

**ARCHAEOLOGICAL INVESTIGATIONS OF 1Ba704,
A NINETEENTH CENTURY
SHIPWRECK SITE IN THE MOBILE RIVER
BALDWIN AND MOBILE COUNTIES, ALABAMA**

FINAL REPORT

PREPARED FOR

**THE ALABAMA HISTORICAL COMMISSION,
THE PEOPLE OF AFRICATOWN,
NATIONAL GEOGRAPHIC SOCIETY
AND THE SLAVE WRECKS PROJECT**

PREPARED BY

SEARCH INC.

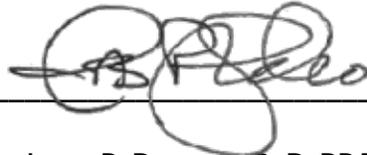
MAY 2019

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PREPARED FOR
THE ALABAMA HISTORICAL COMMISSION
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A handwritten signature in black ink, appearing to read 'J. Delgado', is written over a horizontal line.

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EXECUTIVE SUMMARY

Between December 12 and 15, 2018, and on January 28, 2019, a SEARCH Inc. (SEARCH) team of archaeologists composed of Joseph Grinnan, MA, Kyle Lent, MA, Deborah Marx, MA, Alexander DeCaro, MA, and Raymond Tubby, MA, and directed by James P. Delgado, PhD, examined and documented 1Ba704, a submerged cultural resource in a section of the Mobile River, in Baldwin County, Alabama. The team conducted current investigation at the request of and under the supervision of Alabama Historical Commission (AHC); Alabama State Archaeologist, Stacye Hathorn of AHC monitored the project.

This work builds upon two earlier field projects. The first, in March 2018, assessed the Twelvemile Wreck Site (1Ba694), and the second, in July 2018, was a comprehensive remote-sensing survey and subsequent diver investigations of the east channel of a portion the Mobile River (Delgado et al. 2018a; Delgado et al. 2018b). Prior to fieldwork, an examination of archival and historical records indicated the study area is in a portion of the river not previously surveyed nor dredged. Subsequent sediment coring during the July 2018 investigation confirmed undisturbed soils at a 6.5-foot [ft] (2-meter [m]) depth with twigs Carbon 14 (C14) dated to 2,500 BP at the river bottom. As such, the team deemed the location of the survey area highly likely to contain multiple shipwrecks as well as buried cultural resources.

During the July 2018 survey, SEARCH recorded 14 shipwrecks as well as additional buried magnetic anomalies. One of the wrecks, a wooden-hulled vessel, received the field designation of Target 005 and subsequently an official Alabama site trinomial number of 1Ba704. The July survey confirmed this section of the Mobile River is a ship graveyard. A focal point of the investigation was to identify shipwrecks that share characteristics similar to the historically documented two-masted schooner *Clotilda*, the last vessel to transport enslaved individuals to the United States (US).

At the conclusion of the July survey, SEARCH described 1Ba704 (also known as Contact MR.005S or Target 005) and noted in the draft report that:

A majority of the contact rests in 1.5 m (5.0 ft) of water. Contact MR.005S shares acoustic characteristics of a shipwreck, including a raised bow-like structure, visible port and starboard gunwales, and numerous loose linear (timber-like) objects around the contact. Target 005, of all the targets, is the only target that matches some of the characteristics of a vessel like *Clotilda*. It is essentially the right size, shape, and probable age, and the wood used in its construction is a match. That being said, at this juncture, there is insufficient evidence to identify Target 005 as *Clotilda*, just as there is also no definitive evidence to say that this is not *Clotilda*. What SEARCH recommends is further research, including partial excavation of Target 005. This was beyond the scope of this project, as excavation requires a research design and a USACE permit (Delgado et al. 2018a).

SEARCH prepared a proposal for the additional work. SEARCH also prepared a research design in collaboration with AHC State Archaeologist Stacye Hathorn, and filed an application for a U.S.

Army Corps of Engineers (USACE) permit. The USACE granted permit # SAM-2018-01100-LET on November 27, 2018. AHC permitted and partnered on the project. The AHC, the National Geographic Society (NGS), and SEARCH provided the funding. Additionally, NGS provided assistance through photographic and video documentation of the investigation.

To document 1Ba704, the team employed snorkeling and Self-Contained Underwater Breathing Apparatus (SCUBA) diving to make field observations, raised selected artifacts for photo documentation and measured drawings, collected artifacts and samples for laboratory analysis, and conducted limited hand-excavation underwater for an archaeological inspection.

SEARCH approached this work documenting all aspects and features of the wreck, and comparing and contrasting these with what is known about *Clotilda*. The intent was not to prove the wreck is *Clotilda*. This project followed a research design that provided the framework for the investigation, during which the team critically examined all aspects of the wreck, with comparison to known and presumed qualities and aspects of *Clotilda*, as well as other aspects which might simply be generic, nonspecific to vessel identification, or not a match to those of *Clotilda*. At the conclusion of this work, as documented in this report, SEARCH believes the wreck is likely *Clotilda*.

The research and analysis offered new, previously overlooked insights in the schooner and its deposition into the archaeological record, as well as a greater understanding of its multiple contexts. *Clotilda* and its voyages are historic, and the final, illegal voyage is especially so. If this is *Clotilda*, as suspected, then it is a ship engaged in the slave trade lost in the context of conducting its work as a slaver, and in its case, the last one to bring enslaved people to the US. That voyage was the end point of an involuntary and violent migration of three centuries' duration. It also came within a few years of the repeal of slavery in the US. It would lead to the founding of Africatown, a community that remains an important part of the story of African-Americans, of Alabama, and of the US. Africatown is not only a living community, it is a significant historical and archaeological site listed on the National Register of Historic Places (NRHP).

SEARCH recommends that 1Ba704, as a component in a larger maritime cultural landscape and an apparent ship graveyard is potentially eligible for listing in the NRHP. As this wreck is likely *Clotilda*, SEARCH also recommends that it is individually potentially eligible for NRHP-listing and may be a candidate for designation as a National Historic Landmark (NHL). In conclusion, SEARCH offers a series of management recommendations that address issues such as additional field work, full recovery, and the recommended alternative, which is post-excavation stabilization of the site and establishing a National Slave Ship Memorial at Africatown, incorporating 1Ba704 as a NRHP-listed archaeological site and part of the memorial.

SEARCH acknowledges the assistance and earlier participation in the study that commenced this project of the Slave Wrecks Project (SWP) and its partners, the Smithsonian National Museum of African American History & Culture, (NMAAHC), Diving With a Purpose (DWP), and the National Park Service (NPS).

ACKNOWLEDGEMENTS

Many agencies and organizations greatly contributed to the success of this project. Most notably, the community members of Africatown, for whom SEARCH Inc. (SEARCH) would like to extend the utmost gratitude for allowing the team to play a small role in aiding in the narrative of the people of Mobile and the State of Alabama. SEARCH would like to thank the National Geographic Society (NGS), the Smithsonian National Museum of African American History & Culture (NMAAHC), the Slave Wrecks Project (SWP) of the George Washington University, and the National Park Service (NPS) for their support of this project.

Tireless contributions by the staff at the Alabama Historical Commission (AHC) and support of the Commissioners allowed the entire project to operate smoothly. The team would like to thank the AHC for their continued efforts in overseeing the preservation of Mobile River's rich cultural heritage. SEARCH appreciates the support of the AHC Black Heritage Council and would like to thank the U.S. Corps of Engineers (USACE), Mobile District for their review and approval of a Nationwide Permit for the project.

Especial gratitude for Senator Vivian Figures' continued involvement with the project; her dedication to the project is a testament to her character and commitment to the people of the State of Alabama.

The team is indebted to the Harbor Master and The City of Mobile for access to the convention center boat ramp and parking lot for project vehicles and boats and Chris Blankenship and his staff at the Alabama Department of Conservation who provided operational support and transportation for team members while on the water in Mobile. SEARCH also acknowledges the contributions from the team at the University of Southern Mississippi's School of Ocean Science & Technology who surveyed the Mobile River off Twelvemile Island prior to this project. The collaboration and data sharing augmented the SEARCH survey and assisted with an assessment of potential submerged resource locations.

The team would also like to extend thanks to Alabama news reporter Ben Raines, whose investigations in the Mobile River and ongoing enthusiasm to keep history alive sparked renewed interest nationally. The University of West Florida provided laboratory analysis and identification of wood samples taken from the wreck site. The Archivists and Archives Specialists at the National Archives and Records Center Branch in Atlanta, Georgia provided access to original documents and official records. Support from the Mobile Historic Development Commission has enhanced the knowledge of current maritime landscapes and the historic context of the Mobile River..

This report is the result of the combined efforts of multiple specialists who completed background research, analysis, and authorship in their various specializations. Fieldwork crew consisted of archaeologists Dr. James P. Delgado, Kyle Lent, Joseph Grinnan, Alexander DeCaro, Deborah Marx, Raymond Tubby, and Barry Bleichner, creative designer and cinematographer

Daniel Fiore, and drone videographer Timothy King, all from SEARCH; Stacye Hathorn of AHC; Captain Robert Stevens, PhD; SWP representative Kamau Sadiki; as well as the rest of the abovementioned AHC team. Dr. Delgado was the SEARCH principal investigator, with oversight and review by State Archaeologist Stacye Hathorn. Mr. Grinnan served as archaeologist, diver, dive safety officer, and dive supervisor. Mr. Lent, Mr. DeCaro, and Ms. Marx served as archaeologists and divers, Mr. Tubby, and Mr. Bleichner served as archaeologists. Additional in-house SEARCH support included Jeffrey M. Enright, MA, RPA (Maritime Project Manager), Shawn Joy (Submerged Prehistoric Archaeologist), Nick Linville (Research Historian), Rebecca Mattson (Laboratory Technician), Raymond Tubby (Geographic Information System [GIS] Technician), Abigail Bleichner (GIS) Technician, and Yelena Vilovchik (Technical Editor).

The report was peer reviewed by Dr. David L. Conlin, Dr. Fredrik Hiebert, Dr. Christopher Horrell, Dr. Jack Irion, Dr. Michael McCarthy, and Kamau Sadiki. The team appreciates their rigorous and detailed review, edits and suggestions.

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ACRONYMS AND ABBREVIATIONS

°C	degrees in Celsius
°F	degrees in Fahrenheit
AAUS	American Academy of Underwater Sciences
AHC	Alabama Historical Commission
ARPA	Archaeological Resources Protection Act
ATF	Bureau of Alcohol, Tobacco and Firearms
BAR	Bureau of Archaeological Research
BCD	Buoyancy Compensating Device
C14	Carbon 14 (dating)
ca.	circa
CFR	Code of Federal Regulations
CPR	Cardiopulmonary Resuscitation
CSS	Confederate States Ship
DCNR	Department of Conservation and Natural Resources
DGPS	Differential Global Positioning System
DWP	Diving With a Purpose
ECU	East Carolina University
FFM	Full Face Mask
FS	field specimen
FSU	Florida State University
HMS	His or Her Majesty's Ship
ICOMOS	International Commission on Monuments and Sites
NGS	National Geographic Society
NHL	National Historic Landmark
NHPA	National Historic Preservation Act of 1966
NMAAHC	Smithsonian National Museum of African American History & Culture
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRHP	National Register of Historic Places
OTS	Ocean Technology Services
Panamerican	Panamerican Consultants, Inc.
PL	Public Law
ppm	particles per million
PVC	Polyvinyl Chloride
SCUBA	Self Contained Breathing Apparatus
SEAC	Southeastern Archaeological Center
SEARCH	SEARCH Inc.
SRC	Submerged Resources Center
SWP	Slave Wrecks Project
TPQ	<i>Terminus Post Quem</i>
UNESCO	United Nations Educational, Scientific and Cultural Organization

US	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United State Code
USC&GS	U.S. Coast and Geodetic Survey
USM	University of Southern Mississippi
USS	United States Ship
UT	University of Tennessee
UWF	University of West Florida
WPA	Works Progress Administration
XRF	X-Ray Fluorescence

INTRODUCTION

The Alabama Historical Commission (AHC) and the National Geographic Society (NGS) contracted SEARCH Inc. (SEARCH) to conduct a shallow water archaeological assessment of a submerged cultural resource in the Mobile River in Baldwin County, Alabama. SEARCH previously recorded the resource, archaeological site 1Ba704, during a 2018 SEARCH investigation as Target 005 (Delgado et al. 2018b) (**Figure 1**). 1Ba704 is a mid-nineteenth century wooden-hulled sailing vessel. The purpose of the investigation was to assess the previously documented shipwreck and determine its potential eligibility for listing in the National Register of Historic Places (NRHP).

Historical documentation suggested the area could be the potential location of the scuttled schooner *Clotilda*. This investigation served as a follow-up to jointly conducted fieldwork between SEARCH, AHC, the National Park Service (NPS), the National Museum of African American History & Culture (NMAAHC), and the Slave Wrecks Project (SWP) in March 2018 (Delgado et al. 2018a and 2018b). SEARCH completed a total of eight dives from July 2018 to January 2019 for a total bottom time of 252 minutes. When possible, the team employed shallow water snorkeling to aid in site documentation. Diver investigations focused on assessment of 1Ba704 and included the immediate area surrounding the site.

SEARCH completed this project in accordance with the AHC Administrative Code for Archaeological Investigations (Chapter 460-X-9), the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (36 Code of Federal Regulations [CFR] Part 61) and in compliance with the National Historic Preservation Act of 1966 (NHPA), as amended (Public Law [PL] 89-665), and its implementing regulations (36 CFR Part 800); the Archeological and Historic Preservation Act, as amended (PL 93-291); the Archaeological Resources Protection Act (ARPA) of 1979, as amended (PL 96-95); and the Abandoned Shipwreck Act of 1987. The U.S. Army Corps of Engineers (USACE) nationwide permit file number SAM-2018-01100-LET authorized the archaeological work on 1BA704.

State Archaeologist Stacye Hathorn of AHC reviewed and approved the SEARCH's team work on the research design, permits and participated in field work. SEARCH completed the investigation to carefully examine the site, identify diagnostic features that would further characterize this submerged cultural resource, and draft recommendations regarding the potential eligibility of the wreck for listing in the NRHP, in accordance with the NHPA.

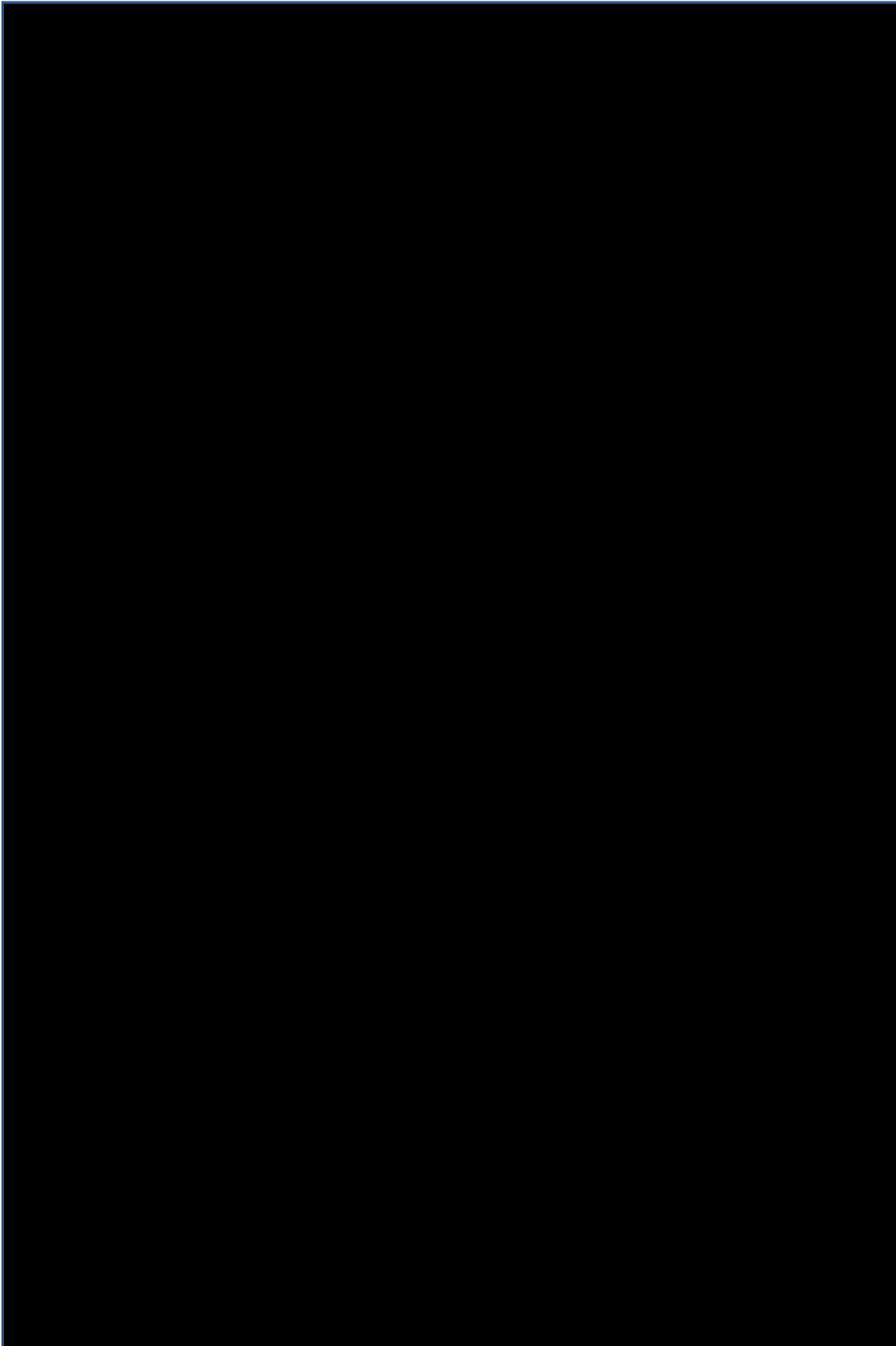


Figure 1. Location of 1Ba704.

DEVELOPMENT OF THE AMERICAN SCHOONER THROUGH THE NINETEENTH CENTURY

In order to discuss the process by which archaeological site 1Ba704 was assessed to determine if it could be the schooner *Clotilda*, it is important to examine the origins and characteristics of the schooner as a type of sailing craft, and then the specifics of Gulf of Mexico schooners. English and Dutch settlers introduced the schooner, a European craft, to North America in colonial times. The development of the American schooner, created a long and lasting maritime tradition in the United States (US). Maritime historian Howard I. Chapelle notes it was the first distinctive type of American vessel and the most important type of American mercantile sailing vessel (Chapelle 1935:41,219). These vessels reached a somewhat standard form by the mid-nineteenth century. The design was prevalent into the first decades of the twentieth century (Morris 1927:ix).

These were the longest-lasting American sailing vessel type and the, "last representatives of commercial activities under sail" in the mid-twentieth century (Morris 1973:ix). Tens of thousands of these vessels were built and sailed in the Pacific, Atlantic, and Gulf of Mexico coasts, and on the Great Lakes in the nineteenth to early twentieth centuries. The schooner was the most numerous type of American sailing vessel built from Colonial times through the nineteenth century (Chapelle 1935:219). The popularity was because the rig and form were handier and surer in confined waters and narrow channels, and the simple fore-and-aft rig required fewer men to sail the vessel (Chapelle 1935:220). As well, the rig "provided additional deck space making room on deck for more cargo" (Burroughs 1972:101). These characteristics combined made the schooner the most economical of available sailing vessels (Horrell 2005:215).

The total tonnage carried by American mercantile-sailing craft, both in the coasting and foreign trades, outclassed that of all other types, including deep-water ships, barks, brigs, and brigantines (Chapelle 1935:219). This was in large measure because schooners "commonly employed in short, quick voyages, had a more rapid turn-over of cargoes and valuation" (Chapelle 1935:219–220). In offshore and foreign trades, schooners dominated the "lumber trade, the fisheries and sealing trades, the slave trade, and the South American and African trades, with considerable European trade" also carried in schooners (Chapelle 1935:220). The "freight trucks" of their time, the coasting schooners carried the bulk of American coastal trade between ports, including commodities such as coal, bricks, iron ore, grain, oysters, and numerous other bulk products.

By the end of the nineteenth century, these vessels were transporting a majority of the country's material goods:

At the turn of this century (1900), the Atlantic coasters constituted a vast armada. Built mostly in New England, the wooden bottoms carries [sic] every conceivable commodity of their times: coal, ice, lumber, bricks, logwood, phosphate rock, lime, salt, naval stores, locomotives, pins, sewing machines, notions—the list is endless (Burgess 1978:xi).

The earliest form of schooner was the two-master. Developed in the eighteenth century, the two-masted schooner had the greatest longevity (Chapelle 1935:258). Though the peak period of two-master construction was between 1825 and 1885, these vessels continued into the twentieth century, with the last launched in 1938 (Morris 1973:20). The two-masters were typically small vessels, "originally registering no more than 40 to 50 tons, the schooner has become in course of time a large vessel, the two-masters ranging from 100 to 250 tons" (Hall 1882:94). Following but not supplanting the two-masters were the three-masted schooners. The first three-masted schooners appeared around 1800, though the rig did not gain popularity and widespread use until after the American Civil War, especially in the coasting trades (Chapelle 1935:258–259). The number of three-masters increased after 1865, but by 1880 these vessels had reached their practical size limit. The *Report on the Ship-Building Industry of the United States* notes that "the popular size now for a three-masted schooner on the Atlantic is 550 or 600 tons" (Hall 1882:94). The coming decades and the new century brought larger schooners, with more masts, in the last great phase of schooner development in America.

THE GULF SCHOONER

The schooner, as both a type and rig, was as common a craft in the Gulf of Mexico as it was elsewhere in America (Borgens 2011:6730) (Figure 2). Schooners first appeared in Gulf trades in the eighteenth century and by the nineteenth century "dominated coastal traffic" (Garrison et al. 1989:E-9). Defining a typical Gulf schooner is a difficult task. A variety of trades, as was the case elsewhere in North America, utilized vessels with schooner rigs, and as such, nothing existed to distinguish one schooner from another in terms of trade other than the actual cargo and the type of voyage. A schooner was a vessel, with a common rig, and essentially with a common form based on shipbuilding practice of the times. Variation came with the size of the vessel, and in that, particularly regarding draft and depth of hold as a few schooners were built to work in and around shallow water bays, estuaries, bayous and rivers. A characteristic feature of the Gulf schooner was the centerboard (Borgens 2011:674). Centerboards enabled a vessel "to sail to windward with the ability to navigate in shoal waters" (Horrell 2005:217; Barkhausen 1990:7). Depth of hold was also critical in regard to potential cargo size. Like the centerboard, it is also a critical factor in assessing typical Gulf schooners.



Figure 2. A Typical Gulf Schooner, 1903 (Lewis Hine, Library of Congress).

To better define the parameters of size and form, Gulf schooners are summarized on the basis of data provided by the certificates of enrollment and registry for New Orleans, from 1805 to 1870 (Survey of Federal Archives 1942). As the oldest and largest port on the US coast of the Gulf of Mexico, New Orleans dominated Gulf trade. As a measure of the economic power of New Orleans' maritime trade, in the 1840s New Orleans "exceeded even New York in the volume of its exports" (Albion 1938:6–57; Albion 1984:105). By 1850, the port's receipts totaled over one hundred million dollars and remained steady up to the Civil War (Colten 2000:51). Surviving records in the National Archives document other ports in the Gulf which also registered and enrolled vessels during this period, albeit with fewer vessels: Galveston, Texas (beginning in 1846), Biloxi, Mississippi (beginning in 1863), and Mobile, Alabama (beginning in 1816).

The analysis of the New Orleans registries shows vessels built in a variety of Gulf ports, including Mobile. The general filter apparent in the New Orleans registries is vessels that physically came into the jurisdiction of officials in New Orleans. Although built elsewhere, their presence in the New Orleans archives indicates that all the documented vessels worked in or regularly called at New Orleans. Although these records do not reflect all locally built and operated vessels working out of Mobile, Galveston, Pensacola, and other Gulf ports, the New Orleans registries represent the single largest population of Gulf-built and Gulf-operated vessels and thus offer a valid sample for assessing the characteristics of schooners built on and working in the Gulf of Mexico and its environs.

The records of New Orleans registrations list 431 schooner in New Orleans between 1851 and 1860 out of a total 1,485 vessels, or 29 percent of all vessels; the next largest category of vessels were river and bay steamboats (N=430) and barges (N=101). In sum, 203, or 48 percent of the registered schooners were built in the Gulf. The smallest schooner registered was a Gulf-built, 21-ton, 19-foot- (ft; 5.7-meter- [m]) long craft with a 16 ft (4.8 m) beam; its dimensions indicate it was a barge-like scow, the largest was a 497-ton, 191 ft (58 m) long, 31 ft (9.4 m) beam schooner built in the north. The average dimensions indicate a Gulf fleet of basically small vessels, with 379 of the 431 (88 percent) registered at 99 ft (30 m) or shorter. **Table 1** provides an overview of average measurements of Gulf-built schooners and schooners registered in New Orleans between 1851 and 1860.

Table 1. Average Size of Gulf-built Schooners and Those Registered in New Orleans, 1851–1860, in Feet and Tons.

Dimensions	Average Gulf-built Schooner	Average Schooner Registered in New Orleans 1851–1860
Average Length (ft)	52.67	71.71
Average Beam(ft)	17.34	20.81
Average Tonnage (tons)	35.29	96.58

SEARCH consulted the archival records of vessel enrolment and registry at the Port of Mobile from 1850 to 1859, when the records end until the 1870s due to likely Civil War loss (US Customs Service Registries 1850-1859). In total, the record of Mobile registrations lists 131 schooners between 1850 and 1859. Of that number, only six, or 4.54 percent of the total, were Gulf-built, and five, or 3.78 percent were Mobile-built. The remaining schooners registered in Mobile during

that period (N=126 or 95 percent) were built primarily on the Atlantic seaboard. The smallest was a 37-ton, 53 ft (16.15 m) long and the largest was a 518-ton, 148 ft (45.11 m). Neither schooner was Gulf-built. In total, 79.5 percent (N=105) were schooners registered with greater than 100 tons admeasurement. The small number of Gulf-built schooners registered at Mobile include the largest-known, *Sarah E. Meaher*, a 426-ton, 146 ft (44.5 m) long schooner. To avoid a disproportionately skewed results, the average size calculations of Gulf-built and other schooners registered in Mobile between 1850 and 1859 exclude *Sarah E. Meaher*. **Table 2** provides an overview of those averages.

Table 2. Average Size of Gulf-built Schooners and Those Registered in Mobile, 1850–1859, in Feet and Tons

Dimensions	Average Gulf-built Schooner	Average Schooner Registered in Mobile, 1850–1859
Average Length (ft)	71.6	93.05
Average Beam(ft)	20.2	24.00
Average Tonnage (tons)	80.6	180.77

The Mobile averages indicate, like those of New Orleans, the relatively smaller size and capacity of Gulf-built schooners, and the domination of the maritime trade in the two major ports by northern non-Gulf-built schooners. This report examines how the Mobile, Alabama-built schooner *Clotilda* fits within this larger contemporary schooner population in a later section.

As to the design and form of the mid-nineteenth century Gulf schooner, and any regional/local variances, a scant architectural or archaeological data is available. “Archaeological examples of the early Gulf sailing craft are rare” (Borgens 2011:673). Three salient examples are: the Bethune Blackwater Schooner, an early to-mid nineteenth century schooner wreck; the Ballast Cove Wreck, a circa (ca.) 1840–1870 schooner wreck in Pensacola; and the Centerboard Schooner Wreck near Milton, Florida.

The typical Gulf schooner is described by Leather (2009). As of 1870, these were “shallow draft, centerboard schooners” 50 tons or less, with hull lengths that ranged from 50 to 74 ft (15 to 22 m) (Leather 2009:186). Leather focuses on the schooners employed in the fishing trade out of Biloxi, Mississippi as the exemplar, built by shipwrights “whose yards were a foreshore plot and shed for tools” (Leather 2009:186). Two basic hull forms existed:

one had clipper bow and a short after-overhang ending in a raked transom; the other had a slightly rounded stern with little overhang and the stern was almost often plumb, carried to the waterline in a wide transom. In both, the bottom had little rise of floor, bilges were of small radius and sides were almost vertical. Sudden violent storms sweep the Gulf of Mexico and seaworthiness is essential” (Leather 2009:186).

On the shallow Gulf coast, draft was usually 4.0 ft (1.2 m) or less, “increased by a wood centerboard working in a case extending between the masts” (Leather 2009:186). The shallow hulls of these two-masted schooners were prone to hogging (sagging) “and many were built with considerable sheer to counteract this, but many had a flat sheer” (Leather 2009:187). These

schooners carried considerable iron ballast because they were shallow-drafted and could capsize under a full set of sail.

Two examples of this type of two-masted schooners survived in the twenty-first century. The Mobile-built schooner *Virginia* (1865) (Figure 3) and the Pascagoula-built oyster schooner *Governor Stone* (1877) (Figure 4) both exemplify the standard Gulf coast shallow-draft schooner. *Virginia* is preserved ashore in storage at the National Civil War Naval Museum in Columbus, Georgia. *Governor Stone* is an operating historic vessel maintained in Panama City, Florida, by a non-profit organization, the Friends of *Governor Stone*. *Virginia* is a 46 ft (14 m) long vessel with a 14.7 ft (4.5 m) beam and a 3.3 ft (1 m) depth of hold (Wittig 2013:19). It is similar in form to *Governor Stone*, with a “classic clipper shape” bow, fantail stern, and shallow draft (Wittig 2013:75–76). Converted to a motor vessel, it remains in that configuration and is no longer rigged as a schooner. Retired in 1989, it awaits restoration. *Governor Stone* is a 39 ft (11 m) long, 12.5 ft (3.8 m) wide, broad two-masted schooner registered at 14.6 tons (Delgado 1990). Sikes (2004), in documenting the form of *Governor Stone*, noted that the schooner has a length to breadth ratio of 3:1:

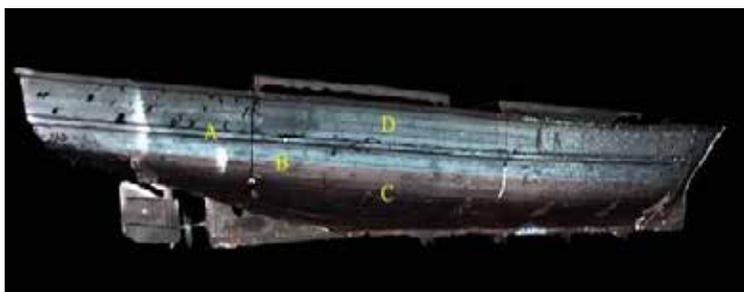


Figure 3. Laser scan of the schooner *Virginia* showing rubrail (A), waterline (B), and older (C) and newer hull planking (D) (Wittig 2013:72).



Figure 4. *Governor Stone* (Friends of the *Governor Stone* 2019).

With a nearly upright stem, the vessel presents a sharp entrance to the waterline. The sternpost is also upright, leading to a raking transom over a full run beneath the waterline. A drag keel allows *Governor Stone* to take full advantage of this hydrodynamic run while maintaining a large cargo hold forward of frame 22. Although the vessel has a full buoyant bow, sometimes referred to as pigeon-breasted or apple-cheeked, marked by very slight tumblehome, and a broad, boxy appearance above the load waterline, its lines are surprisingly fine throughout the shallow draft below the waterline. This allowed the vessel to carry a large amount of cargo without sacrificing agility (Sikes 2004:3).

These vessels were usually defined in terms of their form as having sharp lines at the bow and stern to facilitate speed, but a wider, fuller midships body as noted by Leather (2009:186–187).

The typical or representative Gulf schooner, as defined by Leather based on the hull form and dimensions (Leather 2009:186–187), fit the average dimensions of the schooners' majority registered and enrolled at the Port of New Orleans (**Table 3**). Even fewer Gulf-built schooners were under the length of 70 ft (21 m). Only 26 of the 201 (13 percent) Gulf-built schooners measuring 70 ft (21 m) or longer were registered in New Orleans between 1851 and 1870. The larger schooners were almost exclusively built beyond the Gulf, most of them from the Eastern seaboard ranging from the Carolinas north to Maine. The two-masted schooner *Bear Willis* of New Orleans, built in 1860 in Frankfort, Maine, was 81 ft (24 m) long, with a 21.5 ft (6.5m) beam, and an 8.0 ft (2.4 m) depth of hold, and was registered at 123 tons, for example (Survey of Federal Archives 1942:31).

The 26 Gulf-built larger schooners registered in New Orleans were also analyzed according to their registered tonnage. Only four of the 26 Gulf-built schooners registered in New Orleans had a tonnage over 100 tons: *Southern Independence*, *C.P. Knapp*, *Mexico*, and *James Grierson* (**Table 3**). The records of Mobile registrations lists only seven Gulf-built schooners at the same time, and only two of these at over 100 tons: *Sarah E. Meaher*, at 426 tons, and *Clotilda*, at 120 tons. All other vessels, ranging from 70 ft (21 m) to 73 ft (22.25 m) in length, and beams of 15 to 24 ft (4.5 to 7.3 m), ranged from 47 to 93 tons, with majority in the 50- to 60-ton range. The tonnage is a customs admeasurement for cargo capacity (not to be confused with displacement tonnage [weight]) and noted in a contemporary account of ship measurement as, “an estimate of the weight of stores and merchandise which a ship can carry” (Dodd 1852:2). A shallower hold, even in a longer and beamier hull, equates to less registered tonnage. This means that of the 26 Gulf-built, New Orleans-registered schooners longer than 70 ft (21 m), almost all, although larger, were shallower in depth of hold. **Table 3** shows the dimensions and tonnage of the four schooners registered at greater than 100 tons.

Table 3. Gulf-built Schooners Greater Than 100 Tons Registered in New Orleans, 1851–1860.

Vessel Name	Length (ft)	Beam (ft)	Tonnage (tons)
<i>James Grierson</i>	93	27	149
<i>C.P. Knapp</i>	82	26	109
<i>Southern Independence</i>	79	23	101
<i>Mexico</i>	68	22	105

In this context, when assessing the question of whether *Clotilda*, as an 86 ft (26 m) long, 23 ft (7 m) beam, 120-ton vessel, was a representative Gulf schooner, what emerges from the archival record is that *Clotilda* was not a representative Gulf schooner. It was one of very few stand-out individual craft that reflected elements of regional design. More specifically, *Clotilda* was one of a small group of regionally and locally built schooners with sufficient hold capacity (and hence tonnage) for deep ocean voyages. Although not necessarily an anomaly in regard to length and beam, as other schooners operated in the Gulf of Mexico with its dimensions, *Clotilda* was one of only eight Gulf-built schooners with over 100 tons admeasurement.

Only these eight Gulf-built schooners had deeper holds. These craft were relatively rare, and stood out from the general, regionally-built schooners in the Gulf. These were locally built to compete in the larger market, in compliance with insurance standards, with capacity. They ranged beyond localized confines, such as shipping Mobile-harvested lumber or processed naval stores like turpentine from Mobile to New Orleans. An 1855 notice in the Mobile *Daily Advertiser* captures the essence of that fleet and its trade, noting the schooner *Louisa* was about to sail from the foot of Mobile's Theatre street for Pensacola and environs; "she is a fine little craft for anyone wanting to convey himself and 'truck' to those parts of Florida" (*Mobile Daily Advertiser*, November 9, 1855:3). One of the eight Gulf-built large capacity schooners, *J. Grierson*, for example, was noted at New York, ready to sail for Mobile on October 24, a week after *Clotilda's* launch (*Mobile Daily Advertiser*, October 27, 1855:3).

However, *Clotilda* and the other few larger capacity Gulf schooners, all built between 1851 and 1857, did not represent an emerging trend, and hence a transition, in Gulf schooner form and size. In examining the regional and local shipbuilding after *Clotilda's* construction (1855), only one other schooner was built to that scale: the two-masted *Amelia Ann*, built in Key West, Florida in 1857 (Table 4). Review of vessel registries for schooners in New Orleans up to 1870 (Survey of Federal Archives 1942) shows a trend-continuation of capacity under 100 tons; the table shows a range of Mobile-built schooners up to 1869 that illustrate this point (Table 5). Although Mobile is most relevant, all other Gulf-built schooners registered in New Orleans during this period reflected similar dimensions and tonnages, like the two-masted schooner *Anna Maria* of New Orleans, built at Pensacola, Florida in 1863 and admeasured at 60 tons with a 67.5 ft (20.5 m) length, 19.25 ft (5.8 m) beam, and a 3.75 ft (1.14 m) depth of hold (Survey of Federal Archives 1942:18).

Table 4. Gulf-built Schooners in the *New York Marine Register* and *American Lloyd's*.

Vessel name	Tonnage	Launch Date	Build Location
<i>Amelia Ann</i>	131	1857	Key West, FL
<i>Clotilda</i>	120	1855	Mobile, AL
<i>James Grierson</i>	149	1851	Apalachicola, FL
<i>Sarah A. Meaher</i>	250	1854	Mobile, AL
<i>Allie Day</i>	193	1854	Apalachicola, FL

Source: *New York Marine Register* 1858:43 and *American Lloyd's* 1860:299, 322, 375

Table 5. Known and Possibly Mobile-built Schooners Registered in New Orleans, 1861–1870.

Name	Date of Construction	Dimensions (ft)	Tonnage
<i>Cecilia</i>	1864	56 x 19.5 x 5.5	35 Tons
<i>Eagle</i>	1860	63 x 19.10 x 5.5	54 Tons
<i>Fannie</i>	1869	63 x 20.5 x 4.1	40 Tons
<i>Hermit</i>	1865	61.5 x 21.7 x 6.4	41 Tons
<i>Indian</i>	1866	62.8 x 27.7 x 5	36 Tons
<i>R. C. Files</i>	1860	67.6 x 23 x 4.8	60 Tons
<i>Sea Lion</i>	1858	78.10 x 23.5 x 4	63 Tons
<i>Union</i>	1858	66 x 24.3 x 4.3	55 Tons

Source: Survey of Federal Archives 1942.

The end of the Civil War and the general economic ruin caused by the war to the Southern states effectively brought an end to the construction of any larger vessels in the region. As historian Don Doyle notes, during the postwar period Charleston and Mobile had, “business leaders who, as a group, had little cause for optimism about their cities, and therefore, less inclination toward bold, risky responses to the challenges – and the opportunities they faced” (Doyle 1990:111). Mobile also faced the task of clearing obstructions placed in the bay and port as Confederate defenses during the late war. Prior to the war, local entrepreneurs, like the Meahers, had pursued other opportunities besides the cotton trade as a means to prosperity such as, “wood-product manufacturing, cotton textiles, coal mines...lumber mills, shipbuilding and railroads,” but between 1865 and 1910, most of those initiatives were abandoned (Doyle 1990:64).

At the same time, the northeast coast, especially Maine, took the lead in wooden vessel construction; in 1882, a review of the shipbuilding industry in the US noted that Maine “has long been the largest builder of merchant sailing vessels,” producing, “the most and the largest of this class” because of “cheap timber, low wages, and the nearness of the fisheries” (Hall 1882:96). Although individual shipbuilders in the South, including the few in Mobile, had worked to establish themselves, none were competitive in a market flooded with cheaper hulls built elsewhere, including Maine-born and trained shipbuilders like the Meahers, or Nova Scotia-born and trained William Foster – the man who built *Clotilda*.

That is why only a small number of schooners built for farther-ranging offshore voyages with admeasurements greater than 100 tons like *Clotilda* is observed. The market for local and regional hulls focused on smaller, often owner-built flats, barges, sloops, schooners and river steamboats. These were perfectly suited to work in the shallow coastal bays and rivers of the Gulf Coast. Mobile Bay had but one ship channel that allowed deeper-draft ocean vessels to approach the port of Mobile.

Post-war economic hardship further limited Gulf and Mobile-based shipbuilding. Although eight larger capacity schooners emerged from Gulf yards between 1851 and 1860, the number dropped dramatically after the Civil War. The trend of smaller craft also reflects no established or industrial shipyards working after the war in the eastern Gulf; as of 1882 “along the Gulf coast there is now little ship work east of the Mississippi” (Hall 1882:130). New Orleans was the center with “A number of boat-shops, repair shops, a few small yards and four large repairing establishments with dry-docks,” and in 1880, New Orleans launched only three 20-ton schooners, a 7-ton lugger and a 149-ton steamboat, “being the largest vessel built in the whole state” (Hall 1882:130). In and around Galveston, the only other Gulf shipbuilding center, “most of the vessels built are of 10 to 20 tons,” but two 248-ton schooners and four others averaging 30.5 tons were built in the Galveston region in 1880 (Hall 1882:130).

Only three schooners of notable size were built in Mobile between 1865 and 1892. The two-masted schooner *Garnock*, launched in 1868, a 73.07-ton craft with a 76 ft (23 m) length, a 24 ft (7.3 m) beam and a 4.9 ft (1.4 m) depth of hold (*Annual List of Merchant Vessels of the United States* 1892:126). The two-masted schooner *Linda*, launched in 1871, a 225-ton, 116 ft (35 m) long craft with a 31 ft (9.4 m) beam and an 8.7 ft (2.6 m) depth of hold (*Annual List of Merchant*

Vessels of the United States 1892:175). The two-masted schooner *Miramichi*, launched in 1881, a 72.54-ton craft with a 75 ft (22 m) length, a 25 ft (7.6 m) beam and a 5.4 ft (1.6 m) depth of hold (*Annual List of Merchant Vessels of the United States* 1892:201).

The *Annual List of Merchant Vessels of the United States*, the official published listing of all US-flagged vessels registered by the government, commenced publication after the Civil War. The 1892 edition of the *Annual List of the Merchant Vessels of the United States* listed only 35 schooners built in Mobile and surrounding areas such as Bon Secour (part of Mobile Bay) and Cedar Creek, Fish River and Fowl River, which are tributaries leading into Mobile Bay (Table 6). The schooners range from the oldest (1854) to the most recent (1892), with the majority (N=22) built in the 1870s–1880s (*Annual List of Merchant Vessels of the United States* 1892:53, 61, 68, 69, 76, 84, 103, 108, 117, 125–127, 134, 144, 145, 148, 150, 152, 165, 172, 175, 186, 190, 191, 199, 201, 205, 208, 210, 211, 220, 225, 238, 262).

A survey of Master Carpenter’s certificates for Mobile from 1875 to 1900 in the National Archives branch in Atlanta consistently noted only small sloops and schooners less than 40 ft long; a typical example is the two-masted schooner *Harry Lay*, 37 ft (11 m) by 14 ft (4.2 m) with a 3 ft (0.9 m) depth of hold craft (Figure 5). *Harry Lay* was registered in 1894 with a tonnage of 9.67 tons (*Annual List of Merchant Vessels of the United States, 1894–1895*:84). These certificates, filed by the builders of each craft, reflect a variety of shipbuilders’ names, all indicate individual effort by boat builders, and not established yards.

The previously mentioned Mobile-area-built 40.6 ft (12.3 m) long, 12-ton schooner *Virginia* (1865) and the Pascagoula-built 39 ft (11 m) long, 7.27-ton oyster schooner *Governor Stone* (1877) exemplify the standard Gulf coast shallow-draft schooner, as earlier asserted. A schooner with a spacious hold like *Clotilda* was an anomaly. Detailed archival research has not identified any other schooner built in the Gulf that approaches either *Clotilda*’s dimensions or tonnage.

Table 6. Mobile and Area-Built Schooners, 1892.

Name	Tonnage	Construction Date
<i>A Lamey</i>	41.69	1870
<i>Alice Thompson</i>	16.22	1875
<i>Annie May</i>	46.69	1883
<i>Antonita</i>	7.37	1877
<i>Bill Marcy</i>	9.91	1868
<i>Cecilia</i>	5.39	1872
<i>Edward Corrigan</i>	16.24	1891
<i>Ellen Briggs</i>	20.97	1866
<i>Falcon</i>	10.62	1890
<i>G.M. Parker</i>	7.35	1872
<i>Garnock</i>	73.07	1868
<i>General Washington</i>	37.76	1854
<i>Gentle Annie</i>	25.86	1879
<i>Grover Cleveland</i>	8.80	1887
<i>Hunter</i>	19.76	1874
<i>Ida McKay</i>	25.33	1865
<i>Isabella</i>	15.25	1887
<i>J.E. Hooper</i>	11.09	1892
<i>J.W. Frost</i>	22.54	1883
<i>Justine M.</i>	10.40	1890
<i>Leonine</i>	7.61	1887
<i>Linda</i>	225.00	1871
<i>Margaret</i>	11.00	1881
<i>Mary Ann</i>	37.48	1867
<i>Mary Ida</i>	7.78	1880
<i>Mexican Gulf</i>	10.51	1869
<i>Miramichi</i>	72.54	1881
<i>Native</i>	8.60	1879
<i>Never Tell</i>	8.59	1883
<i>Ocean</i>	7.39	Not Listed
<i>Olivia</i>	6.97	1871
<i>R.D. Post</i>	28.84	1868
<i>Robert Templeton</i>	10.91	1872
<i>Silvia</i>	12.28	1871
<i>William H. Barney</i>	28.91	1881

Clotilda's construction was apparently a local attempt to challenge the domination of the market for deep water, ocean-going schooners in Gulf trade by "Yankee" vessels. Notably, an experienced tradesman from the Northeast coast, William Foster, built it. The size of *Clotilda* and its full form hull were intended to carry bulk cargoes, such as locally produced lumber. Although built with a greater depth of hold (and hence the greater tonnage through more cargo capacity) it also had a shallow-draft that allowed it to navigate in and out of notoriously shallow Mobile Bay using its centerboard to engage in an open ocean voyage. Thus, *Clotilda* was also able to enter other shallow ports in Florida, Louisiana, Texas and Mexico; the vessel appears a "custom-built," atypical Gulf schooner. Both *Clotilda's* physical characteristics and career support this depiction.

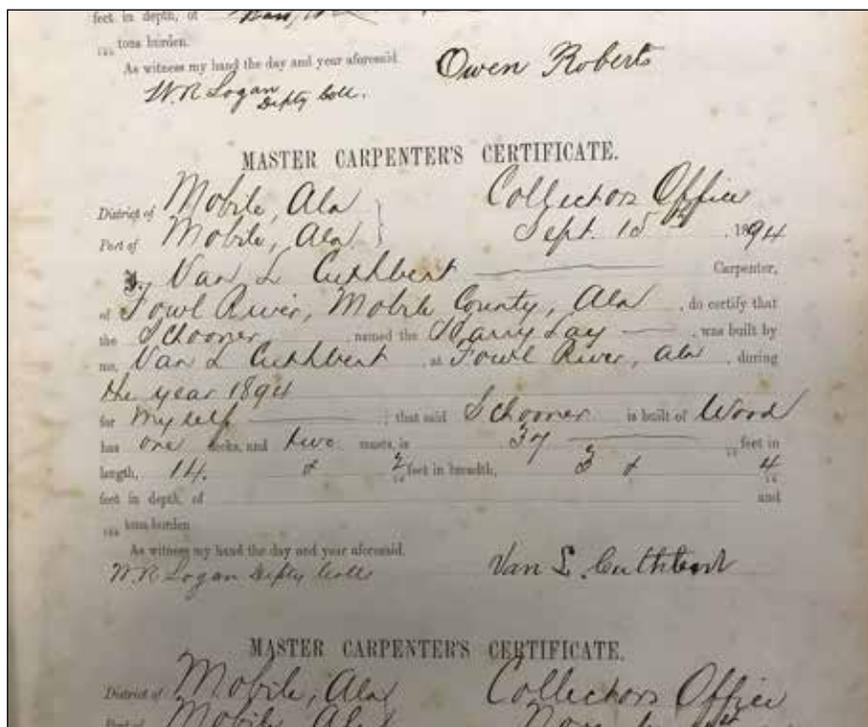


Figure 5. Master Carpenter's Certificate for the Schooner *Harry Lay*, Mobile (US Customs Service Master Carpenter Certificates 1894).

Archaeological Examples

Bethune Blackwater Schooner (8SR985)

In the late 1980s the Florida Bureau of Archaeological Research (BAR) and East Carolina University (ECU) (Baumer 1990b) investigated the *Bethune Blackwater Schooner* (8SR985). The shipwreck is against the bank in Morton's Basin, just off the Blackwater River about 2.6 mi (4.2 km) upriver from Milton, Florida (Figures 6 and 7). Archaeologists did not excavate or remove sediment, instead they recorded exposed portions of the schooner and noted nearby cultural deposits including bricks, cut lumber, pilings, and ballast stone (Baumer 1990b). The only portion of the vessel recovered and conserved by the Florida Bureau of Archaeological Research was the bull's eye from the rigging (Baumer 1990b).

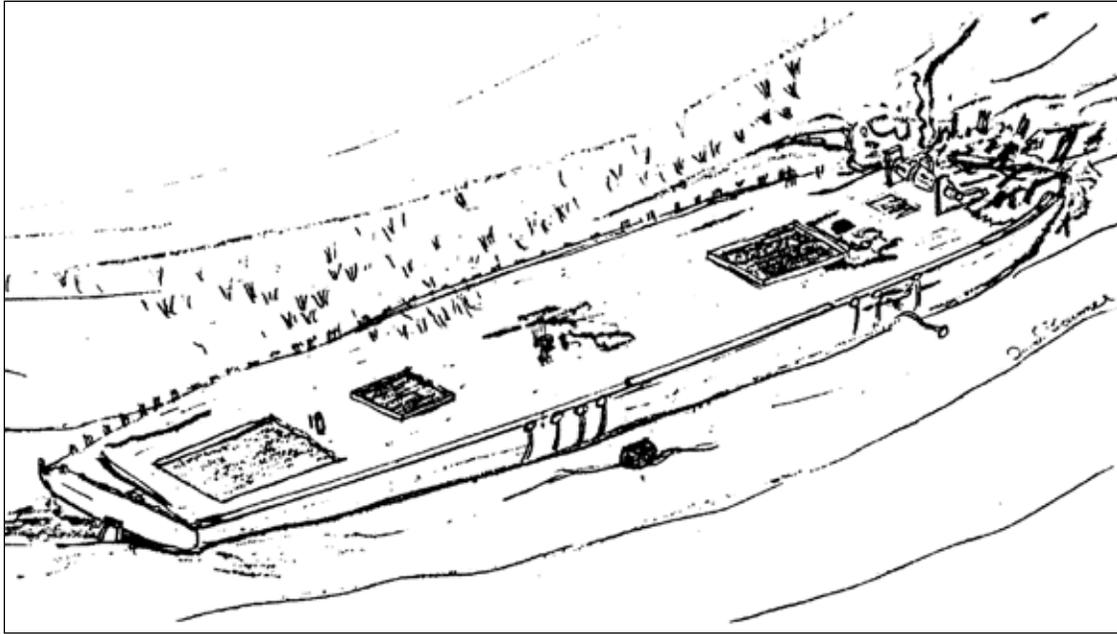


Figure 6. Artist's rendering of the Bethune Blackwater Schooner (Baumer 1990a).

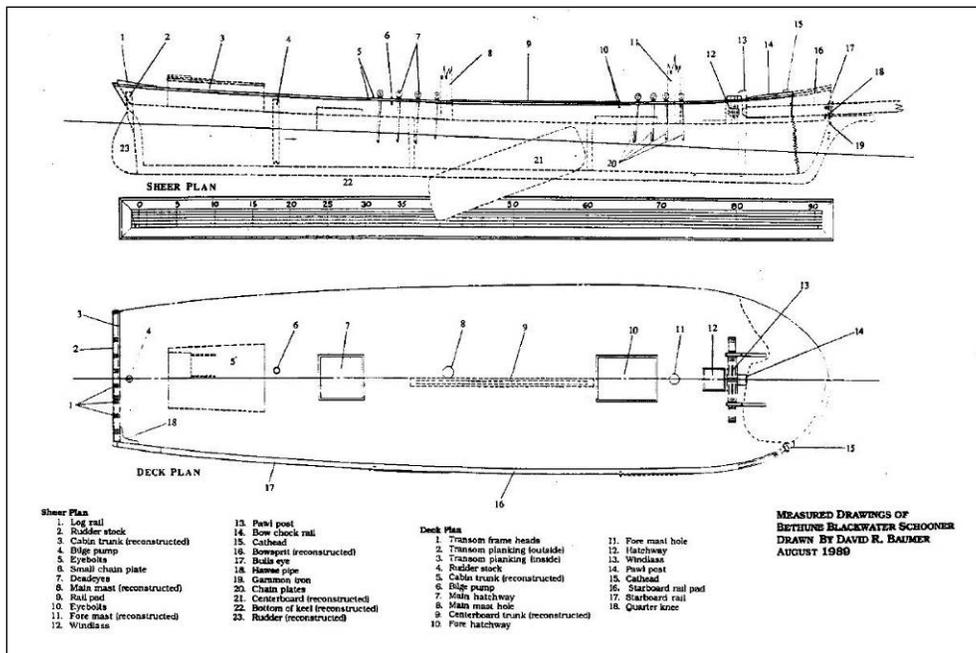


Figure 7. Measured Drawings of the Bethune Blackwater Schooner (Baumer 1990a).

The survey revealed a relatively intact light-draft bluff-bowed centerboard schooner. The vessel is 85 ft (25.9 m) from the forward edge of pawl post to top of outside of the uppermost transom planking with an overall length of 95 ft (29 m) from the stem head to top of transom. The beam is 25.9 ft (7.9 m) with an estimated draft of 6.6 ft (2.1 m) (Baumer 1990b). Baumer (1990b) estimates the tonnage at 93.2 tons. Much of the bow was burned and removed, but some upper portions of the knightheads, port hawse pipe, a bull's eye, lower portions of the gammon iron and possibly a stay for the bowsprit or jibboom rigging remain. Additionally, the Bethune Blackwater Schooner has a handspike or log windlass, which was common until the late 1840s and early 1850s (Baumer 1990b). Portions of the cathead, a knee with a sheave on one end used for raising an anchor, and bow chock rail exist on the starboard side. Extant rigging elements include four deadeye chainplate assemblies and two eyebolts in the bow, four deadeye chainplate assemblies, two eyebolts, and a chain plate fitting for the main rigging. The investigators felt and probed through one of the three hatchways the buried centerboard trunk, but did not fully document it (Baumer 1990b).

Based on construction elements such as the transom, sternpost, and rudder stock as well as the windlass and wooden pumps, Baumer (1990b) postulates that construction dates for the Bethune Blackwater Schooner are between the 1830s and 1870s. Florida BAR and ECU did not conduct any wood analysis to determine a potential construction location (Baumer 1990b). The Bethune Blackwater Schooner is listed on the National Register of Historic Places.

Centerboard Schooner (8SR1978)

The University of West Florida (UWF) conducted fieldwork operations into the Centerboard Schooner (8SR1978) in 2010 and 2011 (Haddock 2014). The Centerboard Schooner is in Marquis Bayou just off the main channel of the Blackwater River near Milton, Florida. UWF archaeologists excavated three 0.9 x 0.9 ft (1 x 1 m) units and mapped exposed portions of the vessel. UWF collected numerous artifacts including ceramics (whiteware, Bristol Glazed Stoneware, and hand-painted tiles), glass (olive and clear), wooden cleat, wooden deck brush, buttons, a kaolin pipe stems, and a Minie ball (Haddock 2014). The artifact analysis provided a *Terminus Post Quem* (TPQ) date of 1855 (Haddock 2014).

A substantial portion of the Centerboard Schooner is intact, with documented construction elements including the stem, breast hook, futtocks, outer hull planking, floor timbers, ceiling, keelson, keel, centerboard and trunk, sternpost, rudder, and knees (Haddock 2014). The overall recorded length was 52 ft (15.8 m) with a beam of 19.6 ft (5.9 m). **Figure 8** is a sonar image of the Centerboard Schooner with the centerboard truck prominently depicted in the center. The centerboard truck is 13.7 ft (5 m) long and 7.87 in (20 cm) wide with a centerboard approximately 1.18 in (3 cm) thick. The centerboard and trunk were both constructed out of yellow pine (*Pinus spp.*). The trunk is secured by copper bolts, whereas the centerboard is fastened together with two large drift bolts on the fore and aft ends. Additionally, an eye bolt is located on the fore end of the centerboard (Haddock 2014).

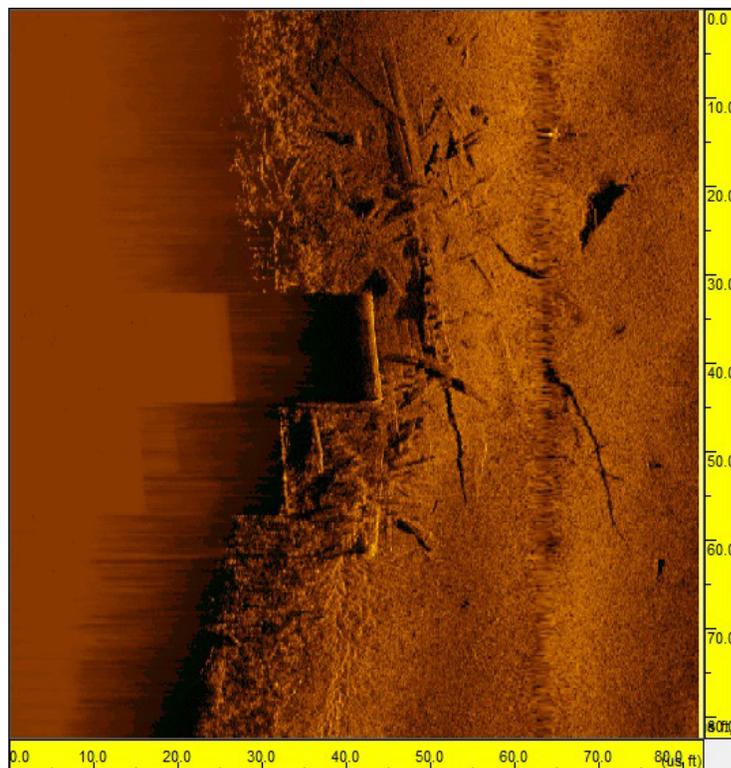


Figure 8. Side-Scan Sonar image of the Centerboard Schooner (8SR1978).

UWF identified 55 futtocks along the starboard side and 32 floor timbers on the port side (Haddock 2014). Futtocks had molded and sided dimensions of 4.7 in (12 cm) and 5.1 in (13 cm) respectively with an average spacing of 8.8 in (22.3 cm). Floor timbers had molded and sided dimensions of 5.1 in (13 cm) and 5.5 in (14 cm) respectively. Futtocks and floor timbers were constructed of torreyia (*Torreya taxifolia*), a species found on the banks of the Apalachicola River. Ceiling Planking is visible in the bow, midship, and sternpost; all of which are composed of yellow pine (*Pinus spp.*). Planking is secured with paired fasteners spaced 16 in (40 cm) apart and 3.1 in (8 cm) in-between (Haddock 2014). The keel and keelson are 8.2 in (21 cm) molded and 17 in (45 cm) sided and

constructed out of oak (*Quercus spp.*). Near the sternpost, rabbets were removed to attach floor timbers. The rudder is out of its original position in the sediment near the sternpost and is 27.5 in (170 cm) by 10.8 in (53 cm) wide at the base. An iron band is wrapped around the rudder measuring 2.5 in (6.5 cm) wide and 22 in (56 cm) from the bottom and likely part of the pintle and gudgeon attachment (Haddock 2014).

Haddock (2014) hypothesizes that the Centerboard Schooner likely had two masts, but excavations did not locate either presumed mast step. Excavations however, did reveal evidence of burning, possibly during the vessel's sinking. The vessel was likely built in the mid-to-late 1800s to early 1900s (Haddock 2014). Haddock proposes theories on how the Centerboard Schooner sunk. The first theory is that the Confederate soldiers led by Lieutenant Colonel William K. Beard burned the vessel in 1862 when he burned much of the local waterfront including numerous ships (Haddock 2014). The second theory is that the vessel was abandoned in the 1920s or 1930s as many sailing ships were replaced with screw-driven vessels. Abandonment in this fashion was extremely common within the Blackwater River (Haddock 2014).

Ballast Cove Wreck (8FR903)

The Ballast Cove shipwreck was relocated during a series of comprehensive marine remote-sensing surveys conducted by Dr. Michael Faught and Florida State University (FSU) graduate students between 1998 and 2001. The survey covered Dog and St. George Islands, Florida and employed a Marine Sonics 600kHz side-scan sonar and a Geometrics G-866 proton precession magnetometer. FSU conducted diver investigations of the shipwreck site between 2000 and

2003. A combination of hand-fanning and induction-dredging exposed the site. Divers identified a small carvel-planked, wooden sailing ship fitted with a centerboard slot (Horrell 2005:137–140). Preservation of hull structure varied with depth of burial as structure above the seafloor is heavily eroded and victimized by shipworm (*Teredo navalis*), whereas buried hull structure remains in good condition (Horrell 2005:132–135). The shipwreck remains measure approximately 65 x 22 ft (20 x 6.7 m) though the shipwreck is not intact. The intact keel measures approximately 64 ft (19.6 m); no identifiable keelson was recovered (Horrell 2005:135–136, 146; Damour and Horrell 2002). Horrell, following excavation and documentation of the site, reconstructed original dimensions of ca. 65 ft (19.81 m) in length with a 22 ft (6.71 m) beam and 4.5 ft (1.37 m) depth of hold and an estimated tonnage of between 48 to 62 tons (Horrell 2005:182). Recovered rigging elements suggested the wreck was that of a two-masted schooner (Horrell 215–216).

The Ballast Cove Wreck was likely built entirely of “local pine, possibly heart of pine” (Horrell 2005:215). Material culture recovered from the shipwreck and ballast pile sites (brick, pipe stems, and majolica) led to a mid-to-late nineteenth century designation, and the dimensions and form suggested a date of ca. 1840–1870 for construction (Horrell 2005:216). Horrell (2005) subsequently identified several possible schooners as candidates for identification, namely *George S. Hawkins*, *George Asher*, *Rambler*, *Acacia*, *Bertha M. Miller* and *F.W. Homans* (Horrell 2005:216–217).

SCHOONER *CLOTILDA*

Clotilda's Characteristics: a Custom-built, Atypical Gulf Schooner

Clotilda's characteristics are documented in a couple of primary sources. The vessel's certificate of registry and enrollment is available in the Federal Archives and Records Center of the National Archives in Atlanta, Georgia (US Customs Service Coasting Licenses 1855). Also known as a license, the certificate was issued on November 19, 1855 as number 24 in sequence at the Port of Mobile, Alabama (Figure 9).

Clotilda was built in Mobile in 1855 and registered with an 86 ft (26 m) length between perpendiculars and a maximum beam of 23 ft (7 m), a depth of hold measuring 6.11 ft (2.1 m), and 120 81/91 tons in measurement (Table 7). What clearly emerges from these measurements is that *Clotilda* was built with a full hull form and a deeper hold than the typical Gulf schooner; it was not built for localized trading, or fishing, but for deep water, offshore voyages and to carry sufficient cargo to make these voyages profitable for the schooner's owners. *Clotilda's* career, as represented in its voyages up to the final, illegal voyage, demonstrates the practical application of the schooner's more expansive hold and seafaring qualities to a profitable career.

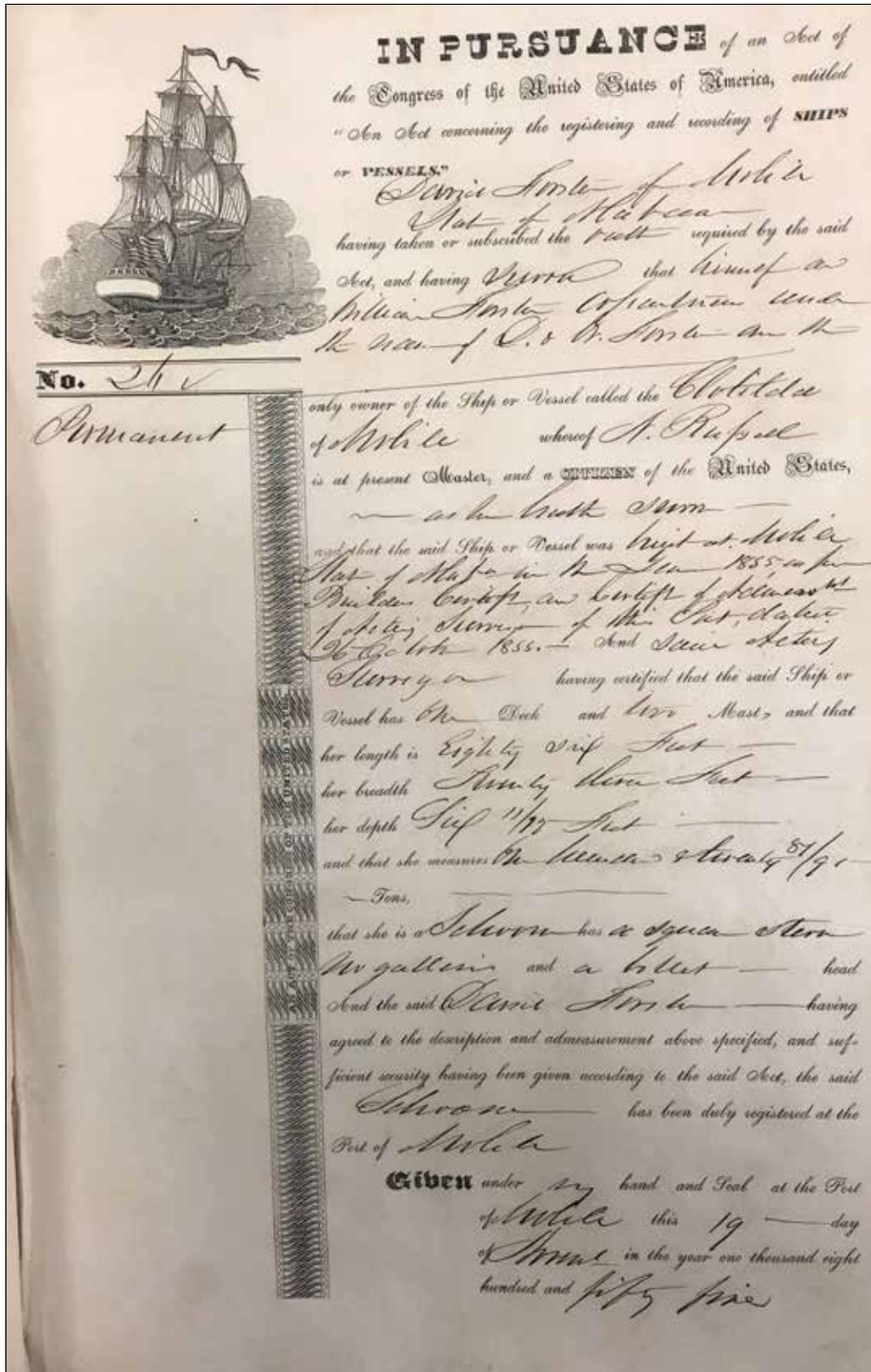


Figure 9. Clotilda's Original Registry (US Customs Service Coasting Licenses 1855).

The seafaring character of the schooner is also indicated in the discussion of *Clotilda's* form, as described in the *Mobile Daily Advertiser* of October 17, 1855 on the occasion of the schooner's launch. "She is light and commodious, draws thirty inches forward and forty-two inches aft.... Her model is of that graceful turn which confers assurance that she will prove a fast sailer" (*Mobile Daily Advertiser*, October 17, 1855:1). The certificate of registry and enrollment notes that a Master Carpenter's Certificate and a Certificate of Admeasurement completed by the acting surveyor "of this port" dated October 26, 1855 were filed with the US Customs Service in Mobile. The certificate describes *Clotilda* as a two-masted schooner with a single deck, a square stern, no galleries, and a billethead (US Customs Service Coasting Licenses 1855).

Table 7. *Clotilda* Characteristics.

Feature	Characteristic
Type	Schooner
Rig	Two-masted schooner
Material	Oak and yellow pine
Length	86 ft
Breadth	23 ft
Depth of Hold	6 ft, 11 in
Draft (unladen)	30 in forward, 42 in aft
Draft with centerboard	6 ft, 6 in
Tonnage	120 81/91

Other details emerge from another set of records. *Clotilda* was insured and registered with the *New York Marine Register*, later known as *American Lloyd's*, and appears in the annual listing for 1858, 1859, 1860, and 1861. The registry also noted that *Clotilda* had a laden (loaded) draft of 6.5 ft (2 m). Additional details not listed in 1858 emerge in 1859 including the notation "CB" which indicate the schooner was fitted with a centerboard with a trunk cabin (*American Lloyd's* 1859:306). The centerboard provided the additional draft from the figures listed in the *Mobile Daily Advertiser* account of the launch at 30 to 42 in. The *New York Marine Registry* entries also state *Clotilda* was "full-modeled," built of oak and yellow pine, and fastened with galvanized iron (*New York Marine Register* 1858:225). The final listing for *Clotilda* adds the notation that the classification survey for the schooner was performed in Mobile in October 1858 (*American Lloyds'* 1861:375). The *New York Marine Register* entries reflect, therefore, no substantial alterations to the schooner up to 1858; minor modifications were made to the rig and inside the hold for the final, illegal voyage. These modifications were effectively nonstructural; *Clotilda's* hull form, capacity, and basic characteristics remained unchanged.

Another key point is that *Clotilda* is registered in the *New York Marine Registry*. This is unlike the later, mandatory listing for American vessels annual *List of Merchant Vessels of the United States* as required by an act of Congress in 1866. That act required the registration of "every vessel of the United States, five tons or over," which then received an official number (essentially, a license) beginning in 1868, when the first *List* was published (Holdcamper 1964:119). The *New York Marine Register* is a classification register, "solely intended for the use of underwriters" (Haviland 1970:9). Rather than a listing of every vessel in a region or country, it represents only those vessels insured by underwriters subscribing to the register, and then those vessels which had surveyed and rated (classified) according to the quality of construction and the presumed risks inherent to that vessel. The best-known example of a classification register is the famous *Lloyd's*, which originated in London in 1760 (Haviland 1970:9).

Surveyors hired by the underwriters compiled the *New York Marine Register*, the first American classification society register. The underwriters were 150 insurance companies, not only from

New York but also London, Liverpool, Newark, Boston, Philadelphia, New Orleans, Mobile, Valparaiso, Chile, Matanzas, Mexico, Bath, Maine, Fredericksburg, Virginia, and Toronto. Seven of these were from Gulf ports (New Orleans, Matanzas and Mobile), and with one American underwriter agent in New Orleans (*New York Marine Register* 1858:np). They had subscribed to the register, financing the classification process as a shared cost because, as the first edition explained, “the want of RULES and REGULATIONS for the classification of shipping, has ever been injurious to American shipping, at home and abroad” (*New York Marine Register* 1858:5). The register included the rules for classification, which outlined the factors by which a rating or classification – e.g. First Rate – would be assigned by an inspector. This included the type of timber and metal employed in fasteners, the dimensions of key timbers, the spacing of fastenings. In short, classification consisted of a detailed assessment of the ship’s quality construction and its probable life span, as well as the size and holding power of anchors and rigging (*New York Marine Register* 1858:7–11).

Clotilda's listing in the *New York Marine Register* is significant because it is unusual for Gulf schooners. In this period (1858–1860) only five Gulf-built schooners were in the register, all of which greater than 100 tons admeasurement (see **Table 4**). All these vessels, including *Clotilda*, were insured, and as such, they stood out. Subjecting to inspection also set the schooners apart by deeming them worthy of insurance. If a vessel was poorly built, worn out, or damaged, it was unlikely that an underwriter would accept liability for any amount of premium paid. This standard, reflected in construction and condition, is a factor for consideration in assessing the archaeological record of any target assessed as a candidate for *Clotilda*.

Clotilda's insurance is rare and suggests that vessel was not a representative Gulf schooner, but an exception. It speaks to the intended long-range (and international) trade aspirations of the owners and master that was reflected in the construction. It is demonstrated by the four-year career of *Clotilda* prior to the final voyage. The insurer was likely local. As noted, the register’s subscribers (funders) included three Mobile firms: the Mobile Board of Underwriters, H.O. Brewer & Co., and the Dry Dock Insurance Company (*New York Marine Register* 1858:np).

An established shipbuilder and ship master, Captain William Foster, built *Clotilda* in 1855. Foster was one of many northern businessmen who came to the south in response to the economic boom occasioned by the cotton trade. This group also included men lured by ancillary benefits of the boom economy. William Foster (1825–1909) was born at Fisher’s Grant in Pictou County, Nova Scotia, to shipbuilder John Foster and his wife Margaret. William likely apprenticed to his father. Documentation of his arrival in the US at the port of Providence, Rhode Island on board the brig *Lucretia*, June 3, 1844 lists him as a “carpenter” (Taylor 1995:76). His parents immigrated at the same time. The exact time of William Foster’s migration to Mobile is unknown; it was after 1850, as his name does not appear in the 1850 Federal Census for Alabama, or before 1855 when he built *Clotilda*.

Foster is listed in the 1860 Federal Census for Mobile. He lived in the household of 66-year old Jacob Vanderslice, a native of Pennsylvania, who was recorded as a “carpenter,” as were Vanderslice’s two older sons and seven other men in their thirties also listed living in the

household. The census entry shows William Foster as a 35-year old “ship builder.” A 20-year old shipbuilder, Peter Darwin, was also listed in the household and may have been Foster’s apprentice (United States Federal Census 1860a). Unlike all others, except Vanderslice, Foster was recorded with property. The census noted Foster’s holdings of \$500 in real and \$200 in personal property. The 1860 US Census started in June and did not end until November so Foster had completed his illegal voyage in *Clotilda* at the time he was interviewed for the census.

Foster married proprietor Vanderslice’s daughter Martha Adelaide Vanderslice in Mobile after the slaving voyage of *Clotilda*, on September 6, 1860 (Alabama Marriage Indexes 1860). The 1870 Federal Census lists William and Martha Foster in Mobile, living next door to the Vanderslice family, with William again identified as a shipbuilder, as he was recurrently listed in the 1880 Federal Census (United States Federal Census 1870, 1880). They had no children. The 1900 Federal Census list William and Martha, noting that he was a naturalized US citizen, and, once again, that he was a “shipbuilder” (United States Federal Census 1900). William died before 1909, when the Mobile City Directory listed Martha as a widow. Martha died in 1913.

In addition to Foster’s shipbuilding, he invested in other vessels, something Mrs. Foster’s will confirms. Martha Foster’s will indicates that Captain Foster had invested in “*Gypsy*,” in which he held a one-twelfth claim “with interest” for a valued loss of \$360,000 along with eleven other owners for its seizure during the Civil War. Mrs. Foster hoped her estate would be compensated for the seizure of the vessel by Congress through a bill introduced for the relief of the owners but apparently, that did not happen as the bill never passed (Alabama Probate Court 1913). The vessel may have been either the schooner *Gypsy*, seized off Pascagoula, Mississippi with a load of cotton by the blockading United States Ship (USS) *New London* on December 28, 1861, or the British schooner *Gypsy*, formerly the Key-West-registered schooner *Grace E. Baker*, seized off St. Joseph’s Bay, Florida (between Apalachicola and Pensacola) on March 19, 1863 by the gunboat USS *Ethan Allen* (*National Tribune*, July 28, 1892:9; Stewart 1903:394).

Foster’s associate in the final voyage of *Clotilda* was his neighbor and business partner Timothy E. Meaher (1812–1892), who also came to Alabama from the North and was a shipbuilder. Born in Whitefield, Maine, Meaher and two brothers, James and Patrick, relocated to Mobile in 1835. Timothy Meaher found employment as a deckhand on the steamer *Wanderer*. Ambitious, “he rapidly worked his way up to mate,” by serving on nine river steamers until he had raised capital to build a sawmill, and a shipyard north of the city on the Chickasabogue River (O’Meagher 1890:177). The sawmill was established in 1847 and the shipyard was built adjacent to it. Timothy Meaher operated the yard with his brother James.

Shipbuilding in and around Mobile, “always existed locally to some degree” until a major boom in the twentieth century (Sledge 2015:185). An earlier push to establishing shipbuilding took place in the mid-nineteenth century as Mobile blossomed as a port with steamers transporting products up and down the rivers, and gradual improvements in the bay opened the city to expanded deep water commerce. It was apparently difficult to sustain a shipyard in Mobile, however. A sheriff’s notice of foreclosure and sale in 1842 documents the inventory of the ship

yard of one James M. Ashton. The sale, set for November 5, 1842, at "Ashton's Ship-Yard," included the personal property, tools and implements of trade:

Three fold, double and triple Blocks; Falls, (or large ropes); Ways; Crabs; Chain Cables and Lashing Chains' round and square iron, comprising Spikes, Nails, Bolts and manufactured articles, &c.; Tackle Falls and Blocks; Live Oak Timber; White Oak Logs; White oak Plank; Yellow Pine Plank; mauls and Sledge Hammers; Smiths Tools; large small and round Jack Screws; oakum; pitch; Rosin, raw and coal Tar; Deck Plank; &c. &c. (*Mobile Daily Advertiser*, October 29, 1842:3).

The sheriff's advertisement also noted he would sell five enslaved women, one six-month old child, and seven men at Ashton's, and "I will also sell at 'Clark's old Ship-yard', a new schooner now on the stocks, about two-thirds finished, of 75 or 80-tons burthen" (*Mobile Daily Advertiser*, October 29, 1842:3). The enslaved men and women likely included laborers who worked at Ashton's shipyard. The use of enslaved labor was common in local industries including shipbuilding. The 1840 US Census shows Ashton's household included 25 persons, six of them "free whites," and nineteen "slaves," as well as 19 persons "employed in manufacture and trade" (United States Federal Census 1840). Although the builder is not named, the New Orleans registry for the 54-ton schooner *Aurelia* of New Orleans indicated it was built in Mobile in 1844 (Survey of Federal Archives 1942:23). Possibly a product of the former Ashton yard, it shows that shipbuilding continued in Mobile even after Ashton's bankruptcy.

By the 1850s, in addition to Meaher's yard, others were engaged in the business of shipbuilding. An 1853 account, in the *Montgomery Weekly Advertiser* noted that a 191 ft (58 m) long "clipper" will be built at Mobile under the "superintendence of Mr. Sidney Porter, the constructor of the US sloop-of-war *St. Mary*," at "the ship-yard just above Hitchcock's pass" (*Montgomery Weekly Advertiser*, July 6, 1853:1). The sloop-of-war *St. Mary's* was built at the Washington Navy Yard nearly a decade earlier in 1843–1844. Sidney Porter's tenure was brief. He relocated to New Orleans, and was there constructing vessels for the Confederacy during the Civil War (Merrill 1962). The registries and enrolments for Mobile do not list a locally built vessel of that size during the period, indicating Mr. Porter's plans came to naught.

Mobile shipbuilding was a small scale, local business, with the operators primarily building vessels for their own use. The *Montgomery Weekly Advertiser*, shared a story from the *Mobile Tribune*, commenting on the launch of a "fine schooner of 150 tons...built by Captain Henry Wulff, for his own use," noted that the 82 ft (24 m) long schooner, with a 22 ft (6.7 m) beam and an 8 ft (2.4 m) depth of hold, was built with "live-oak and cedar, and all the sails, rigging, iron-work, &c. were made and fitted here" (*Montgomery Weekly Advertiser*, March 7, 1855:2). This, the *Mobile Tribune* noted, "is another proof that sea-vessels can be built here as cheaply as at any other point, North or South, and no better timber can be found anywhere. We hope others will follow the praise-worthy example set by the brothers Meaher and Capt. Wulff" (*Montgomery Weekly Advertiser*, March 7, 1855:2). Mr. Wulff's schooner, *Cuba*, first given a temporary enrolment on March 16 and a final enrolment on June 11, 1855, was smaller than reported in the paper. It was

a 99-ton, 78 ft (21.3 m) long schooner with a 20 ft (6.1 m) beam (US Customs Service Registries 1850-1859).

Meaher's first vessel, a steamboat, was built at his own yard in 1847; he followed that with eight steamboats, including two later involved in the *Clotilda* crime, two schooners, one ship, and "numerous scows and barges" up to the Civil War (Sledge 2015:105; O'Meagher 1890:177). References to the yard and the work there include accounts of the launch of the steamboat *William Jones, Jr.* in 1852, heralded as "no slight evidence of the onward progress of Mobile" when launched "from the ship-yard and saw-mill of J.W. and T. Meaher, at the mouth of Chicksabogue." "This fine boat – two hundred feet long – is entirely a home product" (*Daily Delta*, October 29, 1852:2). The *Alabama Planter*, commenting on the launch of William Jones, Jr., noted that the Meahers "are preparing to construct:"

A large class merchant ship. One of the firm informed us that every stick of timber requisite for the ship was prepared, and most of it on the ground – all cut in the adjoining forest, and of the best description – live and white oak, yellow pine &c. The model...is most exquisite and faultless – blending somewhat the style of a clipper and a good bearing vessel....The enterprising brothers have secured the best workmen, who, with the necessary copper, iron &c. are now on their way here to commence operations (*Alabama Planter*, October 30, 1852:7).

The Meaher yard was also described:

The mill and ship-yard are on a flat, a couple of feet above the highest tides, which contains several acres – being a compact shell-bank so solid that a 74-gun ship might be built there without any danger of foundation timbers or props giving way (*Alabama Planter*, October 30, 1852:7).

The new vessel in question was the ship *Wm. R. Hallett*, launched at the end of May 1853, and noted by the local press with pride as the, "first vessel of the class ever built in Mobile" (*Montgomery Weekly Advertiser*, June 8, 1853:1). The following month the press noted the 812-ton ship was "towed down yesterday from Meaher's shipyard to her anchorage" to be loaded with cargo, as "she has already the bulk of her cargo engaged at a very satisfactory rate" (*Independent Monitor*, July 15, 1853:1).

A year later, the press reported the Meahers had launched a "large capacity" schooner, say 400 tons" capable of carrying "900 bales of cotton," and "constructed in the staunchest manner, of handsome model" from the yard (*Times-Picayune*, June 7, 1854:1). The schooner was *Sarah E. Meaher*, "in every respect a fine vessel...made and equipped entirely here...built throughout of the best materials, and of fine model, she will undoubtedly prove herself to be A1 in all respects" (*Times-Picayune*, July 2, 1854:1). The A1 comment referred to the inspection for insurance as *Sarah E. Meaher* was "loading for Galveston, and is engaged thence with a full freight to New York" (*Times-Picayune*, July 2, 1854:1). Like *Clotilda*, the new schooner was a locally built craft intended for deep water and long-range trade. *Sarah E. Meaher's* entry in the New York Marine

Register notes that it was surveyed in 1855 for classification and rated A2. *Sarah E. Meaher* was a three-masted centerboard schooner registered at 250 tons, with a draft of 10 ft (3 m), a single deck, built of oak and locust, copper and iron-fastened (*New York Marine Register* 1858:313).

The pattern of Mobile shipbuilding up to 1855, as demonstrated by Captain Wulff and the Meaher brothers, was work done by locals who constructed their own craft in their own yards. The most common larger vessels built were steamboats, followed by schooners. British artist Thomas Kennet-Ware illustrated both types in a mid-nineteenth century watercolor, now in the collections of the University of Wyoming Library (Figure 10).



Figure 10. "Steamboat on the Alabama River" (Thomas Kennet-Ware), ca. 1860, depicts a river steamboat. Partly obscured behind it is a two-masted topsail schooner.

An article in the [New Orleans] *Daily-Picayune* in October 1857, for example, noted that

Captain David Barton, "an old and well known steamboatman" in Mobile had established a shipyard, "on the lower part of Three-Mile Creek...and soon thereafter began the construction of an elegant little steamer" (*Times-Picayune* October 7, 1857:1). The 121 ft (36 m) long steamer, *Grand Bay*, had engines and boilers "built out and out" by a local firm, "she is built and furnished throughout by Mobile mechanics" (*Times-Picayune* October 7, 1857:1). In this context, the 1855 construction of *Clotilda* in Mobile by William Foster represents an individualized and localized project, undertaken with local materials and the subject of local pride:

The *Clotilda*: Such is the name of a beautiful schooner built by Mr. Foster at his shipyard opposite the city, and which is now receiving her rigging at the foot of St. Anthony Street. The vessel in model and fastening does great credit to her builder, and afford another evidence of the capacity of our city for successful and economical shipbuilding (*Mobile Daily Register*, October 17, 1855:3).

The article also noted *Clotilda*, "is intended for the Texas trade" and "her model is of that graceful turn which confers assurance that she will prove a fast sailer" (*Mobile Daily Advertiser*, October 17, 1855). *Clotilda's* size, construction to a standard that would pass inspection for insurance, and the notation of an intended trade underscore that the schooner was built to stand out from other Gulf-built schooners. *Clotilda* was built to sail beyond shallow local waters on long-range voyages in deep water. A reminiscent account of *Clotilda's* final voyage also noted "she was built

with a view to speed, and was claimed by her builder to be the fastest vessel ever built in Gulf waters" (*Pittsburgh Daily Post*, April 15, 1894:1). Following section discusses *Clotilda's* career.

***Clotilda*: a Merchant Schooner in the Gulf of Mexico and Caribbean, 1855–1859**

William Foster and David Foster became joint owners of *Clotilda* after launching, rigging and fitting out, and then first-registering the vessel. David Foster may have been related to William, as a David Foster, age 35, is listed in the 1860 Federal Census as a carpenter, and as such, could have been William's partner in the construction and hence cost of the vessel (US Customs Service Coasting Licenses 1855; United States Federal Census 1860b). Its first master was A. Russell who also remained its captain through mid-June 1857. Additional captains included William Foster for a trip in 1857, and during its final trip to Africa in 1860, and James Wright during 1857, 1858, and 1859. The 1861 Mobile City Directory does not include an entry for A. Russell but it states James Wright is a captain and seaman residing at his father-in-law's home (Farrow and Dennett 1861:76). On October 27, 1855, under Russell's command, *Clotilda* made its first trip and cleared Mobile for Havana, Cuba with an unknown cargo. It arrived back in Mobile from Havana on December 22, 1855 also with an unknown cargo (*Manufacturers' and Farmers' Journal*, December 31, 1855; *Merchants and Planters Price Current and Shipping List*, October 27, 1855; *Shipping and Commercial List and New-York Price Current*, November 28, 1855).

Historical sources chronicle 40 trips *Clotilda* took between October 1855 and November 1859 as a commercial merchant schooner (**Table 8**). The schooner did not follow a regular route between the same ports, rather the trips varied to meet the demands of the market to stay profitable. This was a typical way of operating for a smaller two-masted schooner that needed versatility and flexibility with cargo and visited ports. *Clotilda's* design, as a centerboard schooner, with slightly larger dimensions than the average Gulf-built schooner afforded it a leg up with its competition as it could hold more cargo and sail further offshore to more distant ports but still access shallow water ports due to its centerboard design. The breakdown of its trips included two trips in 1855, 11 in 1856, 12 in 1857, four in 1858, and 11 in 1859. The records document *Clotilda* engaged in trade between northerly American Gulf ports in Florida, Alabama, Texas, and Louisiana and those in the southern Gulf and Caribbean in Mexico and Cuba (**Figure 11**). The three most frequently visited ports were Mobile, New Orleans, and Brazos de Santiago, Texas. The entire list of all the ports *Clotilda* engaged in trade with is the following:

- Apalachicola, Florida
- Brazos de Santiago, Texas
- Franklin, Louisiana
- Galveston, Texas
- Havana, Cuba
- Matagorda, Texas
- Matanzas, Cuba
- Mobile, Alabama
- New Orleans, Louisiana
- Sabine Pass, Texas
- Tampico, Mexico

Clotilda's trips indicate the schooner operated solely within the Gulf of Mexico and northern Caribbean trade network spanning both the US and international ports in Mexico and Cuba. Although the Gulf of Mexico is a semi-enclosed basin, it required vessels that could handle open ocean travel, with variable weather and sea conditions, over long distances, and in rough water

like the channel between the US mainland and Cuba. A lucrative trade market was already in full effect within the region as *Clotilda* entered the scene in 1855. The increased production of textile manufacturing in the northern states and in Great Britain created a demand for cotton, a major export of New Orleans and Mobile.

The slave trade increased as well to supply workers for those large cotton plantations. All these forces required waterborne transportation to move enslaved individuals and products. The trade in lumber, grain, and sugar were also influential in the market creating a profitable time for the merchants on land and at sea. After offloading these raw materials, vessels often picked up “luxury goods” such as glassware, textiles, and hardware or food and sailed back to Gulf ports. “New navigation routes developed to form a shipping triangle connecting the Gulf ports on the northeast coast of North America and Europe” (Atauz et al. 2006:11). This triangle trade involved a vast network of vessels of all sizes. They worked together to support the larger system with some vessels making oceanic trips along the Eastern seaboard and across the Atlantic while other smaller coastal vessels moved cargoes on a more local or regional scale.

Despite a few trips to Cuba, *Clotilda* generally participated in a regional trade network as 35 of its 40 trips were along the coastal states within the Gulf including Mexico. Its four-year career was active and most likely profitable, a testament to its builder and co-owner William Foster who never sold his vessel until it was time for its final voyage to Africa in 1860 to import the last cargo of enslaved individuals into the US.

Table 8. List of *Clotilda's* 40 Known Voyages Prior to 1860.

Departure Port	Departure Date	Arrival Port	Arrival Date	Cargo	Source
Mobile, AL	10/27/1855	Havana, Cuba	11/19/1855		<i>Merchants and Planters Price Current and Shipping List</i> , October 10, 1855, <i>Shipping and Commercial List and New-York Price Current</i> , Nov 28, 1855
Havana, Cuba		Mobile, AL	12/22/1855		<i>Manufacturers' and Farmers' Journal</i> Dec 31, 1855
Mobile, AL	1/25/1856	Havana, Cuba		70,000 ft lumber	NARA finding aid, <i>Boston Shipping List</i> Feb 6, 1856
Havana, Cuba		Mobile, AL	2/22/1856	sugar, plantains, beef	US Customs Service Cargo Manifests 1856
Mobile, AL	5/23/1856	Tampico, Mexico		lumber	US Customs Service Cargo Manifests 1856
Tampico, Mexico		Mobile, AL	6/23/1856	bread, beef, bacon	US Customs Service Cargo Manifests 1856
Mobile, AL	7/14/1856	Tampico, Mexico		72,500 ft lumber	US Customs Service Cargo Manifests 1856, <i>Alabama Planter</i> , July 19, 1856
Tampico, Mexico		Mobile, AL	8/28/1856	spices, beef, flour	US Customs Service Cargo Manifests 1856
Mobile, AL	9/13/1856	Brazos de Santiago, TX		lumber	US Customs Service Cargo Manifests 1856
Brazos de Santiago, TX	10/18/1856	New Orleans, LA			<i>Times-Picayune</i> , Oct 30, 1856
New Orleans, LA	11/4/1856	Brazos de Santiago, TX		250 barrels flour, 40 barrels tar, 400 boxes soap, 200 boxes wine, 1 hogshead sugar, 1 hogshead tobacco, 75 barrels whiskey, 175 sacks coffee, 30 barrels potatoes, 781 packages merchandise	<i>Commercial Bulletin</i> , Nov 8, 1856
Brazos de Santiago, TX	12/11/1856	New Orleans, LA	12/5/1856	682 hides, 97 pigs lead, 13 bales wool	<i>Times-Picayune</i> , Dec 5, 1856
New Orleans, LA	12/31/1856	Brazos de Santiago, TX			<i>Times-Picayune</i> , Dec 31, 1856
Brazos de Santiago, TX	1/23/1857	New Orleans, LA	1/27/1857	1007 pig lead, 853 packages wool, 832 packages skins, 706 hides	<i>Times-Picayune</i> , Jan 29, 1857, <i>Commercial Bulletin</i> Jan 31, 1857
Brazos de Santiago, TX	3/27/1857	New Orleans, LA	3/31/1857	945 hides, 5 bales wool, skins	<i>Times-Picayune</i> , March 31, 1857, <i>Times-Picayune</i> , April 1, 1857

Table 8. List of *Clotilda's* 40 Known Voyages Prior to 1860.

Departure Port	Departure Date	Arrival Port	Arrival Date	Cargo	Source
New Orleans, LA	4/15/1857	Brazos de Santiago, TX		70 barrels flour, 65 bags coffee, 16 barrels whiskey, 200 sacks corn, 75 boxes candles and soap, 8 sacks rice, 50 barrels sugar, 683 bundles iron, 2000 ft lumber, 360 packages merchandise	<i>Times-Picayune</i> , April 15, 1857
Brazos de Santiago, TX	5/13/1857	New Orleans, LA		1606 pigs lead, 164 hides	<i>Commercial Bulletin</i> , May 13, 1857
New Orleans, LA	5/20/1857	Brazos de Santiago, TX		2 hogshead 2 boxes tobacco, 326 barrels flour, 1 hogshead 35 barrels sugar, 129 sacks coffee, 21 sacks cocoa, 10 kegs powder, 25 boxes soap, 375 sacks corn, 103 pieces lumber, 76 iron screws and bolts, 341 packages merchandise	<i>Commercial Bulletin</i> , May 23, 1857
Brazos de Santiago, TX		New Orleans, LA	6/10/1857	1416 slabs lead, 182 skins, 16 barrels wool, 87 hides, 11 turtles	<i>Times-Picayune</i> , June 10, 1857
New Orleans, LA	6/17/1857	Mobile, AL		none in ballast	US Customs Service Cargo Manifests 1857
Mobile, AL	8/28/1857	Tampico, Mexico		72,000 ft lumber	US Customs Service Cargo Manifests 1857
Mobile, AL	9/5/1857				US Customs Service Cargo Manifests 1857
Tampico, Mexico		Galveston, TX	10/2/1857		<i>Times-Picayune</i> , Oct 6, 1857
Galveston, TX	10/5/1857	Mobile, AL	10/19/1857	none in ballast	US Customs Service Cargo Manifests 1857
Mobile, AL	11/15/1857	Franklin, LA		lumber, salt	US Customs Service Cargo Manifests 1857
Franklin, LA		Mobile, AL	1/4/1858	molasses, sugar	US Customs Service Cargo Manifests 1858
Mobile, AL	1/21/1858	Franklin, LA		79,500 ft lumber	US Customs Service Cargo Manifests 1858
Attacopre (sp?)		Mobile, AL	3/11/1858	molasses, sugar	US Customs Service Cargo Manifests 1858
Mobile, AL	4/12/1858	Matanzas, Cuba		66,325 ft lumber	US Customs Service Cargo Manifests 1868
Sabine Pass, TX		New Orleans, LA	2/17/1859	284 bales cotton	<i>Times-Picayune</i> , Feb 17, 1859

Table 8. List of *Clotilda's* 40 Known Voyages Prior to 1860.

Departure Port	Departure Date	Arrival Port	Arrival Date	Cargo	Source
New Orleans, LA	3/6/1859	Apalachicola, FL		105 barrels molasses, 20 barrels 28 hogsheads sugar, 43 casks bacon, 86 barrels flour, 18 kegs lard, 25 barrels port, 37 bags coffee, 41 sacks corn, 350 cls rope	<i>Times-Picayune</i> , March 6–7, 1859
Sabine Pass, TX	5/13/1859	New Orleans, LA	5/16/1859	232 bales cotton	<i>New Orleans Crescent</i> , May 16, 1859
New Orleans, LA	5/19/1859	Apalachicola, FL			<i>Times-Picayune</i> , May 19, 1859
Mobile, AL		New Orleans, LA	7/11/1859		<i>Daily Delta</i> , Oct 11, 1859
Galveston, TX		Mobile, AL	7/25/1859	none	<i>Advertiser and Register</i> , July 26, 1859
Mobile, AL	8/15/1859	Matagorda, TX		77,534 ft lumber	US Customs Service Cargo Manifests
Matagorda, TX		Mobile, AL	9/9/1859	none in ballast	US Customs Service Cargo Manifests 1859, <i>Mobile Register</i> , Sept 10, 1859
Mobile, AL	9/26/1859	Brazos de Santiago, TX		72,500 ft lumber	US Customs Service Cargo Manifests 1859
Brazos de Santiago, TX		Mobile, AL	10/24/1859	none in ballast	US Customs Service Cargo Manifests 1859
Mobile, AL	11/9/1859	Galveston, TX		70,100 ft lumber	US Customs Service Cargo Manifests 1859

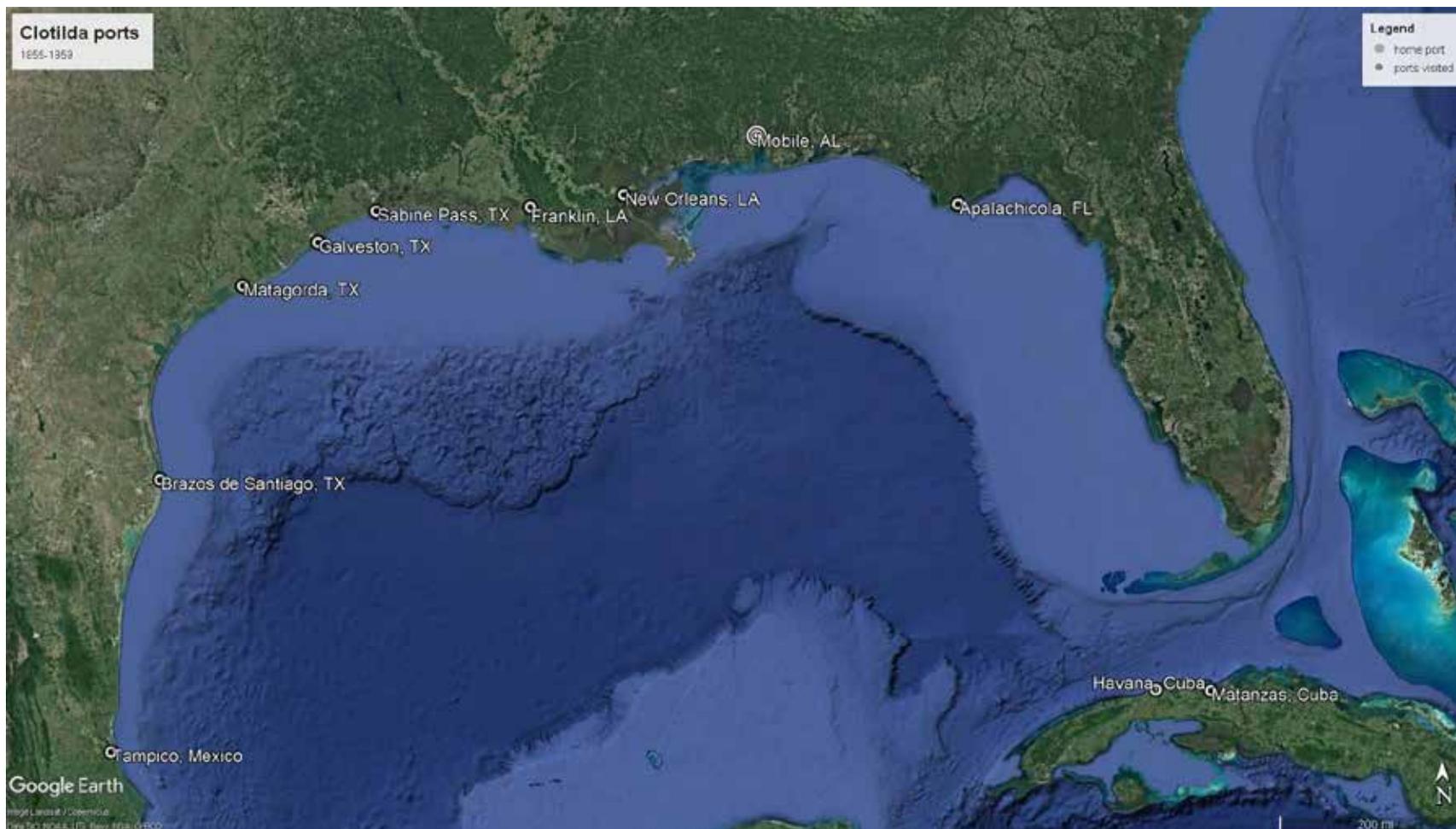


Figure 11. Map of the ports *Clotilda* visited between 1855 and 1859.

Havana and Matanzas, Cuba

On January 25, 1856, *Clotilda* cleared Mobile again for Havana, Cuba with 70,000 ft (21,336 m) cargo of lumber (US Customs Service Cargo Manifests 1856; *Boston Shipping List*, February 6, 1856). This was its second trip from Mobile and second trip in a row to Havana. The lumber cargo was a logical shipment from Mobile, as the timber industry of Alabama was thriving, and Cuba was a booming market, especially for pine. Cuba's plantations and refineries purchased vast amounts of imported softwood to build boxes and barrel staves to make hogsheads for shipping sugar. In 1858, US Treasury Department assessments showed that, "wood and its manufactures were far and away the largest single US export to Cuba, in terms of both volume and value" (Demeritt 1991:108).

Between 1856 and 1860, 42 percent of American voyages to Cuba carried forest products, and between 1854 and 1858, more than fifteen million dollars of lumber exports represented 35 percent, "of all US foreign trade earnings on the island" (Demeritt 1991:109). The timing of *Clotilda's* early voyages coincides with overall American scheduling of the lumber trade to Cuba, which was busiest in the first several months of the year" and "conformed to the general picture of Cuban commerce, which peaked in February and March, during the height of the sugar harvest" (Demeritt 1991:111).

Havana, the capital of Cuba, was the principal port, with a protected deep-water anchorage. It was also the banking, commercial and communications hub for the island and hence, "the island's busiest port of call and its clearinghouse for most imported goods," with over 1,900 vessels entering the harbor in 1857–1858, among them *Clotilda* (Demeritt 1991:116; *The New York Times*, January 28, 1859). The voyage concluded with *Clotilda's* return from Havana, arriving back in Mobile on February 22, 1856 with a cargo of sugar, plantains, and beef (US Customs Service Cargo Manifests 1856).

Clotilda's other Cuban port of call, Matanzas, also on the northern coast, and 56 mi (90 km) east of Havana, is the closest Cuban port to the coast of the US. Matanzas was established in the seventeenth century and in the mid-nineteenth century a center of a sugar industry with large plantations operated with slave labor. As such, it was another heavy consumer of American softwood, and *Clotilda* made a voyage to Matanzas, departing Mobile on April 12, 1858 with 66,325 ft (20,215 m) of lumber (US Customs Service Cargo Manifests 1858). Another *Clotilda* voyage, arriving in Mobile on March 11, 1858, may have come from Cuba; the manifest is partly illegible, listing the sailing port "Attacopre," possibly a Cuban port. The cargo of molasses and sugar supports this assumption.

Cuba was strongly linked to the slave trade, and a source of enslaved people in the early to mid-nineteenth century that were smuggled to North America via New Orleans' back waters, or a route through Galveston, then part of Mexico, or into the backwaters of Florida. As well, with the abolition of the US slave trade, a number of American slave traders shifted their drop-off point to Cuba; "Cuba constituted one of the major new opportunities for American merchants" (Marques 2012:242). In the early part of the nineteenth century, American slave traders with

broader commercial ties helped create a, “sophisticated structure connecting northern credit, rum and cotton production, long-distance maritime trade (including its slave variant), and slave plantations in Cuba producing sugar and coffee for the world market” (Marques 2012:254). This was facilitated when Cuba, formerly closed to an international commerce, was partially “opened” to foreign trade in 1809 when restrictions on trade with the ports of Havana, Matanzas and Trinidad were lifted by the Spanish government, or as one contemporary noted “thrown open to the vessels of all nations and the speculative industry of the world” just as the US passed the law that closed American ports to slave ships (Jameson 2010:93).

Foster and *Clotilda*'s interest in Havana and Matanzas trading were possibly more than a simple transaction seeking sugar; Marques notes that:

Slave ships flying the US flag became common again in the period between 1835 and 1862. This pattern, however, was apparently not linked to the earlier North American involvement in the slave trade to Cuba. Slave vessels were built in the United States, and British and North American merchants supplied slave traders with merchandise, often on credit. Many slave vessels had North American captains and crews while US consuls in Cuba and Brazil facilitated the issuance of official papers that were used by Spanish, Portuguese, and Brazilian slave traders Marques (2012:258).

From the outset, *Clotilda*, while engaged in deep-water long-distance trade and not yet used as a slave ship was nonetheless a tool in the practice of slavery:

Participation in the slave trade and slavery can be represented as a broad continuum ranging from the direct participation in the buying and selling of slaves to more indirect forms of association such as the consumption of goods produced by slaves (Marques 2012:259–260).

Clotilda's, built by slave owners using enslaved labor, on its first voyage was already a participant in a trade and a system that played out overtly and dramatically on its final voyage.

Tampico, Mexico

Another frequent port of call for *Clotilda* was Tampico, Mexico. Tampico is north of Vera Cruz on the northern Gulf Coast of Mexico. The town sits 4 mi (6.4 km) from the Gulf coast in a lagoon that is part of the Rio Tampico; although settled in colonial times, the area was abandoned in the late seventeenth century. The town known to nineteenth century mariners' dates to the early nineteenth century. Silver mining and trade in that silver, as well as agricultural and ranch products formed the basis for maritime trade. Tampico was also linked to the slave trade as it had a direct maritime link through a regularly scheduled express (vessel) that connected Havana and Tampico. As well, the town was a common waypoint for slave ships seeking to bypass American authorities by transshipping them from Tampico to Galveston. *Clotilda* made three round trip sailings between Mobile and Tampico in 1856 and 1857.

Mobile, Alabama

During all three trips to Tampico originating in Mobile, *Clotilda* carried lumber with two cargos consisting of over 72,000 ft (21,945 m) of milled wood. Beginning in the eighteenth century, flourishing in the nineteenth century, and continuing well into the twentieth century, the lumber business thrived at the port of Mobile due to its access to interior forest lands along the Mobile River. The Mobile River Delta, composed of the Alabama and Tombigbee Rivers, was home to a large supply of pine (long leaf, shortleaf, and loblolly), cypress, willow, and black gum. The Alabama River provided easy access to lumberman to move the cut trees down to Mobile for processing at sawmills and shipping. Logs or timbers were tied together to form rafts and ferried downstream. Most of the lumber from Mobile was for the export market, particularly in Latin America. Southern yellow pine was one of the key species harvested along the Alabama River. It was well-suited for structural uses when great lengths and strength were required such as railroad ties and mine-strengthening timbers (Massey 1960). Of the 12 known trips departing Mobile where *Clotilda's* cargo is chronicled, all included loads of lumber as primary export with the largest cargo consisting of 79,500 ft (24,231 m) and an average cargo of 61,273 ft (18,675 m). In addition to Tampico, *Clotilda's* lumber cargos were discharged at Brazos de Santiago, Matagorda, and Galveston, Texas, Franklin and New Orleans, Louisiana, and Havana and Matanzas, Cuba. The *Alabama Planter* of July 19, 1856 listed the main export ports for Mobile as sawed lumber and boards during the preceding season that had started on September 1, 1855. Of the 11 ports listed, Tampico ranked fourth with 660,069 ft (201,189 m). Havana (2,487,455 ft [758,176 m]) was first, followed by Cardenas (945,592 ft [188,216 m]) and Matanzas (682,949 ft [208,162 m]). The total of exported lumber was 5,609,170 ft.

Clotilda's connection to Tampico supported the industrialization of Mexico through importation of much needed lumber for the construction of mines and manufacturing facilities with associated infrastructure. During the mid-nineteenth century foreign capital investments, especially from the British, throughout Mexico created a larger demand for goods to support the growing economy. Tampico became an established port due to the many years of Spanish occupation of Vera Cruz, which did not allow easy access for shipping, and proximity to the US (Russell 2011). Tampico merchants supported an active trade network with neighboring Texas ports; Texas newspaper sales ads often listed materials arriving by ships at Tampico (Francaviglia 1998). *Clotilda's* return trips to Mobile from Tampico included cargoes of bread, bacon, flour, beef, and spices.

Brazos de Santiago, Matagorda, Galveston, and Sabine Pass, Texas

Brazos de Santiago is the most-visited port by *Clotilda* during its Gulf of Mexico career and is more connected with Mexico than Texas markets. Records indicate that the schooner arrived to Brazos de Santiago six times and departed the port seven times in the years 1856, 1857, and 1859. Available digitized newspapers accounts supplement incomplete coverage in the records of maritime arrivals and clearances to investigate the discrepancies in arrivals versus departure numbers which should be the same. *Clotilda* sailed from Mobile and New Orleans to Brazos de Santiago and then from Brazos de Santiago back to Mobile and New Orleans for all its trips

associated with that port. The cargoes to Brazos de Santiago from Mobile was always lumber, whereas those from New Orleans were more diverse and included lumber, iron, flour, potatoes, corn, rice, tar, soap, candles, wine, whiskey, sugar, cocoa, tobacco, coffee, black powder, hardware, and general merchandise. The cargoes from Brazos de Santiago were more limited in variety and included only hides, skins, lead, wool, and turtles as well as one trip in ballast (no cargo onboard).

Now vanished, Brazos de Santiago was situated on Brazos Island, a barrier island on Texas' Gulf coast south of South Padre Island. Although it was once an important port due to its position on the Mexican border and its access to fertile ranch lands up the Rio Grande, today the area is no longer a seaport and is recognized primarily for its scenic beauty. During the nineteenth century, the port was an essential link and transshipment point for upriver commercial activities. The shallow bar at the mouth of the Rio Grande made it difficult for deeper draft vessels to navigate the river therefore goods were offloaded at Brazos de Santiago via lighter and moved to smaller vessels for transport upstream or onto carts for conveyance overland to Mexico's interior (Leatherwood 2010). An oceanic steamship line for passenger traffic also serviced the port with connections to smaller river steamboats. As a transportation hub, vessels, including *Clotilda*, connected the sheep and cow ranches to the larger market as evidenced by the cargo type they moved in and out of the port. The typical cargo coming out of Brazos de Santiago in the 1850s was hides and wool, as reflected in *Clotilda's* manifest. Another important cattle-related product produced there was tallow.

Prior to 1882, Brazos had been the port of entry for not only the Rio Grande Valley supplies but for all goods destined as far northwest and west as the States of Chihuahua, Durango, [and] Zacatecas (Pierce 1917:126).

Moving northeast up the Texas coast, the next port *Clotilda* visited was Matagorda. The schooner only made one trip from Mobile to Matagorda in 1859 with a load of lumber and then a return trip back to Mobile in ballast. Matagorda is situated near the mouth of the Colorado River and Matagorda Bay, halfway between Corpus Christi and Galveston. The port afforded easy access upriver for the movement of materials originating from plantations, farms, and ranches along the river. Matagorda and Mobile, New Orleans, and other Gulf ports had established an active trade and transportation network during the time of *Clotilda's* visit and its cargo of lumber was in heavy demand. Records do not indicate why the schooner departed only in ballast (Kleiner 2010).

Galveston is the next port *Clotilda* stopped at in Texas. It made two recorded trips there, one in 1857 from Tampico with an unknown cargo and one in 1859 from Mobile with over 70,000 ft (21,336 m) of lumber. Both departures from Galveston were for Mobile in ballast. After the city's incorporation in 1839 and position as the capital of the Republic of Texas and homeport for the Texas Navy, it quickly became one of the commercial centers of the Gulf. Its predominance is attributed to the geographic position at a crossroads of many rivers and tributaries combined with a large accessible port and nearby cotton plantations and ranches. Galveston served as a center for steamships and larger deep-water sailing vessels that provided a means for immigrants and merchants access to international markets (McComb 2010).

The final port in Texas that *Clotilda* visited was Sabine Pass (near Port Arthur) situated at the eastern border of Texas with Louisiana. Historical accounts do not show any arrivals so its inbound cargoes are unknown, but during its two trips from Sabine Pass to New Orleans, in 1859, *Clotilda* carried 232 and 284 bales of cotton, respectively. The port was built in a natural opening between the Gulf of Mexico and Sabine Lake located at the head of the Sabine River. The Sabine Pass connected oceangoing traffic with the interior waterways along Texas' border and was a hub for agricultural exports. It held a key position at the entry point to the Sabine, Neches, and Angelina Rivers, a fertile agricultural area rich in commercial importance and eventually of strategic standing. Commonly exported materials included timber, sugar, tobacco, and cotton (Cotham 2004). Small steamers navigated the shallow rivers and brought these exports down and brought supplies back up.

It will need but a cursory glance at the vast range of country of which Sabine Pass is the ocean outlet, to convince business men of the important relationship it is ultimately to occupy commerce of the world. Into and through it pour the waters of three rivers...capable of affording it sufficiently to carry off all the produce of the country...[it] has as great capabilities for producing both which feed and clothe the human race, as upon the face of the globe.... It is, if not the best and decidedly the safest harbor on the Gulf coast (*Times-Picayune*, December 26 1856).

Franklin and New Orleans, Louisiana

Clotilda entered the waters of Franklin port on two documented occasions. Both were voyages from Mobile: one in 1857 with a cargo of lumber and salt, and another in 1858 with a cargo of over 79,000 ft (24,079 m) of lumber. *Clotilda* returned to Mobile after one of these trips with a cargo of sugar and molasses. The destination port for the other passage is unknown. Franklin, west of New Orleans, was known for its large sugar plantations along Bayou Teche that relied on enslaved labor and boats to move their products, mainly sugar and molasses. Due to the narrow waterways around Franklin,

These tall-masted ships would have ascended the bayou not by using their sails, but by poling, warping (pulling a vessel by hand or winch using a rope tied to a tree or other immobile object), cordelling (towing a vessel by rope using human or animal), and, most primitively, bushwhacking (propelling a vessel manually by pulling on overhanging limbs and branches) (Bernard 2016).

Shipping was so prevalent that by 1830 the federal government placed a Collector of Customs and Inspector of Revenue at Franklin for the District of Teche. The former entry into the district was from Nova Iberia. This move indicated the importance of Franklin to the national economy. In 1858, *Clotilda's* cargo was "inventoried" two known times on its way to Mobile to ensure correct record-keeping and customs payments (US Congress 1830; US Customs Service Cargo Manifests 1858).

Besides *Clotilda's* home port of Mobile, New Orleans was the most visited port, based on known accountings of the voyages. The schooner arrived in New Orleans nine times in the years 1856, 1857, and 1859. During six of these trips *Clotilda* originated in Brazos de Santiago, Sabine Pass accounted for additional two voyages, and Mobile was the origin port for the final voyage. Cargoes from Brazos de Santiago are consistent with the common exports such as hides, wool, skins, and lead. Sabine Pass to New Orleans cargo was bales of cotton, and the cargo from Mobile is unknown. *Clotilda* departed New Orleans seven times, four to Brazos de Santiago, two to Apalachicola, and one to Mobile. New Orleans exported cargoes were diverse and more varied than many of the schooner's other cargoes. The common types of goods *Clotilda* carried were farm products (cotton, tobacco, corn), foods (flour, rice, potatoes, cocoa, coffee, sugar, molasses, bacon, lard) spirits (wine, whiskey, port), metals, (iron, nails) and uncategorized merchandise (tar, soap, lumber, rope).

New Orleans was the biggest and possibly most influential southern port during the antebellum era because of its position along the Mississippi River and location of the nation's largest slave market. The city's location, 110 mi (177 km) from the mouth of the Mississippi, afforded shipping a protected, naturally wide deep-water harbor with plenty of river frontage for commercial activities. The access to the Mississippi River's 17,650 mi (28,404 km) of navigable waterways put New Orleans at the center of shipping and trade in the Gulf of Mexico and of the Southern states. New England merchants with Northern capital fueled the retail and wholesale enterprises of New Orleans, all of which were tied to the plantation-based economy up to the Civil War. During the few years *Clotilda* was associated with the port, agricultural exports were still key with cotton the most important, followed by sugar and tobacco. Large steamboats brought raw commodities downriver and then moved products back upriver with connections to the interior heartland. The cargoes were then loaded onto coastal sailing packets and steamships for closer, Gulf-related, movements or further away to the northeast for shipment to Europe (Reinders 1964). By the mid-1850s, New Orleans' foreign cotton exports overshadowed domestic ones and by 1855, "cotton exports enabled New Orleans to run a surplus in the merchandise balance of trade with every domestic port except Pensacola and Philadelphia" (Redard 1986:149). As cotton was not a major export to Gulf of Mexico ports, the market for *Clotilda* and similar vessels centered on "grain, coffee, rice, nails, iron, candles, glassware, soap, lumber, textiles, and whiskey" (Redard 1986:150). "Overall the volume of exports to Mobile and Texas declined from 1855 to 1860, while the quantity sent to Florida doubled" (Redard 1986:150). Although New Orleans' foreign overseas exports overshadowed the domestic trade, *Clotilda's* participation in the regional coastal trade market shows the need for schooners to service the local ports with commercial exchange for resident populations and businesses.

Apalachicola, Florida

Clotilda, under Captain James Wright, completed two trips from New Orleans to Apalachicola in March and May 1859 with merchandise under commission of merchants G. D. Metcalf and Company. The cargo is known for only one of these trips. It was composed of a variety of goods including molasses, port, sugar, coffee, bacon, lard, flour, corn, and rope. It is unknown what *Clotilda* carried when it departed the city. Apalachicola is a port inside Apalachicola Bay where Florida extends south into the Gulf of Mexico just east of Panama City. The area is historically important because of its timber industry and sawmills and was the third busiest port in the Gulf of Mexico behind New Orleans and Mobile before the influence of railways (Encyclopedia Britannica 1910). An article in the [New Orleans] *Times-Picayune* on trade with Florida commented on having a significant connection with New Orleans.

A large and important trade from Western Florida and Georgia and Eastern Alabama centers on Apalachicola.... A rich cotton and sugar growing country lies back of Apalachicola and our merchants will be glad to have its products coming to us (*Times-Picayune* February 4, 1852).

At the time of *Clotilda's* visits to the port, newspapers were filled with the announcements of imports and exports and passenger service to Apalachicola from places such as Galveston, New Orleans, Key West, and further away including Boston, Baltimore, and New York. *Clotilda's* interface with Apalachicola is limited and the two trips probably resulted from the schooner's docking in New Orleans port. Possibly, a shipment was needed and the schooner was available.

CLOTILDA'S SLAVERY AND SLAVE SHIP CONTEXT

Slavery in America spanned three centuries, starting with the arrival at Jamestown of twenty enslaved Africans captured from a Portuguese slave ship by two English privateers in 1619. The schooner *Clotilda* is the last-known slave ship to carry human captives from Africa to the US in 1860. In that 241-year span, as many as twelve and a half million Africans, enslaved against their will, were transported to the Americas. As estimated by the Trans-Atlantic Slave Ship Database, up to three times the number of Africans came to the Americas than Europeans before 1820. The nineteenth century was a time when European immigration rapidly expanded in response to economic and political upheaval in the various countries following the Napoleonic Wars. The African slave trade "was the largest transoceanic migration of a people until that day" (Eltis 2010a).

The statistics of the slave trade voyages, as presented in the Trans-Atlantic Slave Ship Database, are substantial. The database lists 34,948 voyages out of an estimated 40,380 to 41,190 voyages and what could be as many as 15.4 million enslaved people transported against their will to the Americas by slave ships (Eltis 2010b). The vast number represented by these statistics does not necessarily convey the collective and individual suffering endured on these voyages, nor the

consequences of enslavement. In this context, the voyage of *Clotilda*, as the last slave ship to carry captives to the US, transported 110 people, one of whom died during the passage. In the US, the story of that voyage is now better known than of other voyages, in large measure because some of its captives, following their enslavement, founded a community, Africatown, on land they purchased after the Civil War in Mobile, Alabama (Robertson 2008; Diouf 2007).

Some of them, notably Oluale Kossola, known in Alabama as Cudjo Lewis, shared his story with reporters and with writer Zora Neale Hurston (Hurston 1927). One of *Clotilda's* unwilling passengers, Redoshi, known in the US as Sally Smith, shared her story in the *Montgomery Advertiser* in 1932 (*Montgomery Advertiser*, January 31, 1932:13). A review of the Works Progress Administration (WPA) narratives of formerly enslaved persons' volume of interviews conducted in Alabama did not turn up any overt references to *Clotilda*. Others shared their stories orally, especially to family members whose descendants today comprise the Africatown community. Some family members later recounted these stories to Emma Roche, who published them in her *Historical Sketches* (Roche 1914:98–100).

Although this report focuses on the results of a survey to locate *Clotilda's* remains, the authors are very clear that the focus and the importance of this story rests with the people carried on board the ship, their resilience and survival, and the ongoing saga of the families and the communities they have left as part of the fabric of Alabama, the US, and the world in the twenty-first century. In that context, the story of *Clotilda* and the people involved in its saga represent a local convergence of events that were both global and national in scope – the slave trade, both in Africa and transatlantic, the role of slavery in America, and the formation of the US, Alabama, and Mobile.

Slavery came to what is now Alabama after US forces seized Mobile during the War of 1812, and added it to the newly established Mississippi Territory, which was at the center of a national debate on the expansion of slavery (Baptist 2014:29–30). Following Mississippi's statehood in 1817, the US established the new Alabama Territory, and in 1819, Alabama became the twenty-second state in the Union. The first quarter of the nineteenth century was a time of rapid expansion for the US as new territories were opened, some by force, threat of force, and others through fraud. Spain ceded its claims to Florida in 1819 after repeated raids by Georgia militia, the 1813 seizure of Mobile by US forces, and seizures of Spanish ships by American privateers in contravention of US law, acts often overlooked by US authorities for a variety of reasons (Head 2015:25–30; Patrick 2010).

Georgia politicians conspired in 1789 and again in 1794 with speculators to sell lands west of modern Georgia but claimed by Georgia under its original colonial grant by the British crown. These lands extended to the Mississippi River, and Georgia offered forty million acres to the speculators at extremely low prices despite the fact the land was either under Spanish control or on lands occupied by indigenous nations such as the Choctaw, Creeks and Chickasaw. Although overturned, after the "Yazoo Land Controversy" reached the public, in 1810, the US Supreme Court in *Fletcher versus Peck* upheld the validity of sales (McGrath 1966).

The push for acquisition of these new lands and the admission of the new states of Mississippi and Alabama in 1817 and 1819, respectively, was not as much a result of nationalism as it was capitalism (Baptist 2014:xxiii, 18–21, 29–30, 33, 229). Eli Whitney's new cotton gin, patented in 1793, made cotton profitable, that commodity now freed from the laborious process of hand-sorting. Other inventors followed with their own versions, all contributing to making cotton production cheaper (Beckert 2014:102–104). That coincided with the explosive growth (and hence increased demand) from Britain's textile industry (Dattell 2009:35–37). Entrepreneurs eager for previously unheard-of profits demanded expanses of land to grow cotton, slaves to plant, tend, harvest and process it, and ships to carry it to market; this "cotton fever" was the impetus behind the Yazoo Land Controversy and the rapid addition of the Mississippi Territory and soon thereafter the states of Mississippi and Alabama (Dattell 2009:42).

As the new states quickly developed vast cotton plantations, the demand for enslaved labor for them led to a mass internal forced migration. With the passage of the 1807 prohibiting the importation of slaves, the only legal source for enslaved labor was forced relocation. The forced migration of slaves "down the river" brought over 35,000 people to Alabama between 1810 and 1819, and another 54,000 the following decade, peaking at over 96,000 between 1830 and 1839. That same decade, nearly 102,000 enslaved people were forcibly relocated to Mississippi, five times more than in the previous decade of 1820–1829 (Baptist 2014:3; Tadman 1989:12). All were part of forced removal of at least 875,000 and perhaps a million slaves from the upper to the lower south (Pargas 2015:19). Propelled by "King Cotton," slavery doubled in Alabama in that period (Dattell 2009:52; Dupre 1997; Pargas 2015:19).

The result was an explosive growth in cotton production, and fortunes. Southern cotton production in just five decades increased from 178,000 bales in 1810 to nearly four million bales by 1860, "the nation's primary export product" (Pargas 2015:21). At the same time, twenty percent of Britain's raw imports was cotton, and nearly half of its exports were cotton textiles (Dattell 2009:37). In terms of exports, the American share of the British cotton market climbed from 28 percent in 1800 to 88 percent in 1860 (Dattell 2009:37). Getting that product to market relied on water transportation. Most cotton plantations were along navigable rivers, and steamboats brimming with bales, each one weighing 500 pounds, made their way down to the sea.

By 1850, South Alabama was producing 350,297 bales of cotton; in 1851 that had increased to 451,697 bales, and by 1860, on the eve of the Civil War, cotton production stood at 843,012 bales (Jordan 1948:198). To carry that cotton from plantations spread along the banks of the rivers, steamboat construction blossomed. Merchant shipping on "western" American rivers grew from 9,930 tons in 1816 to 167,739 tons by 1860 (Hugill 1993:169). In 1861, at the start of the Civil War, the US Coast Survey published a map which provided a graphic depiction of the percentage of enslaved people in the Southern states, county by county, based on 1860 Census data. The greater the percentage, the darker the shading appears on the map. As a result, the outlines of the rich agricultural regions along the rivers stand out in a patchwork quilt of visualized percentages (**Figure 12**).

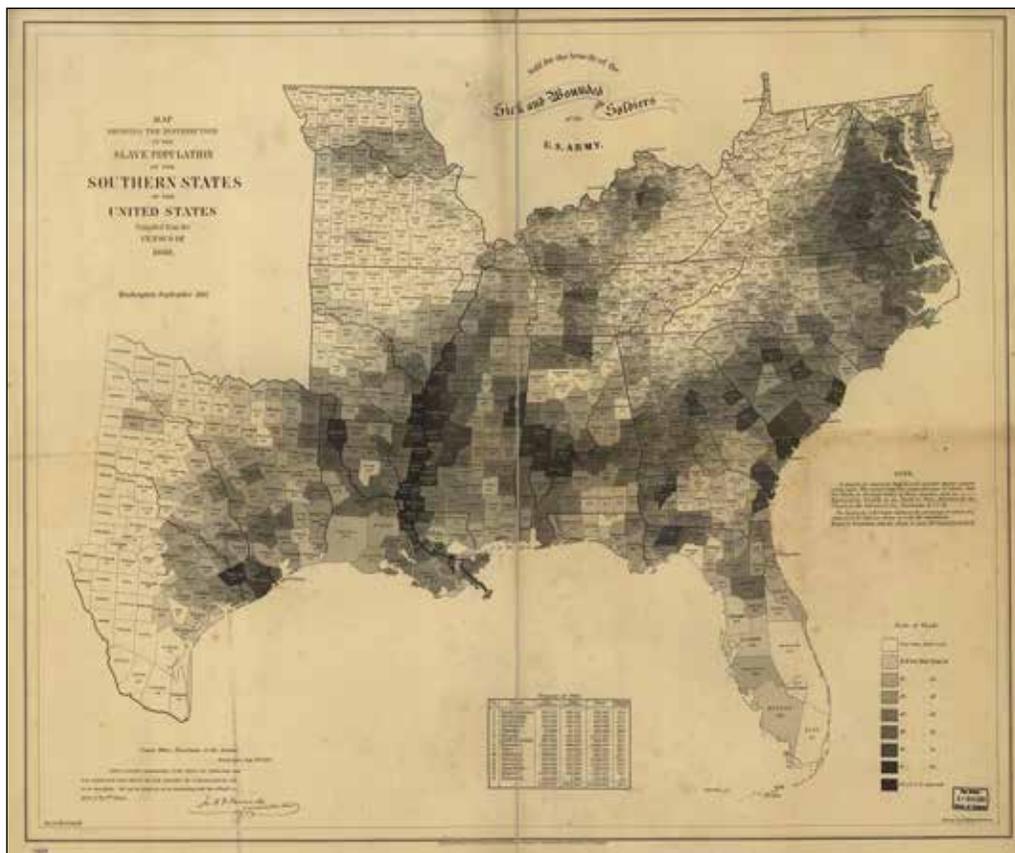


Figure 12. The Coast Survey Map (1861) of the Slave Population of the Southern States (Graham 1861).

While urban Mobile had a mere 32.9 percent enslaved population, surrounding counties enslaved population was over 50 percent. Populations of upriver plantation counties were more than 70 percent enslaved. On the Mississippi River, leading from plantations down to New Orleans, some counties had more than 90 percent of their population enslaved.

Although up Mobile Bay, 40 mi (64 km) from the open Gulf of Mexico, Mobile prospered because it “lay at the mouths of two rivers which drained a rich hinterland into which cotton planting rapidly spread after Alabama became opened up as a territory” (Albion 1938:59). Bolstered by investment from New York bankers, Mobile boomed, and by 1840 was the principal cotton exporting port in the American south (Albion 1938:60). The means of getting the cotton from Mobile (and other ports) was through large capacity ocean carriers known as “packet ships.” Beginning in 1825, regular service by packet connected New York with Mobile (Albion 1938:60). The trade grew spreading up between Mobile and European ports, developing “into a triangle” although “while Mobile was regularly supplied with New York goods,” cotton from Mobile bypassed New York and went directly to British and other European markets (Albion 1938:60). The vessels also carried passengers, all part of a regular routing by various packet “lines.” By 1850, Mobile shipping connected the port not only to Britain and France but to other European ports on the continent, in the Baltic, the Mediterranean, the Caribbean, and to New York, Boston, Providence, Baltimore and New Orleans (Jordan 1948:198).

The nature of this trade, financed and controlled by Northern banks, companies and entrepreneurs, was highly profitable for investors. New York, and by extension other Northerners were not only content with the “domination” of southern ports and their business, but also “penetrated every nook and cranny of the field where a dollar was to be made” (Albion 1938:52). In time, that shifted from Northern investment in the cotton economy to industrial activity. Although the Northern domination of the antebellum Southern economy remains the subject of scholarly debate, the booming Southern economy not only brought Northern investment, but also Northerners who settled in the South to participate and benefit from the economy, either directly or peripherally linked to slavery.

Clotilda is one nexus, not only in terms of its final voyage and participation in the slave trade, but also specifically because it was built, operated and financed in its final voyage by former Northerners who had relocated to antebellum Mobile, shipbuilder and master of the schooner, William Foster, and shipbuilder, master, steamboat entrepreneur and planter Timothy Meaher. Both men relocated to take advantage of the regional and local economy, and both married Southern women and remained part of the community and its economy after the war. Both men employed enslaved labor, and likely did so in *Clotilda*'s construction. *Clotilda* also figured in an incident in which the schooner ran down and killed an enslaved man on Mobile Bay in a maritime accident. To simply identify *Clotilda*'s context regarding slavery by focusing on the final voyage is wrong; the economic, social, and political influences and consequences of slavery defined *Clotilda*'s entire career.

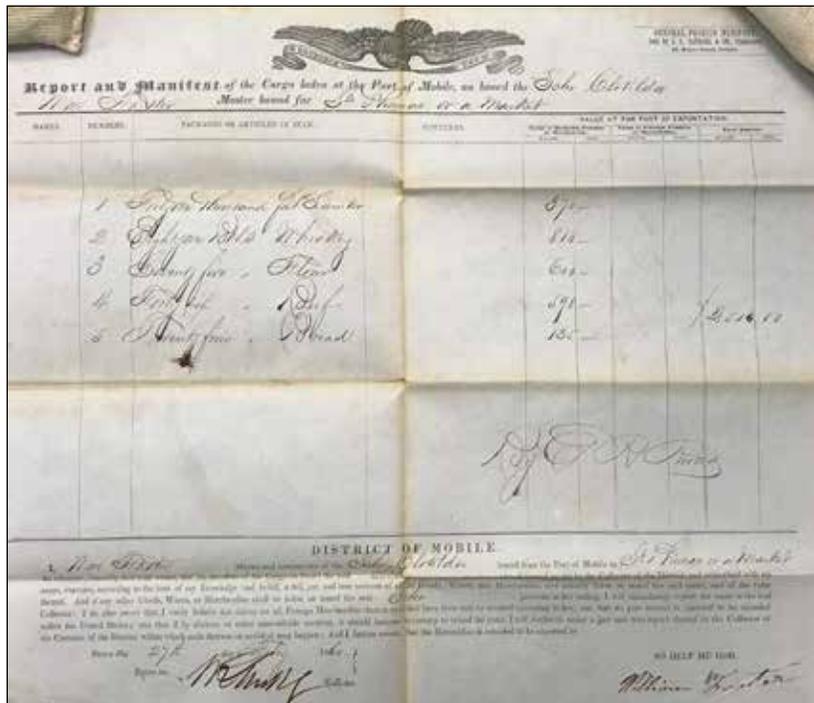


Figure 13. Cargo Manifest for the Schooner *Clotilda*, Outbound from Mobile, February 27, 1860 (US Customs Service Cargo Manifests 1860).

Clotilda's Final Trip, 1860

The schooner *Clotilda* of Mobile, Alabama arrived off the Mississippi River Delta on July 9, 1860 at the end of a four-month, nine-day voyage. Sailing past Grand Island and through Petite Bois passage, *Clotilda* anchored off Point of Pines in Lake Ponchartrain (Foster 1890; Robertson 2008:63). The voyage had started on February 27, when *Clotilda* cleared Mobile with the stated purpose of sailing to, “St. Thomas or a Market” with a declared cargo of 41,000 ft (12,496 m) of lumber, 18 barrels of whiskey, 75 barrels of flour, 46 barrels of beef, and 74 barrels of bread (Figure 13).

The crew consisted of Captain William Foster, of Mobile, mates John M. Simonton of Portland, Maine, and James S. Smith of Boston, and four crew members listed as Joseph Deflow, James Small, William Copeland of Mobile, and James Welch of Boston (Figure 14). Instead of the declared intention of the voyage, Foster planned an illegal stop in Dahomey, where *Clotilda* would forcibly embark enslaved persons purchased with money from Meaher.

NAMES	PLACE OF BIRTH	PLACE OF RESIDENCE	OF WHAT COUNTRY, FOREIGN OR SUBJECT.	AGE	DESCRIPTION OF THEIR PERSONS		
					HEIGHT	COMPLEXION	HAIR
John Simonton	Portland	Portland	U.S.A.	30	5 11	Dark	Dark
Joseph Deflow	Mobile	Mobile	do	25	5 10	do	do
Thomas Beron	do	do	do	24	5 7	do	do
James S. Smith	do	do	do	31	5 7	do	do
William Copeland	do	do	do	28	5 8	do	do
James S. Smith	Boston	Boston	do	27	5 7	do	do
John Welch	do	do	do	21	5 8	do	do

Figure 14. Crew List for the Schooner *Clotilda*, Outbound from Mobile, February 27, 1860 (US Customs Service Cargo Manifests 1860).

One hundred and ten people, purchased by Foster at Ouidah (Whidah) on the Dahomey coast, Africa, were forcibly loaded on *Clotilda*; one person had died on the passage (Foster 1890). According to Captain Foster, he was to meet Meaher “and party:”

for the purpose of landing negroes, and pay the crew off; and I had made arrangements with the mates and crew to take the vessel to Tampico [Mexico] and change her name and get clearance for New Orleans (Foster 1890).

However, as Foster later wrote, “the parties failing to meet me in time compelled me to go up to Mobile” (Foster 1890). Foster landed and hired a horse and buggy for the overland trip. Once in Mobile, Foster and Meaher chartered the Mobile-registered local tug, *Billy Jones*, to take them back to *Clotilda* and then to tow it into Mobile Bay.

Paying off his crew and sending them away on the steamer, *Texas*, then bound for Montgomery, Foster and a crew of five men he had hired in Mobile stayed with *Clotilda* as the tug towed it along the coast, into the bay, past the city and the mandatory customs inspection at night, entered the Spanish River, and followed it up to the junction with the Mobile River.

Two accounts, one supposedly Meaher’s and the other Foster’s, tell similar stories with a few differences. Meaher’s account says that the tug and *Clotilda*, “went to mouth of Spanish River – the cargo of niggers [sic] & some of the seamen were transferred to the [river steamboat] *Czar*

& *Clotilda* was run into Bayou Connor & burned by Foster.” (Slave Cargoes 1890). Foster’s account states they:

towed *Clotilda* into Mobile & up to 12 Mile Island & transferred the niggers [sic] on board the river steam boat the Czar & then I burned her & sank her in 20 feet of water, & then steamed 50 miles [80 km] up the river & landed all the niggers [sic] on Dabneys Plantation (Foster 1890).

Although various secondary historical accounts suggest that the exact location where *Clotilda*’s enslaved individuals were transferred to the steamer is not known, the primary sources, handwritten accounts by the two principals in the conspiracy to bring enslaved people to Alabama indicate that offloading occurred near Twelvemile Island, just upriver of the junction of the Spanish River and Mobile River (Table 9).

Table 9. Historically Reported Locations Where *Clotilda*’s Cargo of Enslaved Individuals Were Offloaded.

Location	Account Type	Source Date	Source Citation	Notes
Up the Tenesaw	letter	July 17, 1860	Sanford 1860	
About 12 miles above Mobile (schooner towed much higher for sake of appearances)	newspaper	July 21, 1860	<i>New Orleans Crescent</i> , July 12, 1860	
Mullet Point	newspapers	July 29, 1860	<i>Times-Picayune</i> July 29, 1860	
Spanish River (mouth of)	newspaper	Nov 30, 1890	Mobile Public Library 1890	Tim Meaher’s recollections
Twelve Mile Island	personal account	Sept 29, 1890	Foster 1890	Captain Foster’s recollections
Spanish River	newspaper	April 15, 1894	<i>Pittsburgh Daily Post</i> , April 15, 1894	
Spanish River (bend behind of it)	article	1906	Byers 1906	
Twelve Mile Island	article	1914	Roche 1914:96	
Twelve Mile Island	article	1927	Hurston 1927:659	Cudjo’s recollections
Spanish River	article	1930	Craighead 1930	
Twelve Mile Island	book	2007	Diouf 2007:74	
Twelve Mile Island	book	2015	Sledge 2015:265	

The actions taken that evening were illegal, the voyage violated US law that banned the importation of enslaved persons to the US, and the burning and sinking of *Clotilda* was barratry, the legal term for the crime of a captain deliberately wrecking or destroying the ship by any means. Captain Foster and Meaher avoided customs officials when they had *Clotilda* towed upriver. By failing to report to the federal officials, Foster also committed a federal crime. The crime was quickly discovered, however, and the news of the illegal slave importation spread not only to government officials but to the entire country via the newspapers (Diouf 2007:77–79). On July 10, 1860, The [Nashville] *Tennessean* reported:

New Orleans, July 9. – The Schooner *Clotilda* with 103 Africans arrived in Mobile bay and a steamboat took the Negroes up the river (The [Nashville] *Tennessean*, July 9, 1860:3).

The news was nationally publicized, with stories in various newspapers, including the papers in Janesville, Wisconsin, Baltimore, Maryland, Wilmington, North Carolina, New Orleans, and Montgomery, Alabama, for example (*Janesville Daily Gazette*, July 14, 1860:3; *Montgomery Weekly Post*, July 18, 1860:1; *The [Baltimore] Daily Exchange*, July 11, 1860:1; *The Wilmington Daily Herald*, July 12, 1860:3). The incident became an international news with a summary of the slave trade in *The [London] Morning Post* on October 5, 1860 that included an entry for *Clotilda*.

The news, both locally anecdotal and nationally published, spurred a search for *Clotilda* by the US Government. On July 17, 1860, the US Collector in Mobile, Thaddeus Sanford, wrote to Howell Cobb, the Secretary of the Treasury that, “the evidence that the schooner *Clotilde* [sic], Capt. Foster, from the coast of Africa...entered this bay with a cargo of slaves about a week ago, is pretty near conclusive” (Sanford 1860). Sanford addressed reports that the schooner was towed up the “Tensas River” and the people onboard were sold or distributed to local residents and “speculators:”

Under a very strong belief of the truth of this report I felt it my duty to advise the charter of a small steamer to go in pursuit of this vessel, and to cooperate with the US Marshal in his endeavors to capture her. To this end Mr. Godbold started in the steamer yesterday evening to explore the rivers, creeks, inlets, etc. with which the upper waters of our bay abound, and with which M. Godbold the Marshal is well acquainted. It is believed that *Clotilde* [sic] is secreted in someone of these by-placed, and should this be true, M. Godbold will be certain to overtake her (Sanford 1860).

Collector Sanford was seemingly unaware that Captain Foster had burned and sunk *Clotilda* days before he dispatched Marshal Cade M. Godbold in a steamer to search for it. The *Mobile Mercury* of July 28 questioned the search, claiming local “wags” were spreading false tales that had led to the Marshal’s actions:

The wags are certainly incorrigible. They have had the Federal authorities quizzed bad enough, in all conscience, rung hither and thither, looking for the *Clotilde* [sic] and her negroes. We have no idea that any vessel by the name of *Clotilde* [sic] ever did bring any Africans inside of Mobile Bay, and that such a one is a mere fabrication; and no Federal officers have been on the qui vive for ever so long a time, all without making any discovery. The wags ought to have been satisfied with the trouble and anxiety they have given our very clever US officers, and it was cruel in them to start so soon again a report of the landing of a cargo of Africans at Mullet Point, last Friday night. We’ll be bound if the Marshal should fire up the cutter and go down there, he wouldn’t see a track of anything landed there but mullets. What these wags will get by shouting wolf, will be, by and by, when the

wolf does come, and they shout wolf, nobody will believe them (as cited in the [New Orleans] *Times-Picayune*, July 29, 1860:3).

While the initial search failed to find *Clotilda*, legal action was pursued against both Meaher, Foster, and planter John M. Dabney, but ultimately to little avail, as the tensions of the time quickly led to the outbreak of the Civil War, and with that Alabama's secession from the Union. Only Foster was punished with the imposition of a \$1,000 fine for failing to meet with customs officials and return his documentation from the voyage. With that came the end of the legal case against the men, and pursuit of any others involved in the commission of the crime.

The *Mobile Mercury's* editorial comment that, "we have no idea that any vessel by the name of *Clotilde* [sic] ever did bring any Africans inside of Mobile Bay" notwithstanding, the basic facts of the case were well enough known to not only make national and international news, but became the subject of conversation in Mobile and beyond. British journalist William Howard Russell made an extensive tour of the US and the Confederacy for *The* [London] *Times* in 1861–1862, publishing an edited version of his diary in 1863 upon his return to Britain as *My Diary North and South* (Crawford 1992; Russell 1863). Visiting Alabama in May 1861, Russell rode on Captain Meaher's steamboat to Mobile. During the voyage a passenger told him "the captain's story" :

A number of planters, the narrator among them, subscribed a thousand dollars each to get up a vessel up for the purpose of running slaves, with the understanding that they were to pay so much for the vessel, and so much per head if she succeeded, and so much if she was taken or lost. The vessel made her voyage to the coast, was laden with native Africans, and in due time made her appearance off Mobile. The collector heard of her, but oddly enough, the sheriff was not about at the time, the United States Marshal was away, and as the vessel could not be seen the next morning, it was fair to say she had gone up the river, or somewhere or another. But it so happened that Captain Maher [sic] then commanding a river steamer named the *Czar*...found himself in the neighborhood of the brig [sic] about nightfall (Russell 1863:187).

Russell went on to note that, "it was worthwhile to see the leer with which he listened to this story about himself" (Russell 1863:188). Meaher brought forward a young boy from his crew, whom he called "Bully," with filed teeth and tattoos. Meaher launched into a forced dialogue with the young man, whom he prompted to say he was from South Carolina, and that everything Russell suspected as an indication that Bully was brought from Africa was the result of Bully filing his own teeth "for greater ease of biting his vittels" and his scars and tattoos were spells to ward off smallpox and, "the way them n--- women has of marking their children to know them" (Russell 1863:188). Russell was disgusted, and in his diary noted that he was convinced that Bully and, "a good many of the hands" on the steamer, "were the result of Captain Maher's [sic] little sail" (Russell 1863:189).

Russell's insinuation that the government officials were perhaps less than diligent in seeking to find *Clotilda* or the people brought in it against their will raises a valid point that the failure to find *Clotilda* in 1860 was deliberate. Whether the search was done in earnest, or diligently was not only laughed about at the time, but also considered in light of the fact that the local federal officials were literally local, and as such, members of the community in which they and their families lived. Collector Thaddeus Sanford was a prominent businessman, one-time president of the Bank of Mobile and "boss" of the local Democratic Party (Thornton 2014:255). Marshal Cade Godbold, appointed to his office of marshal in 1853, and serving until secession in 1861, was a former state representative and state senator, prominent businessman and a slave owner (Garrett 1872:531). As well, the federal judge was sympathetic to slavery, and Meaher had named one of his steamers for Judge Jones (Diouf 2007:79–80).

The questions to ask are not only how diligent the search was, as William Russell asked in 1861, but also if a search was necessary because the location of the wreck was known. With the schooner burned and sunk, crime-specific evidence of breaking the slave trade law was lost. In the prosecution of the slave trade, both the U.S. Navy and the Royal Navy of Great Britain, patrolling off the coast of Africa, regularly boarded and searched suspected slave ships. They had the power to search, seize and send captured vessels to courts of competent jurisdiction for trial. The incontrovertible evidence for conviction would include enslaved people onboard or the accoutrements and outfit necessary for a slaving voyage. In response, some slave ship masters murdered their captives by tying or shackling them to the anchor and dropping it, with the people attached, to fall free into the depths, "eliminating the evidence;" in one such case, the slaver *Brillante's* captain avoided prosecution (Falola and Warnock 2007:145). In this context, if the goal of the burning and scuttling was not to hide *Clotilda*, but to simply destroy the direct evidence of the crime, it is possible that at the time, and perhaps even to this day, the general location of *Clotilda's* final resting place was known.

Marshal Godbold's July 1860 search for *Clotilda* was not the last search for the schooner, as efforts to locate the wreck commenced more than a century later. By that time, the story of *Clotilda's* voyage and destruction was told and retold many times, in reminiscent newspaper articles of the nineteenth century, an early twentieth-century account, a variety of mid- to late twentieth century media stories, and by the end of the twentieth century, in scholarly articles. In the early twenty-first century, scholarship included two major works, and the publication of a series of interviews with one of *Clotilda's* unwilling passengers, Cudjo Lewis (Diouf 2007; Hurston 2018; Robertson 2008).

Over that time, especially in the century following the voyage, accounts were embellished, and although the principals told a version of their story toward the end of their lives, clearly some details were omitted. Historical sources also indicate several places where *Clotilda* was reportedly scuttled (Table 10).

Table 10. Historically Reported Locations Where *Clotilda* Was Burned and Scuttled.

Location	Account Type	Source Date	Source Citation	Notes
Up the Tenesaw	Letter	July 17, 1860	Sanford 1860	
In 20 ft of water	Personal account	after 1880	Clarke & Murrell 188_	Captain Foster's recollections
Bayou Conner	Newspaper	November 30, 1890	Mobile Public Library 1890	Tim Meaher's recollections
Twelvemile Island	Personal account	September 29, 1890	Foster 1890	Captain Foster's recollections
Bayou Conner		ca. 1890	Mobile Public Library 1890	
Spanish River (arm of Mobile River emptying into Bay on its eastern side)	Newspaper	April 15, 1894	<i>Pittsburgh Daily Post</i> , April 15, 1894	
Behind a bend in Spanish River	Article	1906	Byers 1906	
Bayou Corne (mouth of)	Article	1914	Roche 1914:97	
North of Chicabogue	Photo	1914	Roche 1914 (Mobile Public Library has original)	Photo of "wreck"
Twelve Mile Island	Newspaper	February 25, 1917	<i>Mobile Register</i> , February 25, 1917	States that many years later vessel brought into Chickasabogue creek and sunk and raised by the Rev. Prince U. Kabe Rega
Bayou Corne	Article	1927	Hurston 1927:659	Cudjo's recollections
Bayou Connor	Article	1930	Craighead 1930	
Bayou Sara	Newspaper	June 1965	<i>Alabama on the Go</i> 1965	Photo of wreck in "cemetery of wooden ships of eras past"
Bayou Canot (NW of Twelve Mile Island)	Book	2007	Diouf 2007:75	
Bayou Canot	Book	2015	Sledge 2015:265	

Twelvemile Island

The Mobile River, passing by Twelvemile Island, is only one part of a larger network of inland waterways known as the Mobile-Alabama-Coosa River system. This 45 mi (72 km) river system stretches from Mobile Bay, at the mouth of the Gulf of Mexico, up through Alabama, Mississippi, Georgia, and Tennessee. Twelvemile Island, given its name since it is 12 mi (19 km) from Mobile Bay's mouth, located at the intersection of Mobile River and Big Bayou Canot. The earliest reference to Twelvemile Island by name in a newspaper occurred in 1843 during an article about hunting a panther (*The Times-Picayune* December 17, 1843). The Mobile River's navigable channel flows around the island's western side following Bayou Sara, whereas the eastern channel is too shallow for used by regular commercial river traffic.

An uninhabited Twelvemile Island is 5.5 mi (8.8 km) north of the city of Mobile along a transportation route that was utilized for hundreds, if not thousands, of years. Mobile's position as a center of industry, commerce, and shipping would not have occurred without its easy access for steamboats coming downriver, eventually passing by Twelvemile Island, with raw commodities and the ability of oceangoing sailing and steamships to carry the product out to the larger markets. In the nineteenth century, Twelvemile Island's western channel was the preferred navigational waterway and has since was maintained for river travel, primarily with snag clearing. The western channel is still preferred. No evidence of historical dredging is apparent; a 1912 report by the USACE Mobile District noted that Mobile Harbor's dredged channel "extends from Chickasaw Creek, 4.8 miles [7.7 km] above the mouth of Mobile River, to deep water in the lower portion of Mobile Bay, a total distance of 33.5 miles [53 km]" (Pratt 1912:163).

Layup and Disposal Site: a Ship Graveyard

Although unused for commercial navigation historically or at present, the Mobile River's eastern channel around Twelvemile Island was a key part of the river's use during the nineteenth and twentieth centuries. The location of the eastern channel, and its relatively shallow river depths were factors influencing the actions that made it an eventual disposal site for old vessels nearing the end of their working lifespan. This disposal process is referred to, historically, as a ship graveyard, and is similar to that of a junkyard for automobiles. The waters surrounding Twelvemile Island were not too far from Mobile but far enough to be out of sight, making it an ideal place to temporarily lay-up, dispose of, or intentionally abandon vessels. With the island's western side designated safe for navigation, the eastern side was left open as a ship anchorage area or graveyard.

Between 1860 and the 1930s, newspapers reported six instances of vessels by the island burned, broken up, or left to decay. The historical records rarely cover these activities due to their legality and unwillingness of involved parties to draw to themselves an unwanted attention. Simply put, it was much easier to move a worn-out vessel upriver, pull it up on a marsh or river bank, and leave it at a location, than to deal with the logistics and costs of breaking it up. Of all the suggested vessels near Twelvemile Island, the most famous is *Clotilda*. Four additional steamboats or steamships and one lifeboat were also burned or possibly intentionally sunk near Twelvemile Island. These vessels are recorded as the *Northern Light*, *John Quill*, *Burke Jr.*, and *Greypoint*.

Origin and Results of the Current Survey

The latest effort to find the wreck of *Clotilda*, by local reporter Ben Raines, the publication of a story identifying a wreck near Twelvemile Island as a candidate, and a resulting international media response in January 2018 led to an immediate emergency response and a largely volunteer effort to assess the wreck, designated as 1Ba694. A careful archaeological process quickly determined that a vessel is not *Clotilda*. 1Ba694 is recorded as a 183 ft (56 m) long, late nineteenth century to early twentieth century, Pacific Coast built sailing vessel. The

determination was followed by a comprehensive survey of the area near the wreck, which revealed a ship graveyard and a possible resting place for *Clotilda*. The initial assessment of the site, now known as the Twelvemile Island Wreck, that prompted to prioritize surveying Mobile River's eastern channel next to Twelvemile Island, had revealed other wrecks nearby. An assessment of previous surveys and searches for *Clotilda* did not include the area near Twelvemile Island as possible location where *Clotilda* might rest.

In July 2018 SEARCH developed an archaeological research design – a plan for a comprehensive project that conducted new archival and historical research, focusing on primary sources, with a suite of remote-sensing instruments to assess what lays beneath the water and the mud of the river. The archaeological diver assessments of targets identified in that survey to determine if they were shipwrecks followed this work; and if so, what could they expose. The project, as planned and executed, was not a search for *Clotilda*, but a comprehensive cultural resources survey of a hitherto unsurveyed, archaeologically unassessed section of the Mobile River known to have submerged cultural resources, some or all of which might possess significance as defined in state and federal law and regulation.

Prior to the SEARCH survey, the University of Southern Mississippi (USM), in collaboration with the reporter initially focusing on the Twelvemile Island Wreck as a possible *Clotilda*, conducted a separate, remote-sensing survey not coordinated with federal and state authorities. The USM team conducted the survey in the same area SEARCH intended to survey, but did not employ archaeological methodology, or the same suite of instruments as SEARCH. The remote-sensing survey identified a number of targets. AHC and SEARCH have assessed USM-collected data, provided upon request.

SEARCH's planned survey then proceeded without modification of the original plan other than closer lane spacing, and established the presence of other targets and cleared up some misinterpretation of the USM survey through an integrated magnetometer, side-scan sonar, and sub-bottom profiler survey by SEARCH.

SEARCH's work, following the survey and evaluation of the targets, then focused on the only visible target, Target 005 (1Ba704), which had characteristics similar to those recorded for *Clotilda*. This report provides the results of SEARCH's assessment conducted in December 2018 and January 2019. It is based on field observation, excavation, the recovery of artifacts and samples, laboratory analysis, including forensic work, and a detailed program of archival research. 1Ba704, following this work, cannot be ruled out as *Clotilda*. SEARCH cannot identify 1Ba704 as *Clotilda* with 100 percent certainty, as no single diagnostic artifact is found. Such artifact would include an item specifically tied to anything associated with a slave ship, or anything with a name on it, either of a vessel or an individual. The identification of the target as a probable candidate for *Clotilda* comes from a chain of circumstantial evidence that, when assessed, reassessed and challenged, provides no counter-indication. Sections below present the project, with its processes, observations, and the analyses beginning with laying out the research design, followed by the archaeological findings, and lastly, reassessment of *Clotilda*'s

historical context. The context is based on primary sources and archival evidence that points to the likely location of where Captain Foster scuttled his ship in July 1860.

ENVIRONMENTAL SETTING AND CONDITIONS

The Mobile River system is the fourth largest in the US, with the Tombigbee and Alabama Rivers meeting and flowing into the Mobile, which exit into the northern end of Mobile Bay (Figure 15). The average discharge is approximately 5,741 ft³/s (1,750 m³/s) (Schroeder 1978:347). Saltwater from the bay intrudes into the river. The USACE study conducted in 1945, and subsequent study, have revealed that the saltwater penetrates the river, “primarily at the bottom, owing to its greater density,” but that tidal fluctuation has, “little effect in varying the extent of salt water intrusion” (Blackman and Lindner 1951:233). However, when the fresh water flow is at peak, the “salt water wedge is pushed back to beyond the mouth of the river” (Blackman and Lindner 1951:233). Salinity counts as measured by the USACE in 1945 from above Twelvemile Island to the Spanish River ranged in particles per million (ppm) from a low range of 330 ppm at the river surface, 360 ppm at mid-depth level, and 10,110 ppm on the bottom to the high of 2,800 ppm at the surface, 4,450 ppm at mid-depth, and 12,600 ppm at the river bottom.

The environmental conditions of the Mobile River impact the site formation processes of shipwrecks and other submerged cultural resources. The salinity at Twelvemile Island is sufficient to support colonization of wooden timber by small marine borers such as *bankia* and *limnoria*. The cumulative effect of biological impacts such as consumption and current on vessel timbers result in the eventual failure of a wooden hull at the waterline just above the mud. A vessel's upper portions will likely either collapse or dislodge, sometimes falling into the hull, or alongside the wreck on the river bank. The most well-preserved or intact vessel features are likely buried in sediment where they are more protected from environmental factors. The highly variable

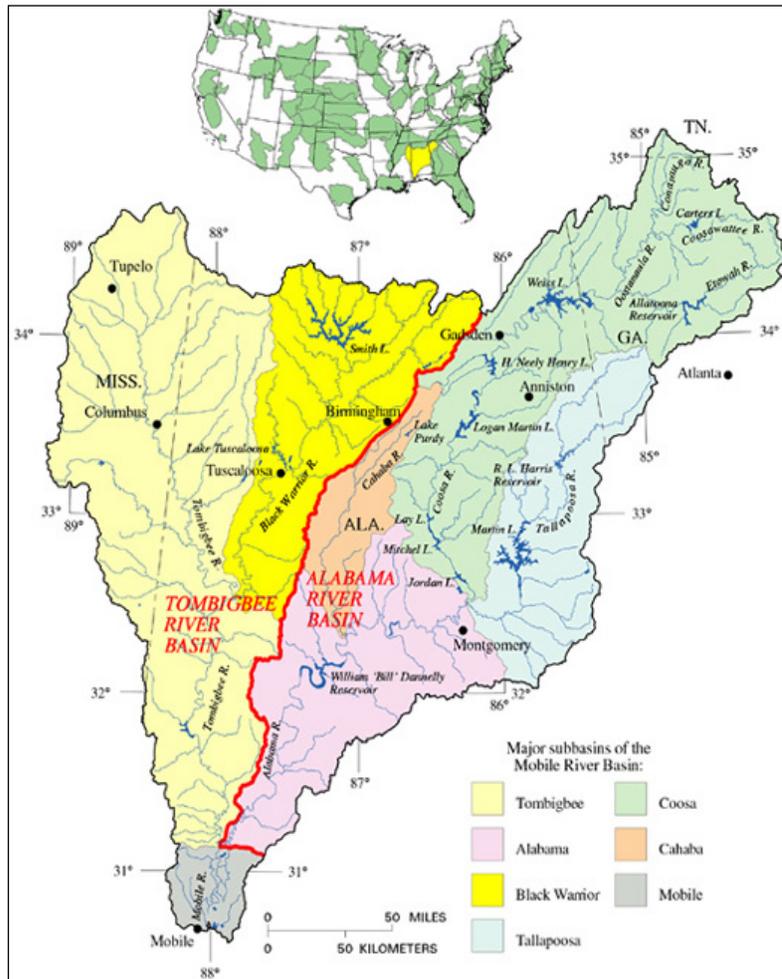


Figure 15. Mobile River Region (University of Alabama).

water current and sediment transport makes the level of exposed vessel structure variable depending on duration and strength of conditions.

Weather and environmental conditions during dive operations in December 2018 and January 2019 were unfavorable with light to moderate breeze to windy, cold, and rainy (**Figure 16**). Air temperatures ranged from 45–65 degrees Fahrenheit (°F) (7.2–18.3 degrees Celsius [°C]) with water temperatures averaging 50 °F (10 °C). Underwater visibility was zero due to high amounts of sediment within the river from recent rainfall. Tidal patterns consisted of high tide in the early morning, gradually decreasing as the day progressed with low tide around 1300 hours. Bottom composition within the Mobile River is silt and clay with water depths at 1Ba704 ranging from 5 ft (1.5 m) to 20 ft (6 m). As the project progressed the water level and current increased due to heavy rainfall in the area making snorkeling and diving conditions very difficult. Currents averaged at least 1 knot for the duration of the project with an approximate increase of 1 to 2 ft (0.3 to 0.6 m) of water level. Divers required dry suits, hoods, and gloves for thermal protection while working in the water to prevent hypothermia.

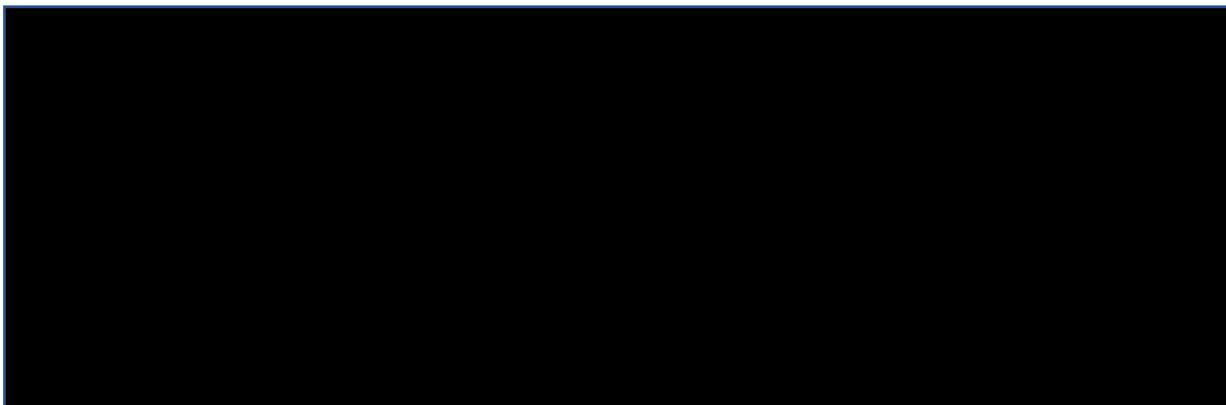


Figure 16. 1Ba704 site conditions.

RESEARCH DESIGN

Between March 1 and 4, 2018 a joint partnership between SEARCH, AHC, SWP, NPS Southeastern Archaeological Center (SEAC), NPS Submerged Resources Center (SRC), Diving With a Purpose (DWP), and NMAAHC investigated a historic shipwreck reported as *Clotilda* (Raines 2018a). Based on an abundance of archaeological evidence, the partnership determined that the shipwreck, (1Ba694), was not *Clotilda* (Delgado et al. 2018a). The partnership documented numerous additional historic shipwrecks in the vicinity of 1Ba694 during the investigation through historic aerial imagery and field investigation. This resulted in the identification of four additional shipwrecks, recorded as Hicks wreck (1Ba695), Dobbs wreck (1Ba696), Harms wreck (1Ba697), and the Kennedy wreck (1Ba698). The final target of investigation was a natural feature consisting of trees. The presence of these cultural resources suggested the area surrounding Twelvemile Island was part of a larger historic ship graveyard, which in turn warranted additional investigation. As a follow-up to the March investigation, in July 2018, SEARCH conducted a comprehensive remote-sensing survey of the Mobile River in an area previously determined a ship graveyard (Delgado et al. 2018a).

For this effort, SEARCH has developed a predictive model based on vessel characteristics and site formation processes for the identification of historic shipwrecks within the Mobile River, focusing on diagnostic characteristics of *Clotilda*. The predictive model aided in determining the potential design, composition, and age of historic shipwrecks and structures within the project area. It is built upon the previous remote-sensing survey and initial diver investigations as described in Delgado et al. 2018b. SEARCH reviewed reported shipwrecks, cartographic records, primary and secondary sources to provide a historical context for the description and interpretation of 1Ba694 and other nearby submerged cultural resources.

During the July 2018 investigation, a joint partnership between SEARCH, the AHC and NGS, and with participation by the SWP, conducted remote-sensing and diving operations for selected targets recorded from analyzing remote sensing data collected in the field. In the process, SEARCH identified 14 remote-sensing targets visible above the sediment on the bottom of the river channel and recorded additional buried magnetic anomalies. Of those, 12 targets were subsequently recorded with Alabama State Site Numbers as archaeological sites, and eight were confirmed shipwrecks. This research confirmed that the surveyed section of the Mobile River is a ship graveyard (**Table 11**). The magnetometer-recorded anomalies within the survey area were buried too deep for positive identification; divers delineated these anomalies. The remote-sensing survey and subsequent diver investigations successfully relocated all five previously recorded shipwrecks; these comprise the bulk of the eight known and documented shipwrecks in the survey area. The remote-sensing data revealed 1Ba704, a wooden-hulled vessel. The side-scan sonar imagery and subsequent diver investigations confirmed that 1Ba704 shared similar characteristics to historically documented specifications of *Clotilda* (Delgado et al. 2018b).

Table 11. Cultural Resources Documented During Previous Investigations.

Site Number	Site Name	Description	Documentation
1Ba694	Twelvemile Island Wreck	Historic Shipwreck	(Delgado et al. 2018a)
1Ba695	Hicks Wreck	Iron Barge	(Delgado et al. 2018a)
1Ba696	Dobbs Wreck	Iron Barge	(Delgado et al. 2018a)
1Ba697	Harms Wreck	Historic Shipwreck	(Delgado et al. 2018a)
1Ba698	Kennedy Wreck	Historic Shipwreck	(Delgado et al. 2018a)
1Ba699	Target 001	Historic Metal Shipwreck	(Delgado et al. 2018b)
1Ba702	Target 003		(Delgado et al. 2018b)
1Ba703	Target 004		(Delgado et al. 2018b)
1Ba704	Target 005	Historic Shipwreck	(Delgado et al. 2018b)
1Mb566	Target 008		(Delgado et al. 2018b)
1Ba705	Target 009		(Delgado et al. 2018b)
1Ba706	Target 010	Historic Shipwreck	(Delgado et al. 2018b)
1Mb567	Mobile River Jetty	Historic Jetty	(Delgado et al. 2018b)
1Mb558	<i>CSS Tuscaloosa</i>	Historic Shipwreck	(Delgado et al. 2018b)
1Mb557	<i>CSS Huntsville</i>	Historic Shipwreck	(Delgado et al. 2018b)

CARTOGRAPHIC AND TOPOGRAPHIC MAP REVIEW

The surveyed area is currently known as the eastern channel of the Mobile River. That was not always the case, as “eastern channel,” was rather an ill-defined bayou that was subsequently charted and thus defined as a channel. The Mobile River, a mouth of the Alabama and Tombigbee Rivers, flows into Mobile Bay and past the port of Mobile. The eastern channel is not the navigable section of the river, which is defined by the marked and dredge-maintained western channel. The river was a highway for steamboats, flats, and barges in the nineteenth century; tugs and towboats pushing and pulling barges are they primary navigators now. For much of its history, neither Mobile Bay nor the river was charted. Knowledge of the bay and river’s depths, shoals, snags and landmarks was anecdotal; experience-based knowledge for the masters of the vessels that navigated the river and the bay often was not placed on a chart.

Maps and charts of the bay in the eighteenth century provide a general picture of the of waterways system that spread from the interior and into Mobile Bay. A 1718 map of the Gulf Coast provides a general outline of Mobile Bay, the location of the French settlement at Fort Louis (today’s Mobile) and above it a vast bayou with only two rivers marked, the “Branche Espagnole,” or today’s Spanish River, and above the bayou, the “Riv. Des Alibamous,” the Alabama River (L’ Isle 1718) (**Figure 17**).

Another chart of the period is Nicolas Bellin’s 1764 chart of the “Golphe de Mexique” (Bellin 1764) (**Figure 18**). The intricacies of the delta and its various rivers, bayous and lakes, again, are not well-defined, at least on paper, but were doubtless known by those who lived and worked in this maritime landscape. A variety of names, known locally, were clearly attached to every body of water and passed along through oral tradition, with some ultimately noted on paper. The word *bayou*, for example, is the Gallicized form of the Choctaw word *bok*, meaning *creek* (Foscue 1989:14).

Various references in the *Clotilda* saga mention both Bayou Corne, and Bayou Canot. The names appear on La Tourette's map of the State of Alabama (1838) as feeding into the Mobile River north of the Spanish River as, "Cannon Bayou" but the landscape is depicted different than modern charts – Twelvemile Island is not shown (Figure 19). The La Tourette map was described as "carefully compiled from the original surveys of the General Government; designed to exhibit at one view each Section and Fractional Section; so that each person can point to the tract on which he lives" (La Tourette 1838). The lack of Twelvemile Island is somewhat puzzling. This may be due to imperfect charting, drafting, or the fact that this portion of the river was essentially one large swamp and a bayou. However, Twelvemile Island existed at that time as it was named in an 1842 newspaper account.



Figure 17. Depiction of Mobile Bay and its headwaters, delta, bayous and rivers (L'Isle 1718).

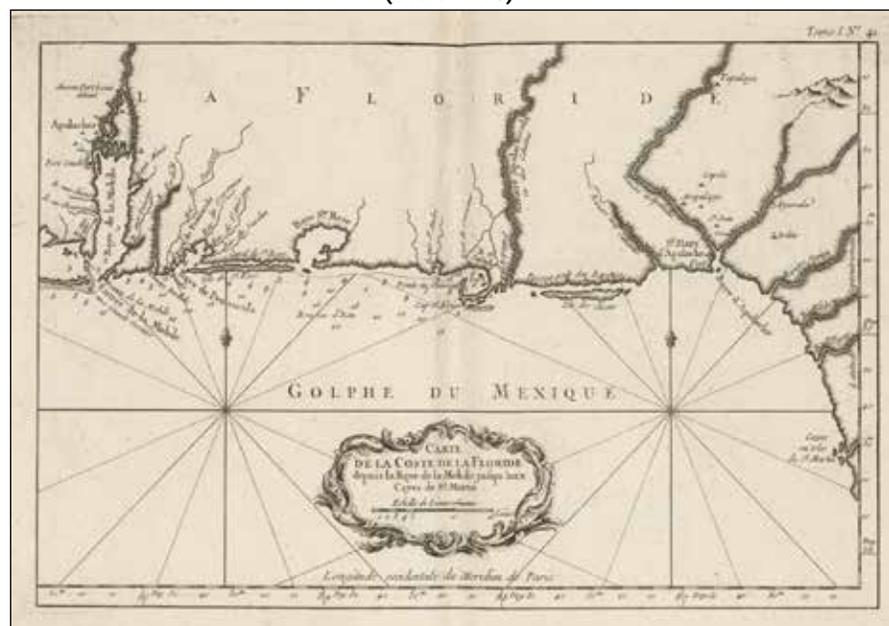


Figure 18. Nicolas Bellin's Gulf of Mexico Chart (1764).

Hydrographic work continued throughout the mid- to late nineteenth century to expand and carefully triangulate and chart the Alabama River's waters. Although an 1834 set of charts provides soundings for the channel entering Mobile Bay, not until 1851–1852 detailed charts of

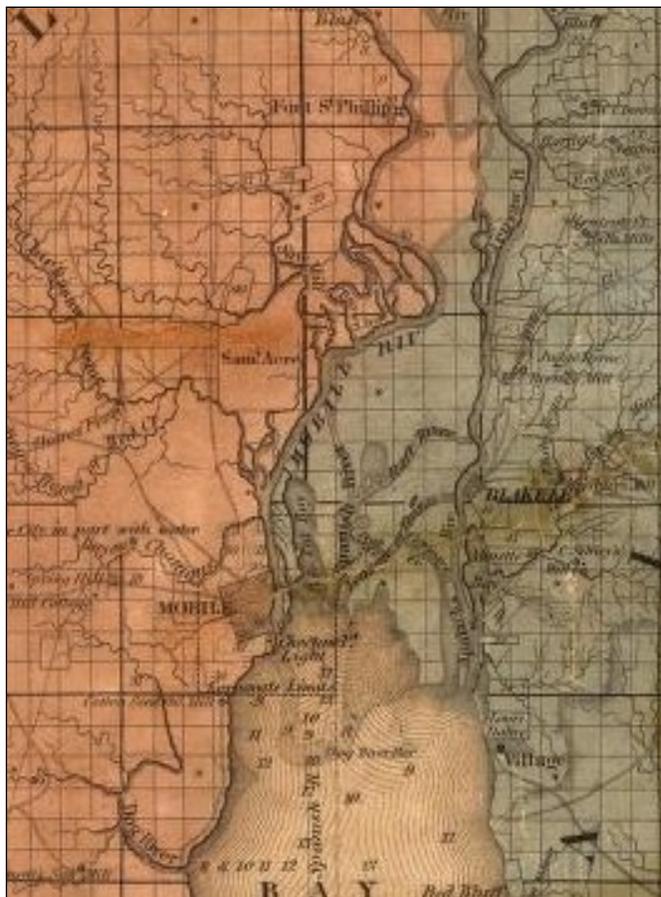


Figure 19. The Mobile River on La Tourette's Map (1838).

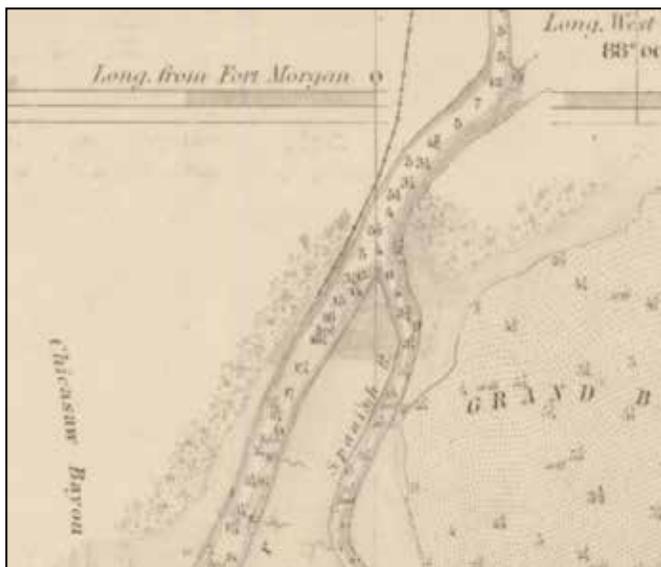


Figure 20. Excerpt from an 1877 Mobile Bay chart up to Twelvemile Island's southern tip (National Oceanic and Atmospheric Administration 1877).

Mobile Bay's full extent and northern end were published by the U.S. Coast Survey, charting the river (without soundings) terminate just north of Chickasaw Bayou. As early as 1861, the U.S. Coast Survey staff had noted that in the context of the very complex system of the Mobile Bay Delta, one channel of the Mobile River was most used for navigation between Mobile and Mobile Bay, and the confluence of the Tombigbee and Alabama Rivers. The Civil War hampered the hydrographic charting operations and expansion of their work up the Alabama River. Although an 1866 manuscript chart noted Confederate obstructions, it stopped short of Twelvemile Island. Not until after the war's end the survey vessels resumed normal work with the next published chart of Mobile dating to 1877 (Figure 20).

In 1888, the U.S. Coast Survey, then known as the U.S. Coast and Geodetic Survey (USC&GS), was assigned to map the major navigational channel of the Mobile River system, starting above the lower "main stem" (as they termed it) above Mobile, at Twelvemile Island. The assistant in charge of the survey was J. Henry Turner. Turner's instructions were to:

Make a rapid survey of that river from the limits of the topographical sheets at Spanish River, near Mobile, up to and including the junction of the Alabama and Tombigbee Rivers. The topography along the river banks only was to be delineated, all the bluffs and their heights being shown, and special attention was to be given to the hydrography (USC&GS 1889a:52).

The Turner survey produced nine original hand-drawn H-sheets (“H” for hydrography), numbered 1909 through 1917, with H1918 presenting the footprints of the nine maps, and a *Descriptive Report* detailing the work (Figure 21 and 22). Turner’s hand-written *Descriptive Report* presents very salient data about the commonly frequented portion of the river system and channels, as well as those utilized less. “The country bordering on the river is, with a few exceptions, a heavily wooded swamp; the trees overhanging the banks” (USC&GS 1889a).

To survey the course of the river, Turner and his crew cut saplings, and drove them into the shoals that lined the channel in order to then chart by triangulating from stake to stake (USC&GS 1889a). The report provides insight into the challenges, and in particular, demonstrates that only the western channel around Twelvemile Island was hydrographically surveyed. The eastern channel, locally known as a portion of Big Bayou Canot, was not hydrographically surveyed. The name is noted because defining an area through a modern use of a name, or a delineation of an area is, at times, imprecise as names change, contract, or shift over time. Hence references to “Bayou Cannon,” “Bayou Canot,” and “Bayou Corne,” all of which, we suggest, refer to the swampy portions surrounding what is currently known as Twelvemile Island as siltation, seasonal flooding, and erosion defined the maritime landscape known in the twentieth and twenty first century.

This is particularly pertinent regarding the earlier referenced location of the *Clotilda*’s scuttling. It cannot be assumed that what is now known as “Big Bayou Canot” was that location, as some have suggested. The detailed survey of that delta section did not identify any wrecks consistent with the characteristics of *Clotilda*, neither was the search supported by the cartographic evidence. As such, a present-day Eastern Channel of the Mobile River around Twelvemile Island, is a candidate for survey as a possible extension of the bayou. Because this section of the modern river is both previously unsurveyed and undredged, the prospect that the remains of *Clotilda* is possibly preserved in its bottoms, advances.

The participation of USC&GS personnel in mapping the Mobile River system ended with the 1888 charting project. Often USC&GS mapping was a prelude to subsequent navigational improvements by the USACE. The USC&GS apparently did not return for additional charting, and an 1898 Notice to Mariners informed that the Twelvemile Island Chart, No. 491, was canceled (USC&GS 1898:9). The 1888 survey has apparently since served as the effective base for all subsequent charts. Despite extensive research, SEARCH has not located field surveys nor notes post-1888 that would provide updated data for this river section.

Navigational charts of Mobile Bay continued to terminate at the head of Twelvemile Island until the late 1950s. The versions between 1892 and 1958 vary only slightly. Charts contain soundings information and bottom composition but little additional details, such as wreck locations. With the advent of more accurate seafloor mapping equipment after World War II, the USC&GS was now able to survey the river bottom with better precision. Subsequent charts showed information about the seafloor, channels, land features, navigational aids, and hazards.

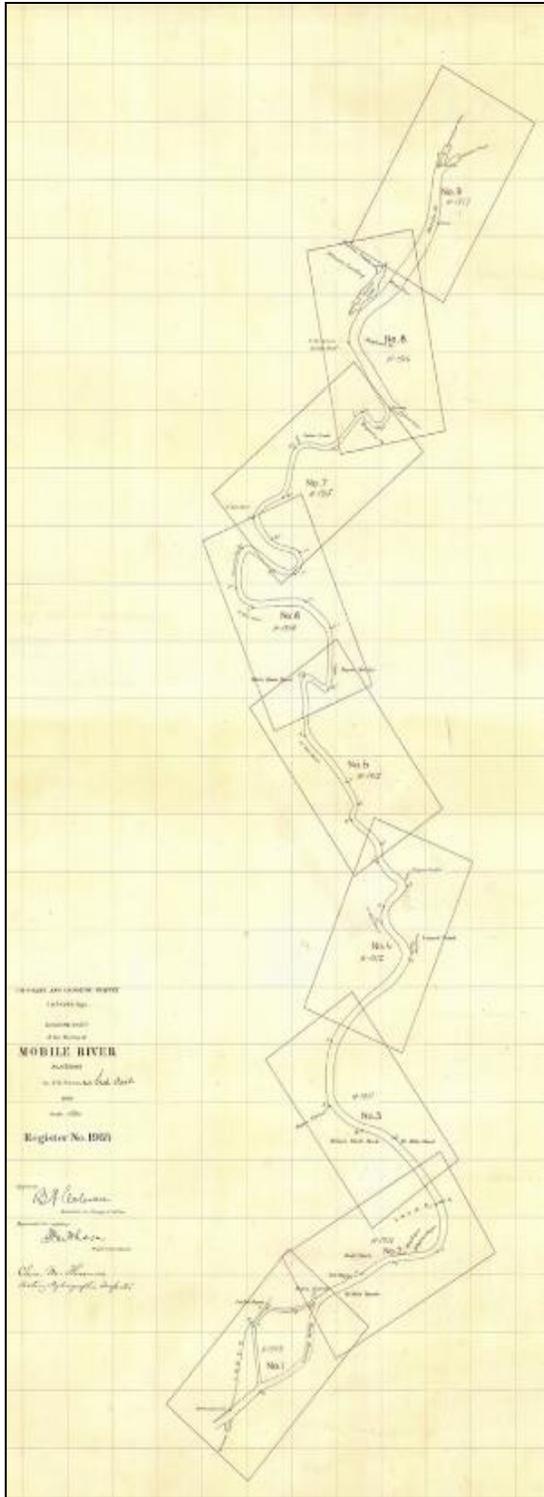


Figure 21. H1918 diagram of the Mobile River surveys (USC&GS 1889b).

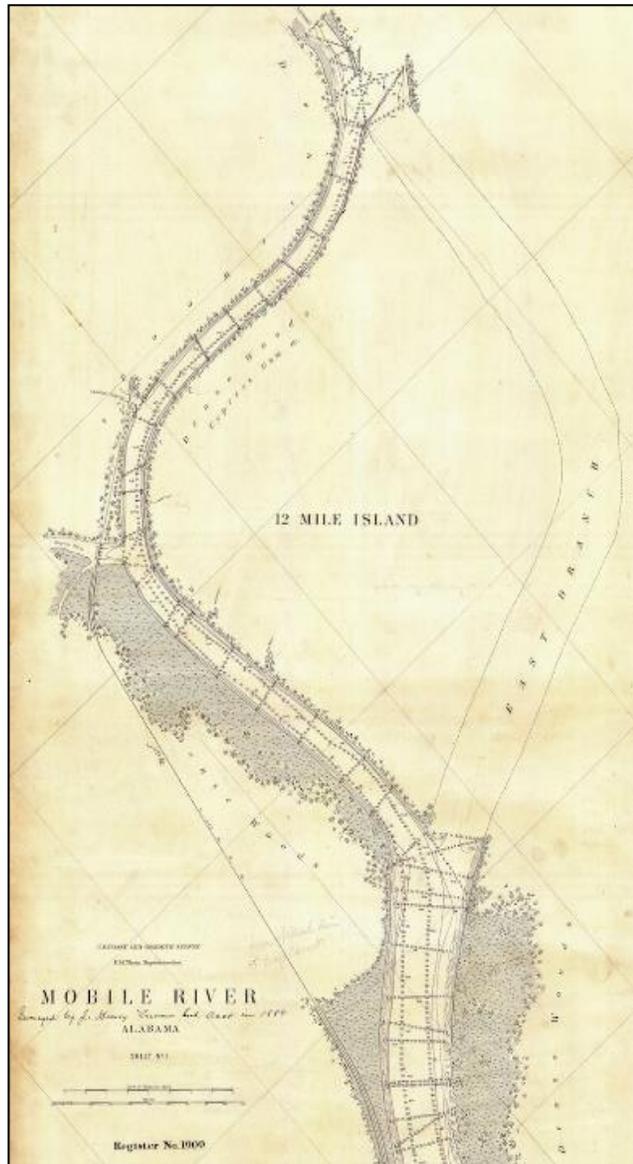


Figure 22. H1909 showing the navigationally-preferred side of Twelvemile Island (USC&GS 1889b).

The 1958 nautical chart covers Twelvemile Island for the first time within the standard Mobile Bay chart (see **Figure 22**). Four sunken wreck symbols are indicated on Twelvemile Island's east channel along the eastern river bank. One is at the southern mouth and the other three are clustered end to end a little way to the north. The symbol indicates that these are a sunken wreck and not hazardous to surface navigation. By 1966, the wreck symbols changed but the location of the sites in the eastern channel did not. Four shipwrecks are depicted, but with a different symbol. The symbol indicated a wreck showing any portion of the hull or superstructure above the sounding datum.

These wreck symbols in the eastern channel remained on the National Oceanic and Atmospheric Administration (NOAA) nautical charts until 2001. The 2001 chart no longer shows any indications of shipwrecks near Twelvemile Island (**Figure 23**). It is likely that the wrecks deteriorated to a point of no protrusion above the surface and since the east side of the island is not navigable, the need for mapping was obsolete. The most current nautical chart for the area dates to 2015 and does not show any changes to the environment. The USACE also publishes charts of inland waters including the Alabama River. The most current charts, Chart No. 1 and Chart No. 2 do not show any wrecks in the survey areas.

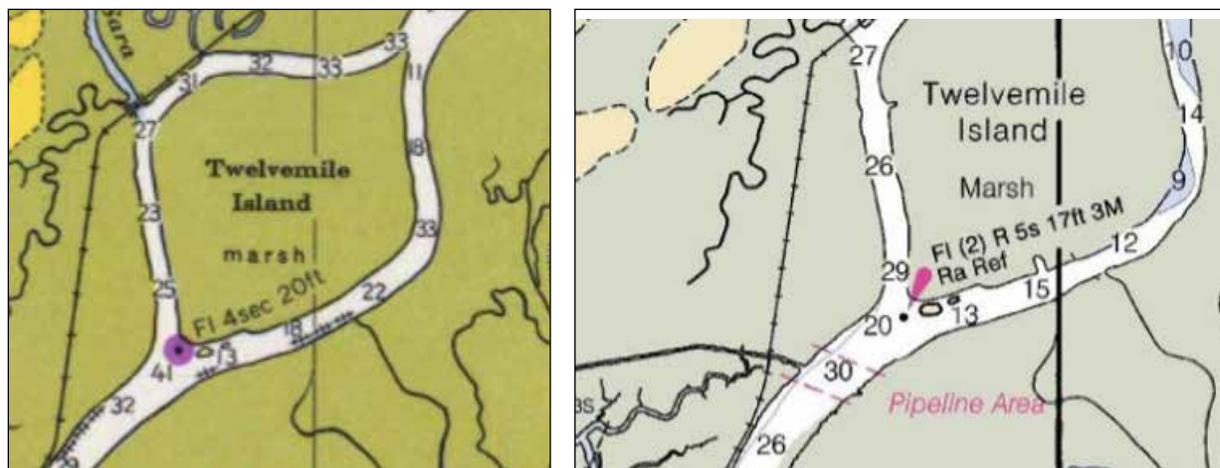


Figure 23. Excerpt from a 1958 (left) and 2001 (right) Mobile Bay chart showing Twelvemile Island (National Oceanic and Atmospheric Administration 1958 and 2001).

HISTORIC PHOTOGRAPH REVIEW

Historic photograph review have identified multiple shipwrecks as *Clotilda* at one time or another over the past 100 years. The first of these images (**Figure 24**) dates to 1912 and was reportedly taken in proximity to Twelvemile Island. The caption associated with the image states it is a, "Photograph of the wreck of the *Clotilda* north of Chicabogue". The reference is to Chickasabogue (Chickasaw) Creek, 3.7 mi (6 km) south of Twelvemile Island where the Meaher Shipyard was located. The image appears in Roche 1914. Although Roche's image suggests the

wreck in the picture is *Clotilda*, personal communication with Africatown community members indicates that currently no verification is available to link the shipwreck in the photo to that of *Clotilda*. The photo documents various vessels at anchor outside the navigation channel. Anchor chain is seen from the vessel in the top left corner. The image shows extensive cultural material buildup along the riverbank, as well as two people in a small watercraft in the background. The middle of the photo depicts the outline of, what appears, a ship structure below the waterline.



Figure 24. Photograph (ca. 1912) referencing *Clotilda* (Roche 1914:102).

Some years later, a second photo (Figure 25) was also suggested as *Clotilda*. The *Alabama on the Go* published the photo in a June 1965 newspaper article now electronically housed in the Mobile Public Library Digital Collections. The image shows apparent the remains of a wooden built vessel, with additional cultural material present along the eastern portion of the photo. The photo shows structural elements of the ship above the water line, and, it is believed, was taken when water levels were low, as exposed mud is visible in the foreground. The image caption in the newspaper reads, "Rotting Hulk of the Schooner *Clotilde* [sic], last 'slaver' yields museum piece" (*Alabama on the Go* 1965). The text of the document refers to, "The skeleton of the old schooner which was scuttled and burned in 1859...was located in the waters of Bayou Sara, just north of Mobile, in a 'cemetery of wooden ships of eras past'".



Figure 25. The "Rotting Hulk of the Schooner *Clotilde*", as referenced in an Alabama Newspaper, 1965 (*Alabama on the Go* 1965).

Most recently, imagery in a 2018 news article (Raines 2018a) focuses heavily on a third vessel, which was determined is not *Clotilda* (Delgado et al. 2018). None of these pictured wrecks were positively identified as that of *Clotilda*; all three are apparently different

shipwrecks, separate from one another. As such, the shipwrecks depicted as *Clotilda* in known historic images cannot be positively identified as such at this juncture.

PREVIOUS MARITIME INVESTIGATIONS

Six previous maritime investigations in the vicinity of the current project are pertinent to the research design. The following briefly describes the results of these investigations, three of which focused on *Clotilda* (Table 12; Figure 26).

Table 12. Previous Cultural Resource Surveys within 1 mi (1.6 km) of the Study Area.

Title	Citation	Figure 26 Reference
The CSS <i>Huntsville</i> and CSS <i>Tuscaloosa</i> Project, Mobile River, Alabama	Saltus and Schell 1985	Saltus and Schell 1985
Remote Sensing Investigation for the Slave Ship <i>Clotilda</i>	James and Krivor 1998	Panamerican 1998
Report of Findings; Additional Investigations for the Slave Ship <i>Clotilda</i>	Lydecker and Krivor 2003	Panamerican 2003
Report on a Mid-to-Late Nineteenth-Century Wooden Shipwreck in the East Channel of the Mobile River Suggested as a Candidate for the 1855 Schooner <i>Clotilda</i> , Baldwin County, Alabama	Delgado et al. 2018a	SEARCH 2018a
Mobile River Shipwrecks Survey, Baldwin and Mobile Counties, Alabama	Delgado et al. 2018b	SEARCH 2018b
Underwater Remote-Sensing Survey and Hazard Assessment of the Proposed Mobile River Barge Mooring Area, Baldwin County, Alabama	Marx et al. 2018	SEARCH 2018c

The Saltus and Schell investigation (1985) included a marine remote-sensing investigation that employed a marine magnetometer and fathometer. The purpose of the investigation was to locate and identify the Confederate States Ship (CSS) *Huntsville* (1Mb557) and CSS *Tuscaloosa* (1Mb558), two Civil War ironclad vessels reportedly scuttled in the shallows of the Mobile River (Saltus and Schell 1985). The project, funded by the City of Mobile, was conducted for the Mobile Jaycees and the USACE. Results of the remote-sensing investigation included two magnetic anomalies and two discontinuities in the river bottom in approximately 12 ft (3.6 m) of water. The location and orientation matched historical accounts of where the historic vessels were scuttled. Diver investigation occurred to verify the source of the anomalies. Divers identified two vessels of various hull characteristics, armor plating, casemate structures, and bow features indicating ironclad vessels (Saltus and Schell 1985). It was reported that the northernmost portion of the northern vessel appeared more intact than the southernmost portion of the vessel, which was recorded as broken with exposed hull construction features. At the time of the investigation, the southernmost vessel had approximately 39 ft (11 m) of bow section exposed. Structural elements recorded on the southernmost vessel included a breakwater, hawse pipe, chock, and pyramid shaped iron ram. The vessel was reportedly broken with additional buried remains located upward of the break of 30 ft (9 m) aft (Saltus and Schell 1985).

A series of Panamerican Consultants, Inc. (Panamerican) investigations conducted in portions of Big Bayou Canot, Little Bayou Canot, and Bayou Sara took place between 1996 and 2003 (James

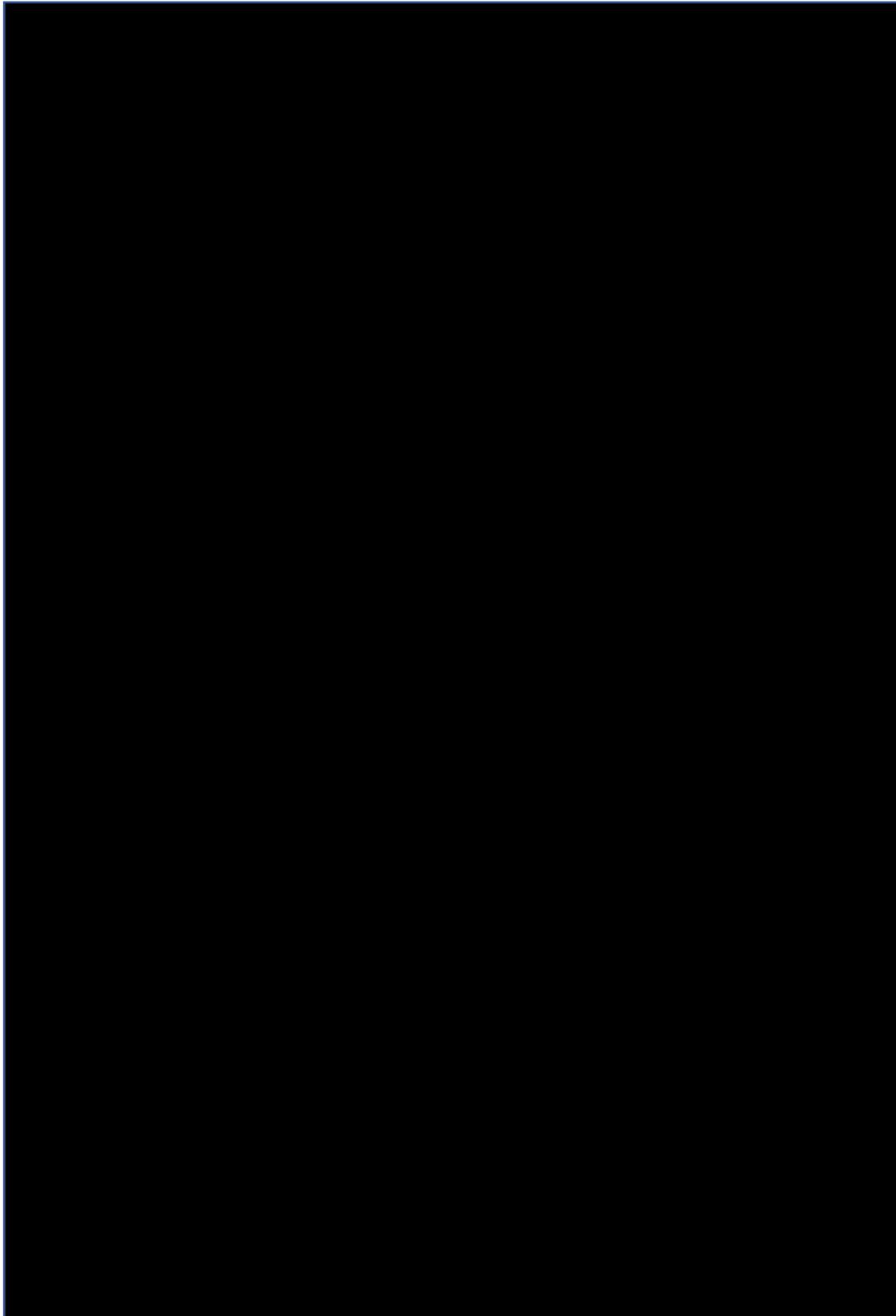


Figure 26. Previous maritime surveys conducted in the vicinity of the project area.

and Krivor 1998; Lydecker and Krivor 2003). These investigations focused on locating *Clotilda*. Panamerican's series of remote-sensing surveys utilized a Differential Global Positioning System (DGPS), marine magnetometer, and side-scan sonar. The surveys identified 17 magnetic anomalies and two acoustic contacts warranting further archaeological investigation. The 1998 diver investigations identified the source of three remote-sensing targets as modern: one target was a metal pipe, one target was an isolated wooden fragment, and another source was a confirmed historic barge (James and Krivor 1998). Refinement survey of remote-sensing targets identified in earlier surveys was completed in 2003 effort to locate *Clotilda*. Panamerican refined the remote-sensing record for three of their original targets. Results of this refinement survey revealed the source of these targets was a 55-gallon drum and other modern debris (Lydecker and Krivor 2003).

SEARCH conducted a series of maritime investigations in proximity to 1Ba704 in 2018. The first, SEARCH 2018a, consisted of wading and diver investigation of the Twelvemile Island shipwreck, 1Ba694, within the Mobile River (Delgado et al. 2018a). The Phase I survey assessed a previously unrecorded resource in an effort to determine the identification of the wreck and assess its eligibility for listing in the NRHP. The wreck, recorded as 1Ba694, as previously noted, was initially perceived as *Clotilda*. The survey concluded that although the wreck was a historic wooden sailing vessel, it was not *Clotilda*. Scientific evidence such as hull dimensions, hull structure, and wood analysis provided results that differed from the known structural elements and dimensions of *Clotilda*. During the investigation, archaeologists located four additional historic shipwrecks within the immediate vicinity of 1Ba694, which lead to the identification of 1Ba704 and surrounding wrecks, as part of a larger ship's graveyard (Delgado et al. 2018a).

SEARCH conducted an additional underwater remote-sensing survey of the Mobile River's east channel around Twelvemile Island in 2018, SEARCH 2018b (Delgado et al. 2018b). The team identified 14 remote-sensing targets as potential submerged cultural resources. Divers investigated four of these targets to assess their potential as *Clotilda*. The sources of these targets included two vessels of metal construction (sites 1Ba699 and 1Ba706), one wooden hulled vessel (1Ba704), and one assemblage of tree debris. Although significant in their own right, the two metal-hulled vessels were not recommended for additional archaeological surveys during the investigation. Additional research was conducted at site 1BA704 to assess the likelihood that it is the *Clotilda* shipwreck (Delgado et al. 2018b). None of the buried anomalies were assessed as they were too deep and are only accessible via excavation.

SEARCH's most recent Mobile River investigation prior to the investigation of 1Ba704 consisted of an underwater remote-sensing survey and hazards assessment of the proposed Mobile River barge mooring area, SEARCH 2018c (Marx et al. 2018). That Phase I investigation employed DGPS, a marine magnetometer, side-scan sonar, sub-bottom profiler, and echo sounder. SEARCH identified 89 magnetic anomalies, 116 acoustic contacts, and nine acoustic reflectors within the survey area. Three magnetic anomalies were identified as potential submerged cultural resources and three acoustic contacts, likely representing a historic jetty (1Mb567), were identified as potential hazards to navigation. This collection of remote-sensing targets was

recommended for avoidance by a distance of 164 ft (50 m) during project activities (Marx et al. 2018).

PROPOSED ARCHAEOLOGICAL TEST EXCAVATIONS OF 1BA704

SEARCH and State Archaeologist, Stacye Hathorn of the AHC submitted a permit application and an archaeological research design to USACE to conduct limited Phase II archaeological test excavations at 1Ba704, located within a portion of the Mobile River, Alabama. SEARCH archaeologists and the AHC considered the target potentially significant and therefore it warranted additional investigation in the form of diver evaluation and assessment along with dredging a test excavation unit. SEARCH archaeologists could not rule out the wreck as *Clotilda*. All subsequent archeological work completed on the shipwreck focused solely on the characterization of the wreck as a possible *Clotilda*, with as little intrusion as possible. The work was performed in compliance with Alabama and federal laws and regulations, with permission from AHC and the Alabama Department of Conservation and Natural Resources (DCNR), under terms of a USACE Nationwide permit and project monitoring by AHC's State Archaeologist, Stacye Hathorn.

Research Questions

SEARCH compiled a series of research questions, listed below, to assist with the identification and documentation of 1Ba704 and aid field investigation.

- **VESSEL CHARACTERISTICS:** What are the exact dimensions, the shape and form of the hull, number or masts, and the ostensible rig? What do the construction characteristics suggest in terms of origin and age? Is evidence of a centerboard trunk available?
- **SITE CHARACTERISTICS:** What is the apparent site formation process? Is the wreck a result of abandonment, or is it a deliberate scuttling? What was the mechanism for scuttling? Was the vessel burned? If burned, during the burning process, what was the disposition of material into the hold?
- **MATERIAL CULTURE:** What is the level of preservation inside the hull, and what does that disclose? What, if any, material culture is inside the vessel? If any, what is its nature and cultural context?
- **MODIFICATIONS SPECIFIC TO A SLAVE SHIP:** What can be inferred about the identity of the vessel? What do the site formation process, vessel remains, and material culture suggest? Can origin from the timber the vessel is constructed from lead to conclusions? Can data results help narrow the age range of the vessel's construction and disposition? If diagnostic artifacts are present, do they reveal modifications made, and evidence of the transportation of enslaved persons? Specifically, are remains of platforms or partitions used to confine and accommodate a large group of people evident? Are instruments or evidence of restraint present? Are artifacts that speak to providing food and water for a large, confined group of people located? Are there DNA or other organic traces of

humans and human activities such as food and waste disposal in the lower hold or specifically in the bilge?

Proposed Methodology

A preliminary survey would delineate the wreck's exposed portions prior to disturbance. Divers would then use a diver-controlled induction dredge to clear off sediment covering the vessel's frame ends to visually determine overall hull dimensions and shape. Next, divers would excavate a test unit to provide visual access to buried portions of 1Ba704's hull. The excavation of the unit would provide the means to determine the hull shape and form for comparison with schooners of the period and the 1855-reported description of the hull shape and the form of the deeper, rounder hull of *Clotilda*.

The team would excavate a test trench athwart, or across the wreck, and if impossible, then a trench inside the vessel's starboard side at midships. The intent of an excavation unit was to create a trench that would stretch approximately 3.2 ft (1 m) along the vessel's length and 6.5 ft (2 m) from the hull edge toward the keel with a goal of reaching the inner hull (ceiling planking). The vessel's depth of hold would determine the exact depth of the trench. This excavation trench would also expose diagnostic features of the ship inside the hold such as the turn of the bilge, and document potentially encountered features and artifacts. The team would then laboratory test the samples collected from the excavation trench for evidence of burning.

Archaeologists would wet-screen dredge outflow material as it discharged directly through 0.25-inch (in) (0.63-centimeter [cm]) wire mesh bags, with alternating 0.125 in (0.30 cm) wire mesh bags for fine screening, and deposit it along the river bank for temporary stockpiling. Immediately after the survey the team would redeposit the spoil in the test units to fill in the holes and rebury the exposed vessel remains.

Artifact Collection, Conservation, and Curation

The team would only collect diagnostic materials as part of this investigation. Principal investigators in consultation with the AHC will determine the collectable materials. Any artifacts recovered would be cleaned, identified, documented (by photo, mapping, and/or drawing), and described in field notes prior to bagging, tagging, and returning to the unit. AHC would oversee the conservation and curation at that juncture, and provide the archeological repository for permanent curation.

DIVE METHODOLOGY

Diving in the Mobile River entails working in limited to zero visibility and with current, which dictates diving and restricts dive operations in ways not experienced in clear water. SEARCH developed and followed a *Dive Safety Plan* that included an emergency evacuation strategy for the diving phases of the project. The team conducted dive operations in the Mobile River using Self-Contained Underwater Breathing Apparatus (SCUBA) equipment with full-face masks (complete with diver-to-surface tethered communications). When diving tethered SCUBA, SEARCH utilizes an Ocean Technology Systems (OTS) Guardian Full Face Masks (FFMs) paired with a MK-7 Buddy line (portable two diver air intercom) with hard-wired OTS Floating Communication Cables that maintain a breaking strength of 2,592 pounds (1,176 kilograms) (Figure 27). This configuration allows for divers tethered to the surface with voice communications, while the diver retains control of both the primary and reserve air supplies. The tether is connected to the diver's Buoyancy Compensator Devices (BCD) with a positive buckling device designed to prevent strap pull-through and accidental release by the diver. When using tether with communications, SEARCH FFM divers incorporates a reserve breathing supply (via a bailout bottle). This supplemental air supply is turned on by an emergency valve attached to a manifold block that is easily accessible to divers in the event of air loss. The manifold block incorporates an air supply non-return valve, inhibiting the loss of air pressure in case of umbilical damage or hose failure.



Figure 27. SEARCH archaeological diver prepares to investigate 1Ba704 in the Mobile River.

OTS FFM allows divers to maintain maneuverability to navigate around obstacles, such as water-logged tree snags and ship timbers, while maintaining constant communications with topside. Divers operated under the American Academy of Underwater Sciences (AAUS) standards (August 2016). This includes the appropriate level of diver's certification satisfied by the AAUS Scientific Diving exemption; current Cardiopulmonary Resuscitation (CPR), First Aid, and Oxygen Administration certifications; a current diver physical signed by a licensed physician; and the requisite experience and training consistent with SEARCH scientific diving standards. SEARCH maintains all dive equipment utilized during dive operations according to AAUS standards and

manufacturer recommendations. All diver and equipment certifications were up to date for the duration of the current investigation. Certified equipment includes regulators, SCUBA cylinders, and all depth and pressure gauges.

SEARCH conducted all dive operations from a 21 ft (6.4 m) aluminum, flat-bottomed Rhino vessel powered by a 90-horsepower outboard motor (**Figure 28**). This vessel is ideally suited for the project location and environmental conditions. It had ample deck space to conduct safe diving operations and was equipped with all the necessary safety gear, including the appropriate number of life jackets, marine radio, horn, fire extinguisher, and visual distress signals. SEARCH displayed a diver-down safety flag to alert nearby vessels to the presence of divers in the water.



Figure 28. SEARCH dive vessel.

A dive log was completed each time a diver entered the water. The dive logs identified the dive supervisor, primary diver, standby diver, tender, purpose of the dive, and type of breathing air source used (SCUBA). The divers conveyed dive conditions, including water depth, water temperature, current, visibility, bottom type, and any other pertinent observations to the dive supervisor at the conclusion of each dive. The dive log also identifies equipment used by the diver during the dive. Most importantly, this form recorded each diver's time in, time out, air in (psi), air out (psi), and maximum water depth attained during the dive. This form also provides space to describe work accomplished, as well as notes and observations made during the dive.

SEARCH used a Trimble DGPS and Hypack Navigation software to relocate the shipwreck site. The DGPS provides sub-meter positional accuracy and Hypack navigation software allowed the survey team to accurately navigate to the shipwreck site. SEARCH deployed a buoy at the presumed bow location to guide divers to the shipwreck. The personnel then anchored the survey vessel upriver from the buoy drop location so divers could float downstream to the buoy. Due to the limited underwater visibility, only one diver was in the water at a time with tethered communication and a standby diver remained on the boat ready to assist. This practice allowed surface personnel to communicate with the diver underwater and retrieve a diver if needed. The diver maintained constant contact with the topside team during the visual and tactile search of

the river bottom. The dive supervisor also maintained visual contact with the divers' bubbles on the surface to monitor diver's location. No live boating was conducted during this investigation.

SEARCH utilized additional underwater equipment to assist in relocating, identifying, and delineating the shipwreck site. This included a hand probe, venturi dredge, pneumatic tools, Premature Ventricular Contraction (PVC) for collecting core samples, and recording equipment such as reels and slates. Due to zero visibility conditions, team conducted circle searches to locate the shipwreck. Potentially diagnostic artifacts were recovered, photographed on the surface, and then returned onsite. Wood samples, a few diagnostic artifacts, and core samples were collected to supplement the site assessment (Figure 29).



Figure 29. SEARCH archaeologists document an iron fastener from 1Ba704.

HISTORICAL ANALYSIS

PRESUMED SITE FORMATION PROCESSES FOR *CLOTILDA*

Vessel Modifications for the Final Voyage

In a series of notes written ca. 1890, Foster indicates that Meaher “fitted out” *Clotilda* at Meaher’s shipyard (Foster 1890) (Figure 30). An early twentieth century account notes that Foster and Meaher modified *Clotilda* for the voyage into, “a low craft with tall masts, long spars, and broad sails like the wings of a yachting racer” (Byers 1906:744). This account, written by a non-maritime author who did not witness the fitting out, should not be interpreted widely. “Fitting out” is a term used to describe the physical work necessary to prepare a vessel for sea and



Figure 30. SEARCH and AHC archaeologists examine primary source documents on *Clotilda* at in the National Archives branch in Atlanta, Georgia.

encompasses everything from rigging, repair, and stowing of provisions. It does not necessarily denote modifications. *Clotilda* was already a low-profile, likely top-sail rigged schooner. The vessel required relatively minor, if any, modifications involving a shift in the rig and preparations to house, feed, confine and control a human cargo bound for slavery.

Clotilda's inherent speed and deeper hold capacity, were likely both key factors in selecting it for the illegal voyage to Africa. However, patrols of both the African Coast and the slaving routes by both the U.S. Navy and the British Royal Navy may have served as incentive to further enhance *Clotilda's* speed. The only avenue to further enhance the vessel’s speed was to provide more sail. Adding topsails, or re-rigging the schooner to a brigantine with a square, yard-rigged foremast would enhance a two-masted *Clotilda's* existing fore and aft rig. Neither rig required rebuilding the hull. A two-masted schooner was either “bald-headed,” without topmasts, or carried topmasts which provided two levels of sail. The more canvas exposed to the wind, the faster and more maneuverable a schooner was.

The difference in the rig is explained in mid-nineteenth century terms by Royal Navy Captain George Biddlecombe in his 1848 treatise *The Art of Rigging*:

Schooners have two masts and a bowsprit: the masts rake aft, but the bowsprit lies nearly horizontal; also, a jib-boom, and topmasts. On the bowsprit and jib-boom are set stay-sails and jibs; on the fore-mast a square sail; and, abaft the fore-mast, a gaff-rigged fore-sail; and, on the top-mast, a gaff-top-sail, and sometimes a square-top-sail. Abaft the main-mast is set a boom-main-sail, and above it a gaff-top-sail. The main-stay leads to the head of the fore-mast, by which means, the sail abaft the fore-mast is not obstructed when the vessel goes about, as the peak passes under the stay. There is also two jumper-stays, which set up to an eye-bolt in the deck, just at the after-part of the fore-rigging, so tee weather one is always kept taut (Biddlecombe 1969:109).

Foster's reminiscent account of his voyage provides a limited view of *Clotilda's* rig through a discussion of storm damage during the passage. Wind damage in storms "sprung main boom" and a line gave way to detach a foresail, all indicate the schooner rig but not reveal the nuances, such as a topsail or a brigantine rig (Foster 1890).

Clotilda likely was already rigged as a topsail schooner given its earlier career in the Gulf. To re-rig *Clotilda* as a brigantine, "a vessel rigged as a brig on the fore-mast, and as a schooner on the main-mast" (Biddlecombe 1969:109), the foremast would be entirely rigged square sail on a yard replacing the lower gaff-rigged fore-sail. Foster noted, at the end of the voyage, that to help disguise *Clotilda's* transatlantic passage, the crew down-rigged the schooner by taking "down square sail, yards and foremast" (Foster 1890). This supports the supposition that *Clotilda* was likely brigantine-rigged for the illegal voyage. This required work only in the rigging, and no structural work to the hull. As noted, Captain Foster burned and sank *Clotilda* after disembarking his captive "cargo," and, after a fire, archaeological evidence of rigging modifications might not be readily evident.

The only other modification needed for the transatlantic transportation of enslaved people would be in the main hold to confine people. For the slaving voyage, the captain and crew stowed 125 barrels of water in *Clotilda's* hold, and then stacked 25 casks of rice, 30 casks of beef, 40 pounds of pork, 23 barrels of sugar, 25 barrels of flour, four barrels of bread, four barrels of molasses, and 80 casks of rum on top. The schooner also carried dry goods and sundries for trade, as well as rum and gold to purchase people in Africa (Foster 1890). In order to give the impression of a full hold, slaving goods were covered with lumber.

In Africa, the lumber was removed, and reinstalled by the ship's carpenter as the means to house and hold the enslaved people brought on board. "The tier that covered the compromising goods was covered with lumber that hid it from casual inspection and would be used later on to build platforms and partitions: the Africans' 'beds'" (Diouf 2007:25). Other material evidence of onboard schooner-modifications for use as a slaver included "mammoth pots" for cooking, and wooden "water tanks" in which the barrels would empty. The vessel may have carried a cannon or multiple guns for protection (Diouf 2007:25).

Scuttling

Both Foster and Meaher's accounts unequivocally state that once the people were taken off *Clotilda*, Foster scuttled the schooner. "I burned her & sank her in 20 ft of water" (Foster 1890). Other than that, the actual process of scuttling was not detailed. Records at the History Museum of Mobile compiled from Jack Friend's research include an interesting detail on the schooner's scuttling. A typed undated page states:

The ship what from I can tell, was not too badly damaged by the fire. Augustine Meaher, says the sea cocks were opening on the *Clotilde*[sic] at the same time she was set on fire, so the ship probably sank before the fire did much damage. Mr. Meaher did say that it cost Capt. Tim over \$7,000 to put copper on the hull back in 1858 when he outfitted the schooner for the trip to Africa. He says it is now worth in the neighborhood of \$100,000 (Friend n.d.).

Later accounts of *Clotilda*'s destruction, possibly embellished, add details for dramatic effect. Roche, who published an account in 1914, might have heard the story directly from Foster or his wife, who died the year before Roche published her book. Roche's account simply states "the *Clotilde* [sic] was scuttled and fired, Captain Foster himself placed seven cords of light wood upon her" (Roche 1914:96). Later accounts add detail. Diouf (2007) summarizes them. Foster "put down anchor" and:

Seven cords of lightwood were placed in strategic locations. Foster lighted them up, and walked down the plank, and took one last look at his fine ship. The infamous *Clotilda* went up in smoke. A man was posted near the burning vessel to make sure pieces of wreckage did not float down the river (Diouf 2007:75).

What Diouf described is certainly possible, but as it was not described in detail by Foster, the only witness to the events to have left a known account. The only definitive statement left by Foster is his simple note that he burned and sank *Clotilda* in 20 ft (6.1 m) of water (Foster 1890). Given the sparse detail in statements, and accepting Roche's statement literally, it remains unclear as to whether the fire was set below or above deck.

The process of burning a wooden vessel would involve setting a fire that would quickly spread and consume the entire craft. Although *Clotilda* was constructed of flammable material; essentially all-wood and painted, with tarred rope used as lines, seams sealed with tar, and with canvas sails, an accelerant was still required to generate enough heat to create a fire that rapidly spread to near-complete consumption of the schooner. The accelerant could have been anything from loose wood to lantern oil, set below deck and perhaps on deck in order to achieve sufficient combustion and rapid spread of fire.

The hull was built of yellow pine and white oak. Pine generally ignites at 470 °F (243 °C) and oak starts to burn at 599 °F (315 °C) (Graf 1949:43–45). Temperatures get hotter as a fire accelerates and intensifies. One method of assessing ultimate fire temperatures is comparing them to the

effects on other materials. *Clotilda* was fastened with iron, which reaches the white-hot stage approximately 2,192 °F (1,200 °C) and melts at 2,777 °F (1,525 °C). For *Clotilda* to burn, therefore, accelerants would need to cause the combustion of the hull, deck and spars to the minimal point of combustion for the pine, and that would then accelerate the fire to combust the oak. Several hours of sustained fire would consume the hull. The hull might also have risen as the fire consumed the upper works, exposing more of it to flames.

Fires burn irregularly, and with hot and cold spots within the same burning structure. *Clotilda* most likely began to burn inside the hold, with flames traveling alongside the pine-planked sides of the hull as well as onto the pine deck to ignite it. The combustion of the deck would spread flames into the tarred rigging and onto the masts and yards, which would regain their canvas sails, which would spread the fire as burning canvas fell back onto the already burning deck. As the interior deck burned and exposed the hold, air would rush in and the fire would flash over. Inside the hull, particularly below the ship's waterline, even before the sea rushed in, the moist timbers of the hull would begin to steam, given the intense heat.

Steam expands on a ratio of 1,700 to 1 (Wiseman 2004:2), so the volume of steam inside the hull, particularly in the enclosed spaces of the hold, would rapidly expand and drive out the oxygen, smothering any embers fallen into the hold through the open hatches or as the 'tween deck above was burned through. Moreover, heat is drawn into liquid. As the hull burned down to the waterline, the heat of the flames would conduct into the river, leaving the hull cleanly burned without extensively charred planks below the waterline, even inside the hold. And yet the timbers above the waterline, even those with high moisture content that sufficiently elevated above the sea, would be completely consumed. This pattern of shipboard fire behavior and the resulting evidence was archaeologically documented in the excavation and analysis of the ship *General Harrison*, which burned to the waterline in San Francisco on May 4, 1851 and was excavated in 2001 (Delgado et al. 2007:311–313).

Post-Scuttling Anthropogenic Impacts

Oral history indicates that *Clotilda* was impacted by deliberate human actions. Mobile historian John Sledge related that a member of the Meaher family, which owned *Clotilda* at the time of its scuttling, told him that on two occasions in the 1950s Meaher family members dynamited the wreck (Sledge 2018). After the first event they purportedly pulled off its copper sheathing and sold it. After the second event they could not salvage any material (Sledge 2018). An undated page from the Jack Friend Collection includes that, "the copper IS still there" but it is unclear who was interviewed for this material and when the interview took place (Friend n.d.). As previously noted, 1Ba704 is distinguished by a concentration of disarticulated structural members, such as hull planks. The examination of the shipwreck shows that these wreck pieces lie not only outside the hull but the highest concentration lies inside the hull, at the mudline and beneath, with many sharp-edged pieces rising vertically from the wreck.

Archaeological investigation noted displaced hull structure, including the probable section of the centerboard trunk, a section of the pump log for a cast iron ship's bilge pump, and displaced hull

planking on the shallow, starboard side of the wreck. Inside the wreck, planks project in various directions, with ragged broken ends, displaced in a pattern that indicates blasting. As noted in the wreck description, the displacement of these timbers does not indicate heavy downward pressure, as if a modern barge had smashed the wreck. SEARCH interprets the condition of the wreckage as possible evidence of a force pushing up and out as opposed to the downward compression and “smearing” if a modern barge was positioned and moored atop the wreck at some time.

CLOTILDA AND AFRICATOWN

The probable archaeological remains of *Clotilda* represent a direct physical link to the events of February–July 1855 and the crime committed by Captains Meaher and Foster, their crews, and co-conspirators. Africatown not only exists as living legacy of those events, but also as a testament to the persistence and survival of the people who endured capture, enslavement, and racism to create their own community in Alabama after the war. Africatown is a living, historic community 3 mi (4.82 km) north of downtown Mobile. A group of 32 West Africans, who were among the last known illegal shipment of 109 people forcibly brought to the US onboard *Clotilda* formed the community. Africatown represents the triumphs of the human spirit in the face of adversity, and is an exemplary instance of perseverance during the hardest of times. As Diouf notes in a 2007 interview:

Even though it’s a terrible story, it’s uplifting.... It’s not about what was done to them. It’s about what they did. They came as children, maintained their traditions, their language. If they could do that, we can do anything (Diouf 2007).

One historical account in the *Harpers Monthly* publication notes that:

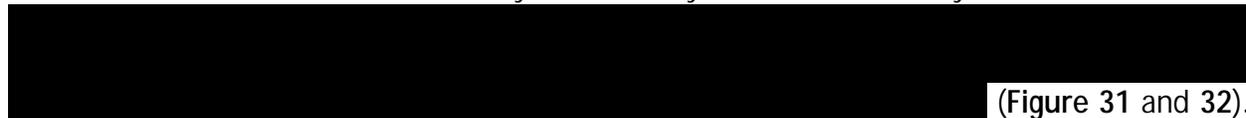
Notions and customs of their African homes had clung to the captives long after they had been brought over and dumped into the canebrakes by the Alabama River. They still buried their dead in graves filled with oak leaves. Once a year the whole tribe plunged into some river (Byers 1906:743).

Clotilda physically represents the forced migration of a group of people, the last Africans brought to the US to be enslaved. It also led, in the aftermath of the war and the end of slavery in America, to the establishment of a distinct and unique community, Africatown. *Clotilda*, and the eventual rediscovery of its remains is of great importance to that community, and to the descendants of *Clotilda*’s unwilling human cargo. Diouf (2007) and Robertson (2008) offer a more comprehensive review of Africatown.

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ARCHAEOLOGICAL FINDINGS

The investigation involved diver relocation and assessment of 1Ba704, which encompassed eight dives totaling 252 minutes between July 2018 and January 2019. When conducive, SEARCH conducted shallow water snorkeling onsite to assist with site documentation. 1Ba704 is located within the Mobile River's eastern channel that flows between Twelvemile Island and the marshlands of Baldwin County fed by Chuckfee Bay to the east.



(Figure 31 and 32).

Due to unfavorable environmental conditions and underwater hazards encountered within the hull during operations in December 2018 and January 2019, divers did not employ mechanical excavations, such as dredging or sediment screening, as planned in the research design. The research methodology was modified to reduce the likelihood of divers receiving injuries from falling hull material or getting snagged in tree debris. Divers focused their movements to an area within the hull's starboard side that was free from overhead material. This included the space from the bow back to approximately 30 ft (9.1 m) and about 10 ft (3 m) to the interior towards the centerline. Excavation inside the hull was limited in scope and conducted by hand to minimize disturbance of loose timbers. Due to the low water level at the beginning of the project in December, snorkeling and wading efforts succeeded in finding diagnostic artifacts and timbers disarticulated from hull's starboard side lying on the mud between the vessel and the shoreline. The majority of these were photographed, recorded and returned to the site. However, the team has collected samples for specialized analysis. During fieldwork and subsequent analysis, the site was determined a mid-nineteenth century wooden-hulled shipwreck.

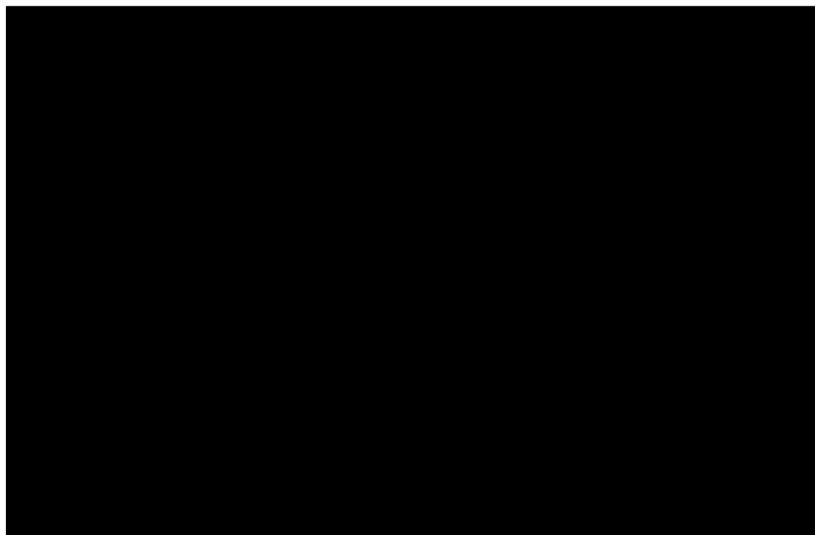


Figure 31. 1Ba704's bow, left buoy, and approximately 50 feet aft towards the stern, right buoy. View looking south.



Figure 32. 1Ba704 marked by SEARCH with an orange buoy for the diver surveys. View looking downriver to the west, left, and view looking upriver to the east, right.

As a historic wooden-built vessel, likely older than 50 years of age, the resource itself is considered eligible for inclusion in the NRHP, regardless of cultural significance associated with the vessel. 1Ba704 is embedded in the bottomlands of a navigable waterway and is therefore the property of the state of Alabama per the Abandoned Shipwreck Act (43 United State Code [U.S.C.] 2101-2106) as well as the Alabama Underwater Cultural Resources Act (Alabama Historical Commission Administrative Code Chapter 460-X-12). As the legal authority for 1Ba704, the state of Alabama, through the AHC and the Alabama DCNR must have final say over any and all operations affecting this site. This authority extends to protection of the site, community outreach, interpretation, and long-term management of the resource.

REMOTE SENSING SURVEY

In July 2018, SEARCH located and imaged 1Ba704 with side-scan sonar during a comprehensive archaeological remote-sensing survey of the Mobile River's eastern channel near Twelvemile Island (Delgado et al. 2018b). The target was noted in the sonar record as likely representing a historic shipwreck, with a visible bow-like feature pointing toward shore in an easterly direction upriver. The vessel sits relatively upright on the riverbed with a clearly identifiable ship-shape. The bow projects above the sediment into the water column and is identifiable whereas the rear end of the vessel is buried and thus obscured so that its size, shape, and location is approximate (**Figure 33**). Although portions of the lower hull appear intact, a large amount of disarticulated and displaced material lies inside the hull and extends outside the vessel on both sides of the wreck and onto the riverbed. The scattered debris are not distributed in any discernable pattern. The characteristics of the disarticulated material (i.e. location and condition) are consistent with a type of destructive force applied to vessel's interior such as an explosion. Acoustic imagery also shows a substantial number of trees and tree fragments intermixed with and built up around the wreck.

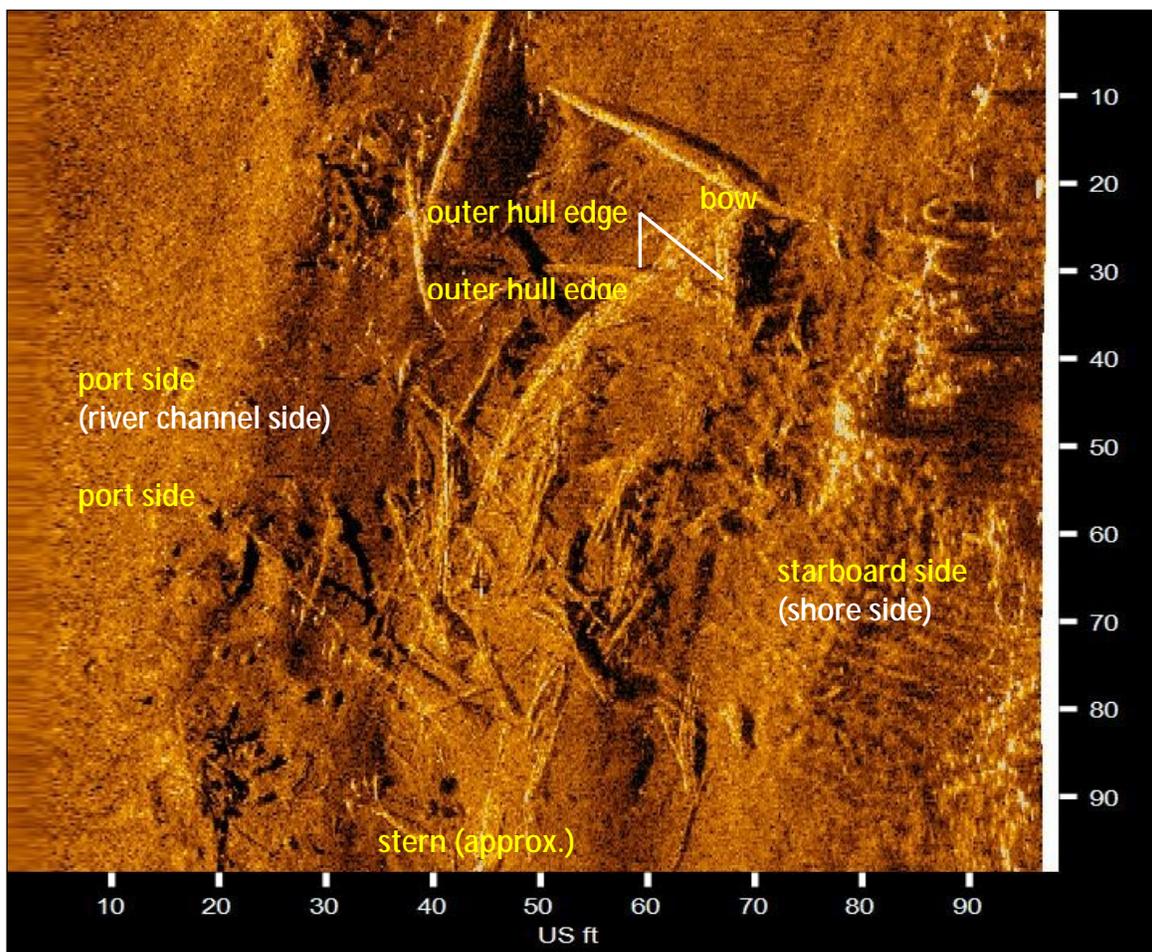


Figure 33. Side-scan sonar image of 1Ba704, July 2018.

As illustrated in the acoustic imagery, 1Ba704's exposed remains measured approximately 78 ft (25 m) long by 21 ft (6.4 m) wide (see Figure 33). These dimensions were based on visible vessel structure as depicted on the side-scan sonar image. The full extent of the vessel was not visually observed because the stern is deeply buried. However, ships are built with specific rules and have proportional dimensions. The curve of the hull toward the bow is matched by a similar curve of the hull toward the stern; the two ends of the ship swell out from the two ends and meet at the extreme breadth or width of the hull. That is what the sonar displays (Figure 33). The port side of the hull, as traced from the sonar, shows the hull on the port side at the extreme breadth, or the midships area of the wreck. It is beginning to curve as it continues aft to the stern. This curvature of the hull, when projected to its logical conclusion beneath the mud, indicates that the stern extends only for several more feet. In summary, the exposed form of the wreck indicates that the entire vessel measures less than 90 ft (27.4 m) in length. 1Ba704 is therefore within the length range expected for *Clotilda*.

The hull's orientation, almost parallel to the riverbank, provides structure upon which sediment accumulates, especially along its shoreside area. The hard structure of the vessel's starboard side provides stability to the river bank and prevents erosion from the constantly changing river flow and water level near shore. In contrast, the acoustic image indicates that an area has been

scoured out along the vessel's port side, which is also the river channel side of the wreck. An eroded channel in the mud extends back from the bow for the entire exposed length of the vessel's port side.

The collection and analysis of remote-sensing data provided sufficient information to identify the source as a potential shipwreck that could not be ruled out as *Clotilda*. The hull shape and dimensions observed using remote sensing technology resulted in the selection of the target for dive analysis and further testing.

DIVER SURVEYS

SEARCH archaeologists conducted diver investigations of 1Ba704 between December 12 and 14, 2019 and on January 28, 2019. The team faced difficulty working in a zero visibility environment and in at times fast-moving currents. Divers confirmed the presence of a wooden-hulled vessel fastened with iron lying on the river bottom with a slight list to its port side (**Figure 34**). The river bottom is composed of mud, silt, and natural debris with many trees and branches scattered amongst vessel remains. Visibility at the site was minimal. Divers were unable to visually examine any underwater components, and relied exclusively on touch to discern hull features. Due to the environmental conditions both topside and underwater, SEARCH did not conduct the proposed test excavations and screening as proposed in the research design; zero visibility, strong current, cold water temperatures, overhead hazards, and unfavorable weather allowed only for diver and snorkeler assessments.

The wreck sits on a sloping river bank with its starboard side lying in 5 ft (1.5 m) of water and its port side lying deeper in 18 to 20 ft (5.4 to 6 m) of water. Displaced and disarticulated hull material is present throughout the site, on top of and inside the hull, and on the river bottom between the vessel's starboard side and the shore. Much of this material, as noted during diver examination, is projected both up and out, with sharp, broken ends on planks. From the vessel's bow to about 40 ft (12 m) aft a varying degree of structure is exposed above the sediment. As divers worked further aft, the edge of the hull was difficult to follow. After a distance of 50 ft (15 m) from the bow, divers encountered the buried hull on the starboard side that prevented them to follow the hull form as it continued to curve or sweep back to the stern. Due to hazardous site conditions, divers were not able to comprehensively examine the exposed area of the vessel's port side.

Approximately 5 ft (1.5 m) of vertical hull structure is exposed above the sediment on the vessel's port side. Far less of the vertical structure is present on the starboard side. Only 3 ft (0.9 m) is exposed near the bow, a few inches at the distance of 30 ft (9.1 m), and the hull edge is not exposed beyond 40 ft (12 m) aft. Divers concentrated their investigation of the hull along the starboard side where it was safer to move in the zero visibility conditions. 1Ba704's bow is identifiable and has portions of a stempost extant. The stempost is a heavy timber or assembly of timbers connected to the keel that rises upwards to form the main forward structural hull

component. Because site conditions necessitated to investigate by “feel,” nothing that was readily apparent as ground tackle (i.e. anchors), a windlass, or any evidence of rigging was found. This does not mean that artifacts of this type are not present at the site. Given conditions of the site and diving, SEARCH did not locate any artifacts of this type.



Figure 34. 1Ba704 site sketch and notes, not to scale.

As noted, dangerous conditions due to the large amount of overhanging and suspended timbers, some with sharp, jagged ends, and sharp iron fasteners, limited diver investigation within the hull. Inside the hull divers encountered a mass of timbers which may be either structural or a mass of displaced planks. A significant vertical timber feature was located approximately 4 ft (1.2 m) aft of the bow. A precise measurement was not obtained due to zero visibility conditions but it is estimated at 3 ft (0.9 m) high and 2 ft (0.6 m) in diameter. It is unclear whether this is a portion of the samson post, foremast or a tree trunk. Investigations ceased when divers encountered the sharp timbers that projected over this forward area of the hold. Divers were, however, able to determine that the depth of hold remains is approximately 7 ft (2 m) from the

mud to the top of the exposed frame ends. Additional probing determined the total depth of hold is consistent with approximately 7 ft (2 m). The probing indicated the hold in this area does not have a steep, or sharp form, but has the more full-bodied profile of a shallow draft vessel.

Frames and Hull Planking

Hull components observed onsite include ceiling planking, frames, and outer hull planking along with iron fasteners. The frames are a ship's internal skeleton that provides the stability and rigidity. Covering the inside and outside of the frames are planking, known as outer hull planking for the outer covering, and inner or ceiling planking for the inner covering. The ceiling planking lines a vessel's hold and protects the frames from shifting cargo while the outer planking is the "skin" of the vessel. A general measurement for an outer hull plank was 15 ft (4.5 m) long by 6 in (15 cm) wide and 3 in (7.6 cm) thick. The ceiling planking had similar dimensions as the outer hull planking except for a slightly smaller width, 4.5 in (11 cm). The team collected wood samples for specialized analysis. Divers did not locate any evidence of metal sheathing remaining on the exposed portions of hull they were able to examine. However, a sheathing nail without a head was observed in a disarticulated outer hull plank.

Fasteners

Iron nails, iron spikes, iron drift bolts, and wooden treenails comprise the observed fastener types. Divers collected representative samples for analysis. A more thorough discussion on fasteners follows in the section on artifacts collected and analyzed.

Probable Centerboard Trunk

Divers encountered a probable section of a centerboard trunk within the hull about 15 ft (4.5 m) aft of the bow. It may have been displaced from its original position, as another piece of the trunk was observed outside the hull. A centerboard trunk is the raised narrow rectangular feature positioned just aft of the schooner's main mast and off to one side of the keel. It would have a slot that housed the centerboard and permitted it to raise and lower as needed. Only a small portion of the possible trunk was accessible to divers but the feature recorded had horizontally positioned planks and many iron drift bolts. The longitudinal feature extended up 5 ft (1.5 m) above the mudline and contained six timbers situated parallel to one another with the drift bolts closely spaced 1 ft (0.3 m) apart. The feature lay at a slight angle with its aft end closer to the hull edge than its forward end.

MATERIALS COLLECTED AND ARTIFACT ANALYSIS

Shallow water snorkeling and SCUBA diving operations targeted the environment surrounding 1Ba704. The investigation noted a significant amount of riprap in the form of trees and tree limbs extant onsite. The site area also contained loose artifacts, some of which were recovered for laboratory analysis (Figure 35). Due to low visibility and the safety concerns noted above, divers examined the river bottom between the vessel and the shoreline (left-bank descending), and focused on the midships to bow section of the vessel. SEARCH did not conduct overhead environment diving.

Despite these limitations, team encountered a variety of cultural material during the investigation. This included disarticulated shipwreck timbers and several structural elements separated from the intact hull of the vessel. Archaeologists observed numerous iron fasteners still set into and protruding from the hull, disarticulated timbers, isolated scatters of iron fasteners, fragmented wood, and what is likely part of the iron well for a ship's piston bilge pump.

Divers brought to the surface those artifacts that could be safely raised for visual examination for documentation and then returned in situ. Although the side-scan sonar survey suggested scattered timbers, the possibility that portions of trees mimic the appearance of shaped timbers necessitated raising them for visual inspection to differentiate them from elements of the shipwreck. Once raised, team identified most of the disarticulated material as ship timbers. Under the direction of the AHC, SEARCH collected and took to the lab for stabilization and documentation some artifacts identified as vessel components.



Figure 35. Hand-worked end of an iron fastener (drift) analyzed in the laboratory.

Team collected a total of 18 artifacts during the investigation (Table 13). The SEARCH lab facility in Jacksonville, Florida inventoried 15 artifacts, and collected and sent three wood samples to the University of Tennessee for analysis. The artifacts recovered during investigation are only representative samples of a considerable amount of material present within the hull and the surrounding area. Outside the hull, divers only recovered artifacts from material exposed above the sediment on the river bottom. No excavation took place outside the hull. As noted above, the maritime archaeologists recovered artifacts and samples “by feel” in a zero-visibility work environment. Therefore, the potential is high for additional significant artifacts associated with 1Ba704 to remain either exposed on the river bottom or buried.

Table 13. Inventoried Artifacts.

Field Specimen Number	Catalog Number	Artifact Description	Count	Weight	Length	Width	Thickness
1	1.01	Disarticulated timber sample, midships	1	151.02 g (5.33 oz)	8.20 in (20.50 cm)	2.11 in (5.36 cm)	1.50 in (3.81 cm)
2	2.01	Outer hull plank/wood sample	5	60.14 g (2.12 oz)	8.75 in (22 cm)	23.80 in (2.39 cm)	-----
3	3.01	Drift pin/fastener	1	1345.20 g (47.45 oz)	15.3 in (3.84 cm)	1.547 in (3.93 cm)	-----
3	3.02	Drift pin/fastener	1	(945.90 g) (33.37 oz)	21.75 in (55.40 cm)	1.29 in (3.28 cm)	-----
4	4.01	Loose iron bolt	1	347.78 g (12.27 oz)	8.76 in (22.50 cm)	1.22 in (3.10 cm)	-----
5	5.01	Loose iron bolt with wood	1	466.40 g (16.45 oz)	11.77 in (29.90 cm)	0.94 in (2.38 cm)	-----
6	6.01	Long loose iron bolt	1	-----	15.08 in (38.30 cm)	1.31 in (3.33 cm)	-----
7	7.01	Wood sample	1	183.78 g (6.48 oz)	5.66 in (14.39 cm)	3.28 in (8.34 cm)	1.73 in (4.39 cm)
8	8.01	Nail/spike from outer hull	1	50.38 g (1.78 oz)	5.88 in (14.94 cm)	0.46 in (1.17 cm)	-----
9	9.01	Square cut nail fragment, intentionally ridged	1	10.16 g (0.36 oz)	1.87 in (4.75 cm)	0.28 in (0.73 cm)	-----
10	10.01	Wooden plank with diagnostic fastener marks, indent of square cut nails, and notches	2	4257.20 g (150.17 oz)	47 in (119.38 cm)	5.75 in (14.61 cm)	2.28 in (5.79 cm)
11	11.01	Iron fastener with fragmented wood	1	183.64 g (6.48 oz)	8.20 in (20.83 cm)	4.80 in (12.19 cm)	1.32 in (3.35 cm)
12	12.01	Unidentified wood with iron fastener	1	748.40 g (26.40 oz)	17.50 in (44.45 cm)	2.17 in (5.51 cm)	2.44 in (6.20 cm)
13	13.01	Unidentified framing with iron fastener	1	927.80 g (32.73 oz)	12.15 in (30.86 cm)	6.17 in (15.67 cm)	1.47 in (3.73 cm)
14	14.01	Planking with diagnostic fastener marks	1	476.10 g (16.79 oz)	20.50 in (52.07 cm)	2.59 in (6.58 cm)	2.39 in (6.07 cm)

Preliminary analysis of the collected material as well as the dimensions and form indicate that 1Ba704 is a mid-nineteenth century, local or regionally built Gulf schooner. The vessel is heavily iron-fastened with the fasteners evidencing the type of handiwork consistent with blacksmithing as opposed to factory-produced fasteners, as depicted above in **Figure 35**.

Timber analysis concludes that the vessel was constructed with local or regionally sourced white oak and yellow pine. The vessel was intended for and apparently used in deep-water ocean trade as indicated by both the hull form and the evidence of metal sheathing, possibly copper. Although investigation did not reveal extant metal sheathing, its presence is indicated by sheathing nail holes observed in a hull plank with one headless sheathing nail embedded in a nail hole.

Probable Centerboard Trunk

As noted previously, the field investigation identified apparent sections of the centerboard trunk, one inside the hull and another disarticulated section lying in shallow water off the starboard side of the hull, between the vessel and the shoreline.

These features were documented in the field; the section outside the hull was not collected due to its size. Damage to the external feature, namely a patterning of some surfaces that is consistent with surface charring, may indicate burning (Stephens 2018). Approximately half of the drift bolt's fastener length, which is 25 in (63.5 cm), is exposed where timbers are missing.

One of *Clotilda's* characteristics was a centerboard. A centerboard is a wooden structural member that could be raised and lowered within a watertight housing inside the hold and alongside the keel (Figure 36). The centerboard's main function was to increase lateral resistance and therefore reduce leeway when tacking or sailing off the wind. A centerboard was a common feature for shallower draft vessels sailing in the open ocean, built with less draft for shallow ports access. Griffiths' 1854 treatise on shipbuilding notes that centerboards, which had "proved advantageous to vessels of light draught" varied in length "according to the size of the vessel, from 15 to 20 feet long" (Griffiths 1854:351–352). While sailing offshore, the centerboard was positioned down, and then raised to reduce the draft as the vessel neared a port or a shoal. Marine historian and architect Howard I. Chapelle noted that centerboards were usually rectangular and pivoted at the lower forward corner (1994:152). In Chapelle's illustrations of a centerboard, he notes that multiple bolts fasten the thick planking of the trunk at different levels (Chapelle 1994).

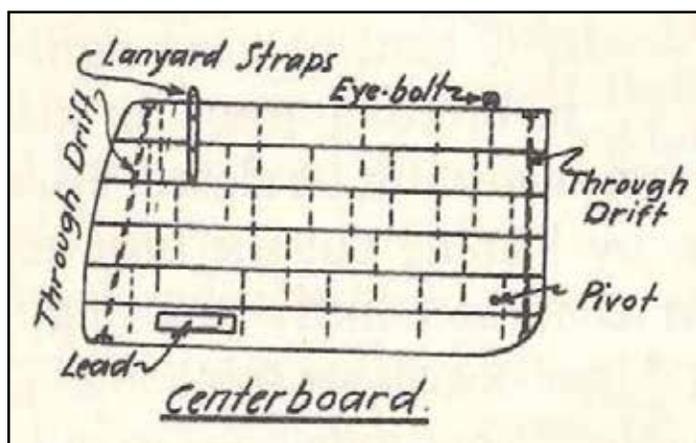


Figure 36. Sketch of a Centerboard (Chapelle 1994).

1Ba704's disarticulated portion of the probable centerboard trunk measures 13 ft (3 m) long and 1 ft (0.3 m) wide (Figure 37). It is composed of three timbers 6 in (15 cm) wide by 4 in (10 cm) thick with 13 iron drift bolts set into it vertically. Archaeological assessment of a similar sized two-masted schooner wreck documented a centerboard trunk 13.7 ft (4.15 m) in length (Haddock 2011).



Figure 37. Archaeologists documenting probable centerboard feature. Note: nib scarph lapping visible, as well as iron drift bolts.

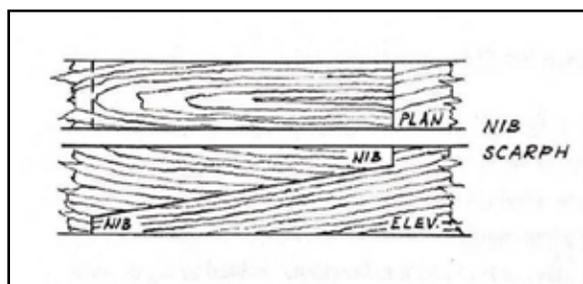


Figure 38. Sketch of a Nib Scarph joint (Crothers 2013).

Timbers making up the probable centerboard trunk outside the hull of 1Ba704 are connected by nib scarph joints and iron through-bolts. The nib was the basic scarph joint used in nineteenth century shipbuilding (Crothers 2013:75). It is essentially a plain scarph with butt ends (Figure 38). The scarph joint is a common joint used to unite two pieces of timber together. The ends were tapered to meet evenly. The role of a scarph joint was to join two lengths of timber into

a single structural member with the minimal amount of strength lost (Crothers 2013:73).

The artifact has fastener and fastener holes throughout, with iron fasteners connecting the wooden timbers vertically. Specific through-bolt patterns were often the choice of the shipbuilder, so long as the minimum requirements for strength were met, as centerboards were also subject to inspection and regulation by insurance firms; the rules for wooden shipbuilding for 1866 and 1876 specifically addressed centerboard construction. Barkhausen (1990) notes that these rules undoubtedly “reflected construction methods that had already been adapted in some form by experienced and quality builders and codified to reflect the best practices” (Barkhausen 1990:24). Both the fastener density and the timber dimensions indicate that the centerboard trunk section of 1Ba704 was well-built to perform under significant torque and stress. Once the team recorded and photographed the centerboard trunk section, the divers placed it back on the river bottom, along the starboard side of the vessel.



Figure 39. Smaller unidentified timber located near the probable centerboard.

Outside the hull, divers found a second smaller 1.5 ft (0.4 m) long timber fragment entangled within the probable centerboard fragment (Figure 39). This single timber was

cross-fastened in two directions at 90 degrees to each other with iron bolts. The bolts have a 1 in (2.54 cm) hand-hammered head and are 2 ft (0.6 m) long. The feature was visually observed and recorded in the field, and replaced onsite.

Hull Planking and Timbers

The investigation documented three disarticulated planks or planking segments and a single disarticulated timber fragment ranging from 2 in (5 cm) thick to 5.5 in (14 cm) wide, with the widest point measuring 3 in (7.8 cm) and the narrowest 1 in (2.3 cm), and 4 ft (1.2 m) long, with the longest measuring 15 ft (4.5 m) and the shortest 0.5 ft (0.15 m). The planks have visible diagonal saw marks characteristic of pit sawn boards and impressions from original attachment to frames. Most planks are apparent outer hull strakes, judging by the fastening pattern. The planks observed and documented indicate that a combination of treenails and spikes originally attached outer hull planking to floors and futtocks, whereas inner ceiling planks were fastened with either treenails to attach to floors or square iron spikes to attach to futtocks. This is consistent with nineteenth century wooden shipbuilding practices.

Outer Hull Plank

The December field work located a highly diagnostic, 15 ft (4.5 m) long outer hull plank displaced along the starboard side (**Figures 40 and 41**). The plank was documented in the field and returned to the site. It measured 6 in (15 cm) wide and 3 in (7.6 cm) thick. The plank is very finely worked with smooth edges where the original surface survives. The plank was held together by two sets of fasteners. These are wooden treenails with a straight wedge and iron spikes with the head inset and capped with a wooden plug (**Figures 42 and 43**). The inset spikes and the wooden plugs that cover their heads are a feature of both professional ship carpentry and on hull planks that were copper-sheathed, the plugs prevented contact between iron fasteners and the copper and resultant galvanic corrosion of the iron. In addition, a diagonal line of sheathing nail holes spans the length of the plank (see **Figure 39**). Although no sections of hull sheathing were observed onsite, the sheathing holes indicate that 1Ba704 had metal sheathing at one point in its working life (**Figure 44; Figure 45**).

The diagonal nature of the worn sheathing tacks conforms to the curve of the hull as it sweeps forward and up to the stem at the bow. These gore-ended sheathing plates were set at a diagonal adjacent to more horizontally placed full-length courses of sheathing (Crothers 2013:275, Fig. 22.2) (**Figure 46**). The angle of the sheathing line indicates that the plank came from the curvature of the hull toward one end. Given the position of the dislodged plank off the starboard side, off the bow, the plank was likely trending toward the bow on that vessel's beam.

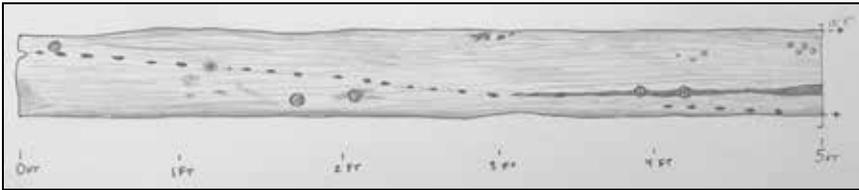


Figure 40. Mosaic of documented outer hull plank, not to scale, (top), and drawing of the same plank from 0 ft to 5 ft (left).



Figure 41. Outer hull plank with evidence of sheathing tacks, interior view.



Figure 42. Outer hull plank with a treenail, right, and a wooden plug covering an inset iron spike, left.



Figure 43. Outer hull plank from Figures 26 and 28 showing the underside of the iron spike with a wooden plug and wedge.



Figure 44. Closeup of hull plank showing an intact sheathing tack.



Figure 45. Outer hull plank with evidence of sheathing tacks, exterior view.

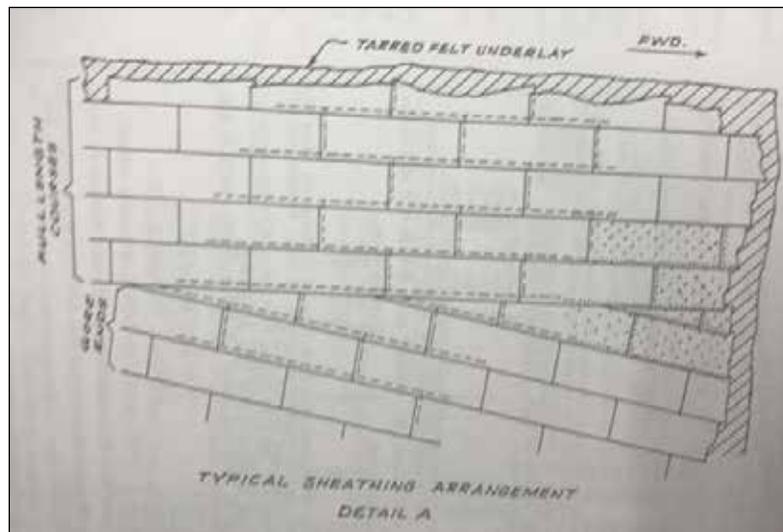


Figure 46. Gore ends and full sheathing courses on a mid-nineteenth century vessel (Crothers 2013).

Ceiling Plank FS 10

Archaeologists located and recovered a wooden hull plank from the outside 1Ba704's hull, in the mud off its starboard side between the hull and shoreline. It measures 47 in (119 cm) long by 5.75 in (14.61 cm) wide by 2.28 in (5.79 cm) thick. Although the fasteners were missing, the holes indicate the plank was attached to the hull with square nails or spikes (**Figure 47**). Field specimen (FS) 10 is a probable ceiling plank originally attached to the inside of the hull. During collection of this plank, a nail barely attached to the wood was collected and bagged separately and assigned the identifier FS 8.

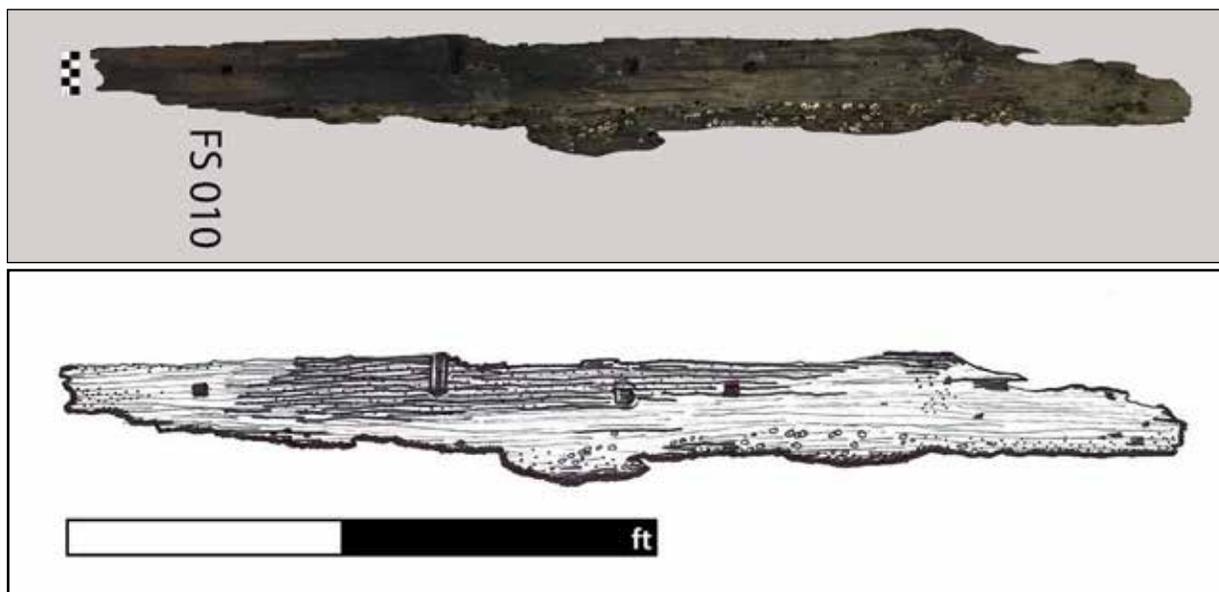


Figure 47. Laboratory photograph and artifact illustration of FS 10, hull planking recovered from 1Ba704. Note square fastening pattern on wood. Illustration by K. Lent.

Disarticulated Hull Plank FS 14

Hull plank fragment FS 14 was located outside the hull in the mud off 1Ba704's starboard side (**Figure 48**). It measures 20.5 in (52.07 cm) long by 2.59 in (6.58 cm) wide by 2.39 in (6.07 cm) thick. The original placement of the plank within 1Ba704 is unknown. A hole indicating a use of an iron fastener is present on one of its ends. The fastener and plank dimensions imply FS 14 may be either a ceiling or outer hull plank.



Figure 48. Plank FS 14, view of each side.

Disarticulated Timber FS 1

Archaeologists recovered timber FS 1 outside the hull in the mud off 1Ba704's starboard side (Figure 49). The fragment measures 8.2 in (20.5 cm) long by 2.11 in (5.36 cm) wide by 1.5 in (3.8 cm). Two small pieces that broke off from FS 1 in transit to lab are also depicted in Figure 49. The timber shows evidence of biological colonization. The original location of the timber within the hull is unknown.

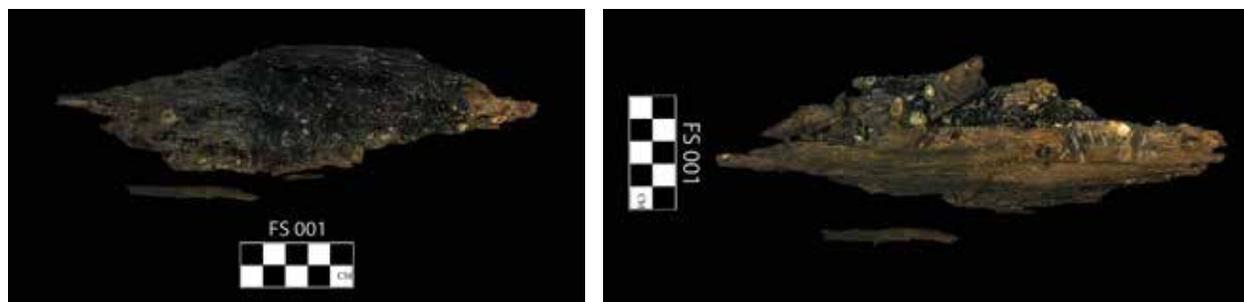


Figure 49. Timber FS 1, view of each side.

WOOD SAMPLES AND SPECIATION

During the July 2018 fieldwork, archaeologists recovered three wood samples for analysis from 1Ba704 (Delgado et al. 2018a) and numbered them as samples 1, 2 and 3. Subsequent samples were distinguished by the addition of FS and numbering in the FS sequence again began with 1; i.e. FS 1 and so on. The three initial samples (1, 2, and 3) were sent to the UWF for analysis; one sample was collected from a frame, one from the ceiling planking, and one from a loose piece of wood with a fastener embedded into it. Dr. Amy Mitchell-Cook, of UWF conducted wood analysis and determined the frame sample is white oak (*Quercus spp.*), the ceiling samples are southern pine (*Pinus spp.*), and the disarticulated piece of wood with fastener is also southern pine (*Pinus spp.*) (Delgado et al. 2018a) (Table 14).

Table 14. July 2018 Wood Speciation Results.

Sample Number	Location on Shipwreck	Species
1	Frame	White oak (<i>Quercus spp.</i>)
2	Ceiling plank	Southern pine (<i>Pinus spp.</i>)
3	Disarticulated wood with fastener	Southern pine (<i>Pinus spp.</i>)

Further segregation of the particular species of pine (*Pinus spp.*) was not possible because of the small sample size. SEARCH compared the 1Ba704 site to descriptions in the registration for more than 700 Gulf Coast built wooden schooners of the nineteenth century. The use of southern pine and white oak is consistent. The wood identification for 1Ba704 indicates the vessel was built with wood readily available along the Gulf Coast of Mexico, which is consistent with and expected for regionally-built Gulf Coast Schooners.

The results of the wood analysis for three samples collected and sent to the UWF for analysis clearly demonstrated that the vessel was constructed with regionally available woods. The type of wood, and the specific use of different woods for the planking and framing are consistent with the archival record for *Clotilda*.

Wood Samples FS 2 and FS 7

SEARCH recovered two wood samples fragments, FS 2 and FS 7, in December 2018 to supplement the previous samples (Figure 50).

In January 2019 SEARCH archaeologists collected three additional wood fragments with pneumatic drill and subjected them to further analysis at University of Tennessee (UT) and Western Carolina University. These last three samples were collected aft of the bow along the starboard side's interior ceiling planking at a depth of 2 to 3 ft (0.6 to 0.91 m) below the mud line. These samples were not collected for species identification, but rather were sampled from the articulated ceiling hull planking inside the hold and from beneath the mud for potential DNA analysis by UT and NGS. This work, not yet completed, seeks to determine if the wood retains any presence of human DNA. If it does, subsequent recovery of samples and analysis would be necessary to determine specific DNA characteristics. NGS will supervise the DNA analysis, which is ancillary to and separate from the work in this report.



Figure 50. Wood samples FS 2, left, and FS 7, above.

OBSERVATIONS OF POTENTIAL SITE FORMATION PROCESSES FROM THE WOOD SAMPLES AND OVERALL WRECK CONDITION

Visual inspection of the wood recovered for the initial DNA analysis found it brittle and possibly carbonized with at least one of the samples. This may suggest it was subjected to a high temperature fire prior to sinking. Biological colonization of the wreck is present; some of the artifacts, such as a section of hull planking (FS 10) is heavily colonized with marine borers and partially consumed (see **Figure 47**). Although biological colonization could not be assessed in the buried sections of the wreck, it may be present, possibly not as heavily colonized or consumed where the hull is essentially sealed in thick mud. The nature of the dislodged planking, projecting up and out, as if splayed, suggest that at some time, much later than the original deposition of the wreck into the river, it was subjected to blasting. The splayed orientation of the broken and displaced planks in and on the wreck are not the result of the wreck compressed or “smeared” by a heavy modern barge.

ARTIFACT BURN ANALYSIS (WITH INPUT FROM ROBERT M. STEPHENS, PHD)

As previously noted, with zero visibility, diver assessment of the hull to determine evidence of burning at 1Ba704 was not possible. The concentration of iron fasteners no longer associated with wood, or with fragments of wood adhering to them is possibly the result of complete to near-complete biological consumption by marine borers. Typically, such consumption stops where the corrosion of iron or copper infuses the surrounding wood, making it unpalatable to marine organisms. However, the pattern of that style of wood survival in association with a metal artifact follows the cellular structure – i.e. the grain of the wood, which was not observed on the recovered artifacts from this site. FS 5 and FS 13, for example, represent two iron drift bolts originally driven into fastened white oak frames; not only has very little wood survived, but it is uniquely shaped. Corrosion by-product infused wood surviving on salt water shipwrecks sites adheres as a thin crust or sheath of wood, with some parts of the wood better preserved where the corrosion by-product has followed the grain pattern. Although, iron spike FS 11 (**Figure 51**) shows this type of differential preservation, two iron drifts, FS 9 (**Figure 52**) and FS 13 (**Figure 53**), have a different appearance.



Figure 51. Iron spike FS 11.



Figure 52. Nail FS 9.



Figure 53. Iron bolt FS 13.

SEARCH engaged the volunteer services of Dr. Robert M. Stephens, who provided an assessment based on laboratory inspection of the various field samples as well as in-field photographs as a forensic fire investigator. Dr. Stephen's experience is summarized:

Twenty-eight (28) years of Leadership, Management, Law Enforcement, and Fire and Explosion Investigations experience within city, county and state public service. Extensive experience in conducting and teaching in all areas of criminal investigation, and a court recognized subject-matter expert and instructor in the field of fire, arson and explosion investigations. An Adjunct Professor at Saint Leo University (Saint Leo, Florida) within the Department of Public Safety Administration - Graduate School; Adjunct Professor of Public Administration and Emergency Management at Barry University (Miami, Florida); Associate Professor at Post University (Waterbury, Connecticut) within the John P. Burke School of Public Service teaching Graduate level Public Administration courses; Fire Instructor III at the Florida State Fire College / Bureau of Fire Standards and Training (Ocala, Florida); Contract Instructor for the US Department of Homeland Security at the US National Fire Academy (Emmitsburg, Maryland); and Adjunct Instructor / Contractor for the US Department of Justice, Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) National Academy, at the Federal Law Enforcement Training Center (Brunswick, Georgia) teaching advanced courses as needed. Serves as an agency liaison and member of the Northeast Florida FBI Joint Terrorism Task Force and continually directs and consults on criminal investigations with local, state, and federal investigators and prosecutors. Provides guidance on organizational strategies, loss mitigation, and critical incident management for numerous public, private, and non-profit organizations and executives (Stephens 2019).

Dr. Stephens noted the chemical and physical aspects of a fire:

As we discussed, most matter such as wood has to undergo a phase change in order to burn. This process is called Pyrolysis. The states of these phases are from a solid, to a liquid, to a gas. The matter change is actually a decay process or in the case of the wood, a thermal decomposition. The decay process in a fire is a rapid decay of the matter, whereas wood rot is a much slower decay or decomposition process but fundamentally not dissimilar in nature but both have distinctions. The rapidity of the oxidation process results in the production of heat which is part of the chemical reaction process that allows for the phase change of matter. In this case the fuel is the wood from the vessel. The heat transfer causes the solids to phase change to a gas but if not fully consumed, the incomplete combustion presents as burn patterns such as charring. The ways in which the heat transfers (the way the fire attacks) to the fuel (the wood) leave different patterns (Stephens 2018).

In regard to FS 9 and FS 13, Dr. Stephens noted, "Saddle Burn Patterns," a "U-shaped burn seen in joists that is typically presented from a burning of the wood downward through the floor, or deck" (Stephens 2018). Upon viewing the photographs of the disarticulated centerboard trunk feature, Dr. Stephens noted the possibility of other burn patterns known as "beveling" which are caused by fire traveling along a surface; "I see what appears to be char patterns (beveling) on the beam embedded amongst the natural decay that is occurring" (Stephens 2018).

Dr. Stephens hypothesized that the significant mass loss of the wood in association with FS 9 and FS 11 is due to a fire that consumed the wood (Stephens 2018). The near complete consumption of the frames that FS 9 and FS 13 were once driven through may be from fire that reached those temperatures. When asked whether the form of the surviving wood on the fasteners could have been created by the river's flow carrying silt that eroded it into the current shape, he thought that unlikely given the density of oak and the smooth form of the remnant. If erosion and shaping took place by current-driven silt, his thought was that extreme charring, as suggested by the saddle burn pattern, would result in:

less mass to erode. The rounding effect I theorize is possibly due to the outer edges of the artifact being less dense, due to a mass loss caused by the fire, which left charring on the outer edges of the wood. I hypothesize that the erosion process would then be easier for that rounding of the material to occur. The artifact actually shows one side to have less rounding and a pointier effect, which helps to support this theory (Stephens 2018).

Dr. Stephens' delivered the aforementioned opinions with the caveat that, "it is difficult with the limited evidence and data to be more conclusive at this point in the investigation" (Stephens 2018). In summary, tantalizing evidence suggests a fire have consumed part of 1Ba704, but without the ability for a fire investigator to examine the entire site, as conducted in an active fire investigation, a more definitive conclusion cannot be reached.

FASTENERS

Fasteners for wooden ships were composed of two basic types of material: wood and metal. In the case of 1Ba704, archaeological and subsequent laboratory work identified both wooden fasteners known as treenails and iron fasteners that ranged from iron bolts and spikes to hand wrought nails (Figure 54). The type of fasteners, in general and as a group, are common to wooden vessels built from the mid-nineteenth century up to the 1880s when steel fasteners began to replace iron fasteners, a progression that was complete by the turn of that century (McCarthy 2005:90).



Figure 54. A treenail, right, and wooden cap plugs the inset top of an iron spike, left.

Wooden Treenails

Various yellow pine treenails were observed in timbers on 1Ba704. These ubiquitous wooden fasteners were a common feature of wooden shipbuilding for as long as wooden vessels existed (Crothers 2013:66). Treenails were commonly used throughout vessel construction, driven by mallets into holes bored to the same diameter, and then seated with a hardwood wedge placed into the split end as it was hammered flush with the surface of the plank or other timber it was fastening. Crothers (2013) illustrates the typical treenails of the mid-nineteenth century (Figure 55). Treenails are essentially long wooden dowels that range from 12 to 36 in (30 to 91 cm) in length. By the mid-nineteenth century, treenails consistently measured 1.5 in (3.8 cm) in diameter for larger vessels and one inch for smaller vessels ranging from 50 to 150 tons (Crothers 2013:66–67). By the early twentieth century, the diameter was uniformly 1.25 in (3.1 cm) (Estep 1918:67). The treenails observed on 1Ba704 measure 1 in (2.5 cm) in diameter in proportionate measure to a smaller vessel and consistent with that which is expected for a mid-nineteenth century vessel in the tonnage range for *Clotilda*, which was registered at 120 tons.

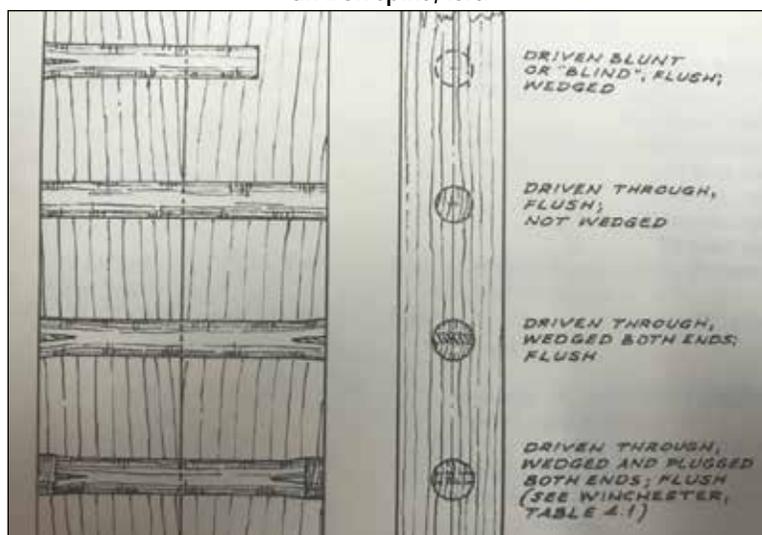


Figure 55. Treenails of the mid-nineteenth century (Crothers 2013:63).

Iron Bolts

A wide range of iron bolts were observed throughout the 1Ba704 site. Six bolts were recovered and taken to the lab for further documentation and analysis; FS 3 (composed of two bolts), FS 4, FS 5, FS 6, and FS 13. Bolts are plain, round rods composed of various metals which held the various parts of a ship together (Crothers 2013: 67). During the nineteenth century, iron was the most commonly used metal for ship bolts. Iron was relatively easy to work with and was the most efficient metal available for holding capacity. Of the numerous bolts observed on the wreck, most remain articulated in timbers and, are thus, part of the hull. The team also observed disarticulated bolts scattered around the wreck. The scattering of these loose bolts may suggest a single-event, large-scale fire rather than biological consumption over an extended time.

The most common bolts observed onsite are through-bolts and dump-bolts, all three were employed in wooden ship construction. Through-bolts, as the name suggests, completely penetrated all wooden members through which they were driven. Dump-bolts were shorter fasteners driven into but not going all the way through a timber. SEARCH recovered a total of six iron bolts from the site. Four of these are iron bolts without concretion or attached wood fragments, whereas two have fragmented wood associated with them.

X-Ray Fluorescence (XRF) analysis of the bolts indicated that these are near-pure pig iron, which is indicative of nineteenth century iron-founding. This helps date the wreck to the nineteenth century. The malleable nature of pig iron made it ideal for making wrought iron stock consistent with ship-building after 1783 (McCarthy 2005:36).

The iron employed in building 1Ba704 as a local or regionally-built vessel may have come from more distant foundries that shipped down river. Another possibility is iron manufactured in relative proximity; the most common source of pig iron used for producing wrought iron was purchased from local blast furnace proprietors as costs multiplied with shipping any distance (Gordon 2001:259–261).

All recovered fasteners were made of bar stock and have hand-hammered heads, all indicate hand work, and suggest the employment of a ship blacksmith in the construction of 1Ba704 (Figure 56). In the mid-nineteenth century, both

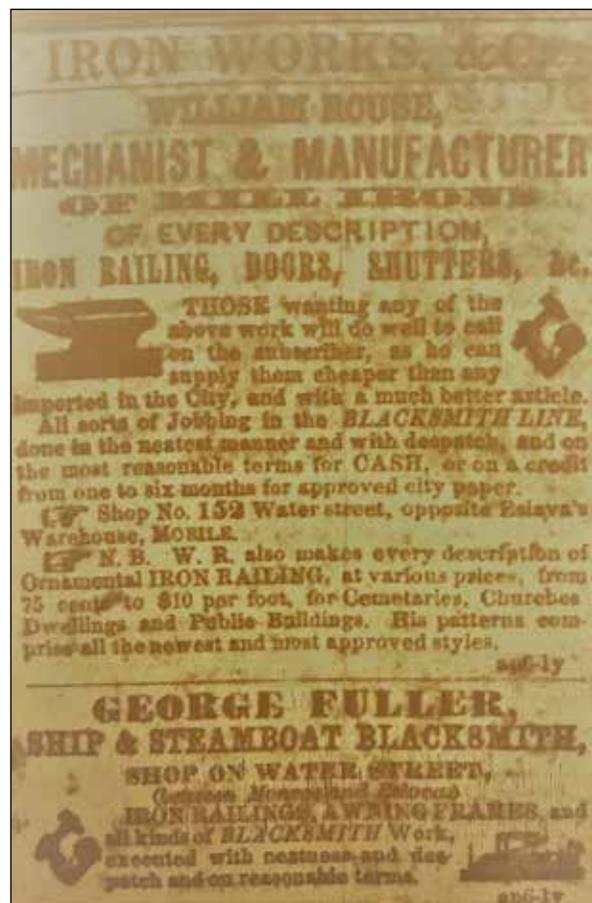


Figure 56. Blacksmith advertisements (*Mobile Daily Advertiser*, December 9, 1855, p. 1).

free and enslaved blacksmiths were in the Gulf, including ship's blacksmiths.

Iron Bolts FS 3

FS 3 is composed of two iron bolts recovered loose from inside the starboard hull edge about 10 ft (3 m) aft of the bow (**Figure 57**). The longer one measures 21.75 in (55.4 cm) long and 1.29 in (3.28 cm) wide. The shorter one measures 15.3 in (3.84 cm) long by 1.54 in (3.93 cm) wide. Their use or location within the hull is unknown but may have been to secure larger timbers. As the lower hull is buried, these may be associated with structure higher up such as a knee or deck beam. Both bolts show moderate signs of deterioration and evidence of marine growth on their tops. Their bottoms are eroded away to a point. FS 3 was selected for XRF analysis to determine its material type and composition.



Figure 57. Iron bolts FS 3.

Iron Bolt FS 4

FS 4 is an iron bolt recovered loose from outside the hull near its starboard hull edge (**Figure 58**). It measures 8.76 in (22.5 cm) long by 1.2 in (3.10 cm) wide. As with FS 3, its use and original location in the hull structure is unknown but may originate from the upper features. The bolt is in good condition with only a small amount of deterioration. It shows marine growth on the end opposite its head.

Iron Bolt FS 5

FS 5 is an iron bolt with wood remaining near the head or top (**Figure 59**). The fastener measures 11.77 in (29.9 cm) long by 0.94 in (2.38 cm) wide. It was recovered loose from outside the hull near its starboard hull edge. The bolt is in good condition with only a small amount of deterioration present. The shape of its head is visible and bears marks from being hammered into the wood.

Iron Bolt FS 6

FS 6 is an iron bolt that measures 15.08 in (38.3 cm) long by 1.32 in (3.33 cm) wide (see **Figure 59**). The bolt shows moderate signs of deterioration and evidence of marine growth on its bottom end. It was recovered from just outside the hull on 1Ba704's starboard side.

Iron Bolt FS 13

FS 13 is an iron bolt with a portion of wooden timber still attached at its middle (see **Figure 53**). The bolt measures 12.15 in (30.86 cm) long by 2.17 in (5.51 cm) wide. The thickness of the wood is 1.47 in (3.73 cm). The bolt is in good condition with only a small amount of deterioration observed.



Figure 58. Iron bolt FS 4.



Figure 59. Iron bolts FS 5, left, and FS 6, right.

Iron Spikes

Divers observed both loose iron spikes and iron spikes set into wood, including the intact portions of the hull. Most spikes observed on 1Ba704 are traditional square spikes, which are a major component of nineteenth century ship fastenings. Iron spikes were used principally for securing deck planking, ceiling planking, the toes of knees, and the nib ends of scarphs (Crothers 2013:69).

Both square and round spikes are present onsite. Square spikes have two advantages over round spikes. The first, the chisel-pointed spike was less likely to split the wood it was driven into; and second, the square spike had a stronger hold (Crothers 2013:69). SEARCH collected three spikes for further analysis. Two of the spikes have fragmented wood remains associated with them. XRF analysis of the spikes indicated that these are near pure pig iron, which indicates an older material type.

Iron Spike FS 8

FS 8 is an iron spike recovered near the hull edge along the starboard side (Figure 60). It measures 5.88 in (14.94 cm) long by 0.46 in (1.17 cm) wide. Although the artifact shows heavy deterioration along its head and most of its length, its four square sides are still clearly observed. FS 8 was selected for XRF analysis to determine material type and composition.



Figure 60. Iron spike FS 8. Figure 61. Iron spike FS 12.

Iron Spike FS 11

FS 11 is an iron spike with wood remaining at its top (see Figure 51). The artifact's overall length is 8.30 in (10.83 cm) by 4.80 in (12.19 cm) wide. The wood's thickness measures 1.32 in (3.35 cm). The spike is in overall good condition with an intact head and shaft. It is a square spike which retains evidence of its head being hammered.

Iron Spike FS 12

FS 12 is an iron spike with wood remaining at its top (Figure 61). The artifact's overall length is 17.50 in (44.45 cm) by 2.17 in (5.51 cm) wide. The wood's thickness measures 2.44 in (6.20 cm). The spike is in overall good condition with an intact head and shaft. Evidence of it being hammered into the wood is present and the shaft shape appears rounded.

Iron Nails

Iron Nail FS 9

SEARCH documented a fragment of a hand-forged iron nail (FS 9) that had become dislodged from its original location (Figure 62, see Figure 52). This nearly complete iron nail was collected for analysis. It is not obscured with concretion and has little corrosion product. It is forged wrought iron (grain runs parallel with the shaft), measures 1.87 in (4.75 cm) long by 0.28 cm (0.73 cm) wide, and the shaft is squared. The nail appears to have a ribbed texture on two opposite faces. The nail is most likely from ship joinery, which relates to structures built in the ship that are not part of the hull, such as cabins or partitions in the hold. The ribbed feature of the nail helps keep the nail seated. FS 9 was selected for XRF analysis to determine its material type and composition.



Figure 62. Forged wrought iron nail, FS 9, (left) and artifact illustration of the same nail (right). Note ribbed texture present on shaft. Artifact illustration by K. Lent.

Bilge Pump Suction Pipe Segment

Sailing vessels carried bilge pumps to expel excess water that accumulated either from leaks, or by flooding from a heavy swell or wave. Pumps for ships date to antiquity. Between ca. 1550 to 1840 AD, a variety of mechanical pumps were employed, giving way to the common, or suction pump by the mid-nineteenth century (Oertling 1996:xv). A portion of cast iron pump suction pipe from a ships' suction bilge pump was raised for examination from the river bottom and then returned in situ (Figures 63 and 64). The iron pump suction pipe section measures 2 ft (0.6 m) in length, with an inner diameter of approximately 4.5 in (11.5 cm). Grooved spirals are present along the length of the artifact, and it tapers at the ends. The artifact is not solid, but is a cast section of pipe with a concreted mass surrounding a rod in the center of the bore. It is identified as a section of the suction pipe from a common, suction bilge pump.



Figure 63. Bilge Suction Pipe Segment.



Figure 64. Both ends of the pump suction pipe segment.



Figure 65. HMS *De Braak*'s pump (Oertling 1996).

Bilge pump is similar in appearance and dimensions to sections of the double-piston pump suction pipe recovered from the 1798 wreck of His or Her Majesty's Ship (HMS) *De Braak*, an 84 ft (25 m) long British sloop-of-war, which sank off Lewes, Delaware and was subsequently raised in the 1980s (Oertling 1996:49) (Figure 65). Two well-made pump assemblies were recovered from the *De Braak* wreck, which were copper, are 3 ft (1 m) long with an inner diameter of 7 in (18.4 cm), and tapering towards the ends. The pump assemblies displayed grooved spirals along the length of each as though threads were cut into them, indicating these were probably turned on a lathe (Oertling

1996:49). The common or suction bilge pump was the preferred type for smaller merchant vessels as opposed to the larger, chain pump used on warships, which worked best "when a large number of men were operating it," and even then required frequent breaks as the work was exhausting, and replacement, as the equipment was prone to breakage through heavy use (Lavery 1987:76).

Merchant ships, with smaller crews, employed the common brake, or suction pump that essentially drew the water out of the bilges via a suction pipe, made in segments, which ran the depth of the hold; for *Clotilda*, the entire suction pipe would have been 6 ft, 11 in (2.1 m) long. The pistons inside the pump attached to pump boxes that drew the water up, past leather flaps that hinged upwards, drawing the water either up to a pump box or on to the deck to empty out

the scuppers and into the sea (Lavery 1987:76–77). Multiple patents for brake, or hand pumps existed in the nineteenth century, but they essentially conformed to a basic design, as shown in **Figure 66**, from Paasch (1890:pl. 68). Brake pumps were operated either by a handle, or in later cases, by a flywheel, as shown below. A larger example of this type of pump is found on the 1886 square rigger *Balclutha* at San Francisco Maritime National Historical Park (**Figure 67**).

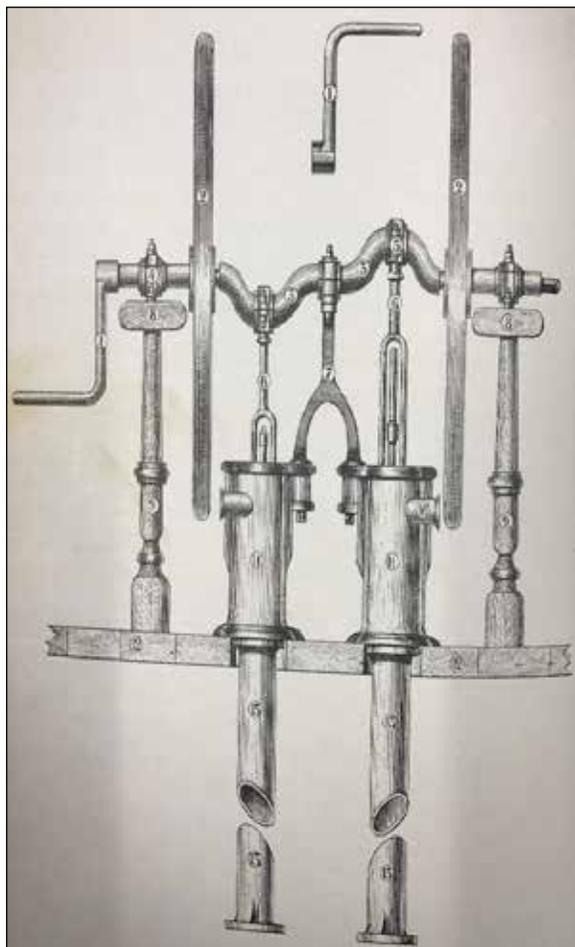


Figure 66. "Pumps of a Sailing Vessel," (Paasch 1890:pl. 68). Numbers 13a on the legend are the suction pipes.

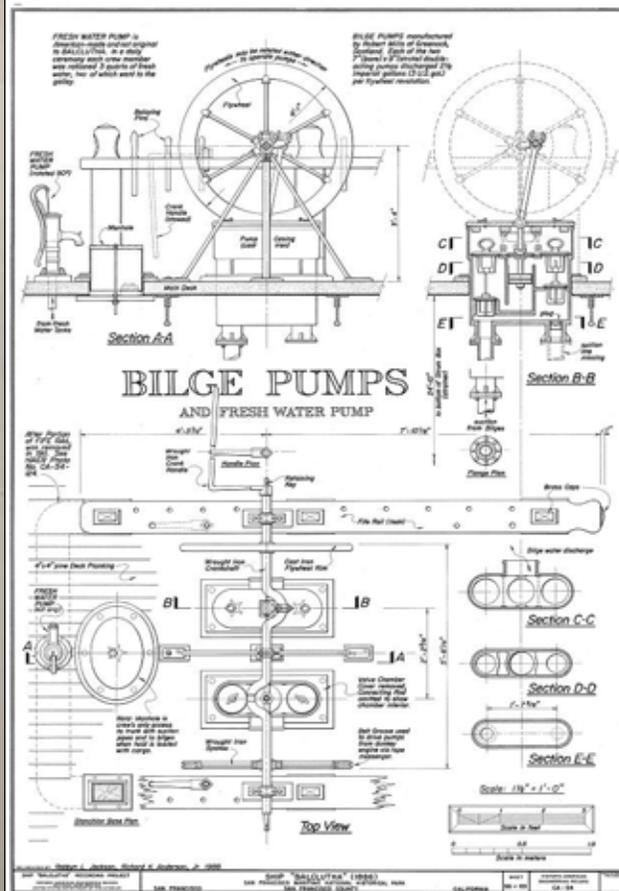


Figure 67. Drawing of *Balclutha*'s bilge pump (NPS 2016).

The use of copper for a pump assemblage, as seen on *De Braak*, is not uncommon for a naval vessel of the late eighteenth century; with the industrial revolution and the development of iron foundries in the nineteenth century, pump assemblages were replaced with less expensive cast iron, like the section observed at 1Ba704 (Oertling 1996:52). The size, form, and characteristics of this section of pump suction pipe are what is expected on the wreck of a circa 1850, medium-sized, American schooner.

All recovered and field-observed metal fasteners exhibited the characteristics of iron, especially in terms of their malleability. Three representative artifacts, FS 3, FS 4, and FS 9, were analyzed through XRF scans to provide information regarding the iron's composition. XRF is a non-consumptive method to determine the elemental composition, or chemistry, of a material by measuring the secondary X-ray, or fluorescent, emitted while the sample is subjected to a primary X-ray source. XRF technology records the unique elements specific to a material (ThermoFisher Scientific 2019). To assist in the scanning and to further analyze the artifact, FS-4, an iron drift, was sectioned in the laboratory at the NGS (**Figure 68**).

Results of the analysis show the sample material tested from 1Ba704 is 98 percent (Fe) iron (**Figure 69**). The sample also included 0.33 percent Mn (Manganese) and 0.05 percent Mo (Molybdenum). The latter is found only in oxidation states in minerals. Based on the fact that the fasteners are nearly pure Fe, wrought iron, made from pig iron, we surmise that these were manufactured in the early to mid-nineteenth century, ca. 1830–1870. The iron may have been imported from the mid-west, but in the period, the procurement of iron generally came from regional foundries as the costs were lower and direct supply was simpler. Mobile had two iron manufacturing facilities, J.D. Spear and Company and Skates & Company, as well as foundries in other Alabama counties north of Mobile before the American Civil War (Lakwete 2012).



Figure 68. Sectioning FS-4 and result.



Figure 69. Spectra-graph results of iron artifacts from 1Ba704 (National Geographic Society 2019).

Answering an inquiry from a Northern speculator in 1871 on the costs of building a foundry in postwar Alabama and shipping the product to New York, an iron-founder answered that the costs of manufacturing hot blast charcoal iron pigs would range from \$17.50 to \$20.00 a ton, and that the cost of transportation varied “the highest rate I have known was seven dollars per ton, by rail by way of Selma...to Mobile, and from there by sea to New York at the rate of three dollars per ton” (Armes 1910:230). In summary, shipping iron long distances in the era could increase the cost by 50 percent or more. In their analysis of an iron hull plate from the wreck of USS *Monitor* (1862), Boesenberg (2006:627) notes, “the iron ore used for the *Monitor* probably derived from areas near to the construction and manufacturing sites... typically, the pig iron used for producing the wrought iron was purchased from local blast furnace proprietors”.

Alabama had an established and wide-spread iron industry that, by 1850, was the most active producer of iron in the Gulf region, and of sufficient capacity to make Alabama the second largest producer of iron cannon and ironclad warships for the Confederacy at the Selma Arsenal and Naval Yard between 1862 and 1865. The iron used for the fasteners on 1Ba704 could have therefore come from Alabama. The high percentage of Fe at 98 percent, and the 0.33 percent of Mn is within the range of percentages noted for Alabama gray iron ore, which averaged 0.30 percent Mn as tested by the Alabama Geological Survey (Burchard 1907:159); an 1898 account of Alabama iron production notes that, “we have had to depend upon the lime and the magnesia as desulpherizers, as the ores seldom carry more than 0.30 per cent of manganese” (Phillips 1898:337).

CORE METHODOLOGY

As previously noted, the UT and Western Carolina University have partnered with the NGS to use 1Ba704 as a test case to determine if environmentally derived human DNA can be gathered and analyzed, to assist with identifying the shipwreck as potentially *Clotilda*. This work is pending, and its results will be reported separately. The collection of wood samples for this aspect of the project was already noted in an earlier section.

SEARCH archaeologists additionally collected two cores of sediment from inside 1Ba704's hull down to the bilge level while collecting the three wood samples from as far down as feasible from the interior ceiling planking (**Figure 70**). Lab analysis, as noted, is ongoing and includes taking 10 extractions of alluvial soil from each core and 10 extractions from the wood samples. The examination hopes to assess the eDNA profiles of the core samples and presence of human DNA (Cabana et al. 2018). Core sediment and wood samples are currently under examination for DNA with impending results.

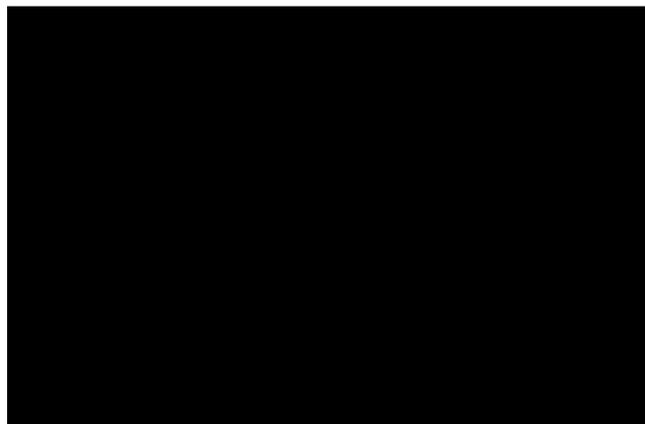


Figure 70. SEARCH archaeologist Kyle Lent caps one of the cores from 1Ba704.

OVERALL VESSEL CHARACTERISTICS

1Ba704 is the wreckage of a wooden-hulled sailing vessel of the mid-nineteenth century, with a dislodged centerboard. As noted above, planned mechanical excavation of the wreck's interior was terminated due to safety. As a result, the bottom of the hold, keelson, and mast steps were neither cleared nor observed. The shape of the hull's body was not sharp. Based on the hull form and dimensions, and the presence of the centerboard, the wreck in our opinion represents a full-formed two-masted schooner, the most common rig for a vessel of this size and in the Gulf region. The probed depth of hold is approximately 7 ft (2.1 m) and the beam is 23 ft (7 m). Although the stern could not be located because it was buried, a logical projection of the hull form, working with established length to beam ratios and following the beginning of the hull's curve as it moves aft from midships on the port side, would project the length of the exposed hull, as delineated by sonar at 78 ft (23.77 m) to only extend several more feet beneath the mud. The hull is approximately 85 to 90 ft long (25 to 27 m) (**Figure 71**).

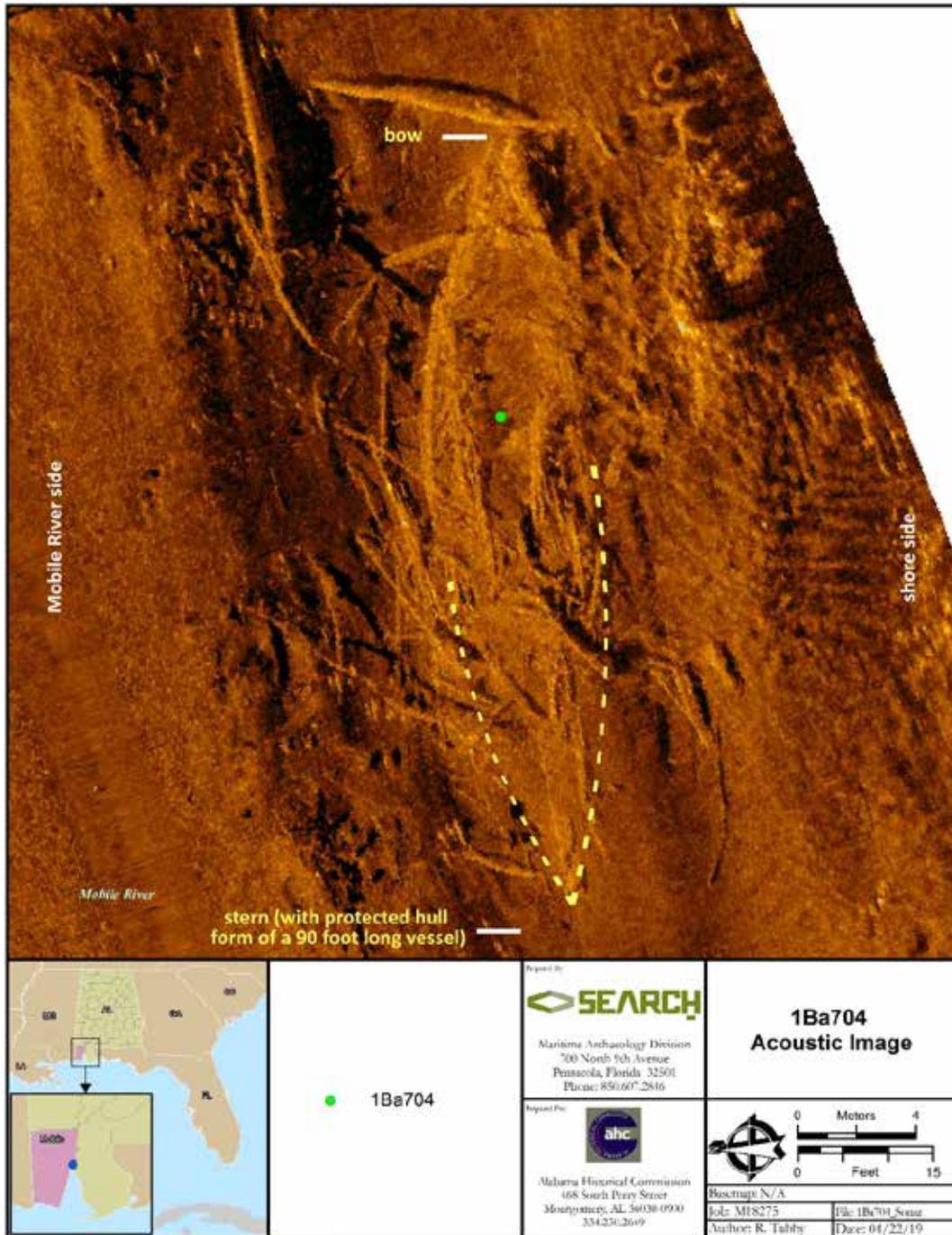


Figure 71. Projected hull form with 1Ba704's assumed overall length of 90 ft (27 m).

Another identifying characteristic of a vessel of the period is tonnage. Tonnage is neither the weight nor the displacement of a ship, rather it is a calculation based on the dimensions of the vessel that determines how much cargo it can carry. The calculation is based on the rule that 95 cubic ft (28 cubic m) of space equals one ton of cargo and uses the following formula:

$$\frac{L - 3/5 B) \times B \times 1/2 B}{95}$$

L is the length of the vessel on deck, B is the breadth or beam. The 95, again, represents the cubic space for a ton of cargo (Crothers 2013:6). This system was employed when *Clotilda* was registered, with the 86 ft (26 m) length, the 23 ft (7 m) beam and the 6 ft (1.8 m), 11 in (27 cm) depth of hold equaling an admeasured tonnage of 120 tons. It follows, that employing the same formula, 1Ba704 is admeasured at approximately 120 tons.

As previously revealed, wood analysis demonstrates that the vessel was constructed in common Gulf Coast fashion with white oak frames and southern yellow pine for the inner and outer hull planking and for treenails. All recovered samples of metal ship fasteners were near-pure iron, based on XRF analysis. One outer hull plank, which lay detached from the hull on the starboard side, retained iron spikes, which were counter-sunk and capped with pine plugs. The plank had a single line of evenly spaced holes consistent with metal sheathing that was removed.

Planks observed onsite that retained original form were cleanly cut and finely shaped, the fasteners, with treenails (with a split end widened at the outer end with a thin hardwood wedge) evenly spaced, which is consistent with a level of construction that

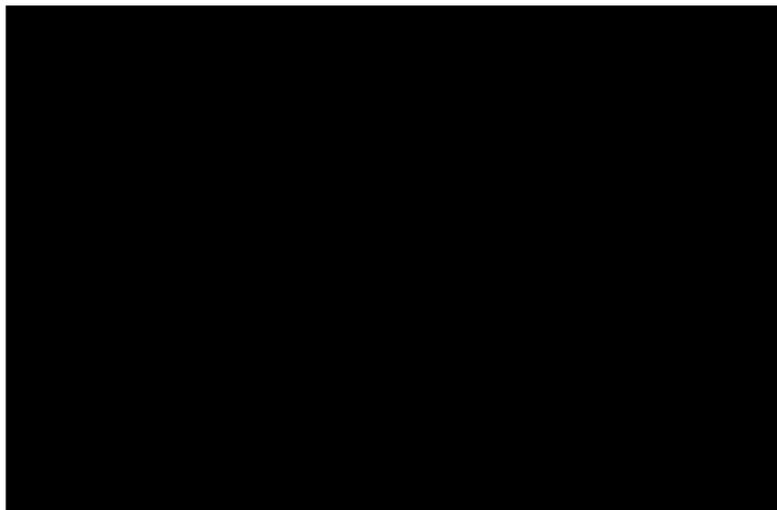


Figure 72. SEARCH and AHC archaeologists examine an outer hull plank from 1Ba704.

evidences both skill and experience (Figure 72). The counter-sinking of the iron spike heads on the outer hull planks, and capping them with wooden treenails or plugs, is a shipbuilding practice that requires time and skill. The attachment of planking in a shipyard required careful shaping of the plank to conform to the sheer and curve of the hull's frames, and for each plank to fit, edge on edge with a slight gap to allow for caulking. Skill was key as "planks are not parallel for their entire length but have their widths graduated" so that a length of plank can conform to a narrow space as they curve to meet the stem, "the narrowest space to fill" as well as at the midships, "the widest space to fill" (Desmond 1919:56). Prior to fitting a plank, holes for the fasteners were bored to facilitate driving them in. The plank was then:

tightened into position by means of chains, shores and wedges...the plank is first tacked or stuck in position with...boat spikes which are driven by hand. Two spikes are driven at the ends and one in between at every frame, after these spikes are driven, the shores and wedges may be removed....It is now ready to receive the final fastenings of...treenails and iron drift-bolts (Estep 1918:67).

This practice of fastening was observed on 1Ba704. The counter-sinking of the spike heads with a set punch is particularly time-consuming and fine detail work. This method, particularly in the mid-nineteenth century was a measure to, "cover the fastening for the sake of appearance or as protection from water or weather" (Crothers 2000:74-75) (Figure 73).

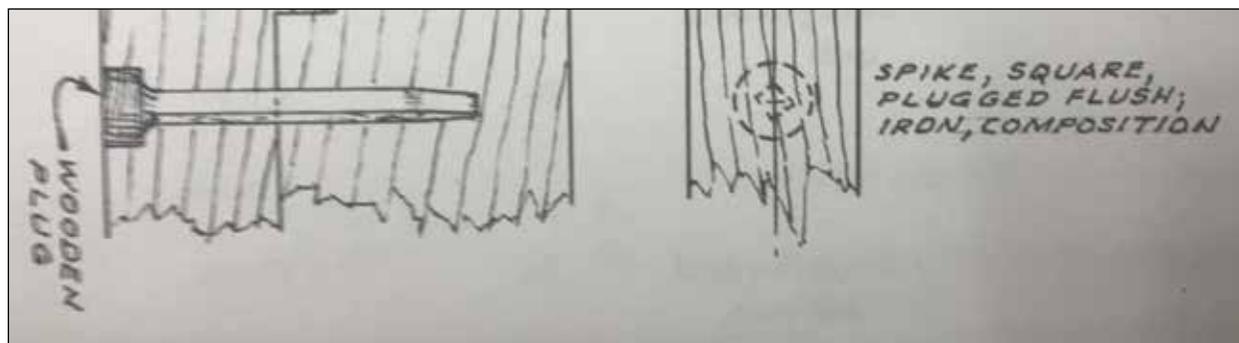


Figure 73. Counter-sunk iron spikes in mid-nineteenth century ship construction (Crothers 2000:63).

It not only created a flush appearance for an outer hull, but also served as a protective measure when an iron-fastened vessel was copper-sheathed, as 1Ba704 apparently was. In 1852, British naval constructor Fincham explained the problem with iron fasteners and copper sheathing:

Formerly, ships were fastened with iron throughout; but this species of fastening, after the bottoms of the ships were coppered, was soon destroyed, and though great pains were taken to prevent the communication of the two metals, still oxidation took place very fast, when subject to the action of salt-water, and the iron was soon destroyed (Fincham 1852:Part 2, 42).

He went on to note that:

A much greater degree of oxidation goes on when the iron fastenings are subjected at the same time to the action of salt-water and to that of the acids contained in the oak, than when exposed only to the oxygen of the atmosphere, or in fresh-water; but an active galvanic arrangement is produced, and oxidation goes on still faster when the bottom is coppered, and there are iron fastenings; because then there are two metals possessing different degrees of oxidability, combined with a fluid (fresh or salt water) that is capable of oxidating either (Fincham 1852: Part 2, 42).

The plugs observed on the outer hull plank are therefore consistent not only with nineteenth century practice, but specifically tied more to the mid-nineteenth century. The practice transitioned into iron shipbuilding after mid-century. In 1867, Lloyd's formally adopted what had been a practical shipbuilding practice into a rule for classification of ships that allowed sheathing of iron-framed and fastened ships with wooden hulls if the fastener heads were properly "cemented" or covered with a wooden plug (McCarthy 2005:120).

This adherence to quality shipbuilding practice is reflected as well in the apparent metal sheathing of the hull of 1Ba704 as evidenced by the line of sheathing tack holes and the counter-sunk and capped spikes below the line of the holes. Introduced at the end of the eighteenth century, at first with British naval vessels, the use of copper as sheathing for ship's hulls to protect the bottom from infestation and consumption by marine borers expanded and became common practice for deep-water sailing vessels by the end of the first quarter of the nineteenth century (Crothers 2000:328–330; McCarthy 2005:102–105). As well, copper reduced fouling of the hull with marine growth; because fouling retarded a ship's speed, sheathing was also favored by owners and masters seeking to employ fast ships in certain trades. An analysis of coppering in merchant fleets between 1777 and 1816 found that 36 percent of coppered vessels engaged in Britain's West Indies trade, 23 percent were privateers, 21 percent were slave ships, and 7 percent were vessels trading with the Americas (Rees 1971:89).

The expense of copper, and the necessity of replacement every several years due to wear led to experiments and the development of alloys for sheathing. Frederick Muntz of Britain patented a "naval brass" or "yellow metal" in 1832 that in time became known and sold as "Muntz metal." By the 1850s, Muntz metal was exported to shipyards around the world, including the US (Crothers 2000:330, 335; McCarthy 2005:115–118). At 60 percent copper and 40 percent zinc, it was still prone to problem of oxidation when in contact with iron or steel. The shift to iron and steel vessels decreased the demand for sheathing, and although it was employed through the 1870s, by the end of the nineteenth century, wooden ship bottoms were protected with regular applications of "anti-fouling paint."

In summary, the characteristics of 1Ba704 indicate that it was built well, by a master shipwright, with a well-trained shipyard team, in the Gulf region during the mid-nineteenth century, i.e. prior to ca. 1875. Based on the archaeologically documented dimensions, 1Ba704 fits the archival record for *Clotilda*; the dimensions, especially the depth of hold, are proportional for a schooner admeasured in the range of 120 tons.



This less navigated section of the river where 1Ba704 lies evolved over time into a larger maritime cultural landscape as an apparent ship graveyard. All sites within this maritime landscape are considered potentially eligible for listing in the NRHP. As this wreck is likely *Clotilda*, SEARCH is of the opinion that it is individually potentially eligible for listing in the NRHP and may be a candidate for designation as a National Historic Landmark (NHL).

RECOMMENDATIONS

INTRODUCTION

At the conclusion of this phase of research, field work, and laboratory analysis, SEARCH affirms that 1Ba704 is likely the wreck of *Clotilda*. The archaeological evidence observed during this study matches not only the historically known aspects of *Clotilda* but also what is known of the expected site formation processes associated with the scuttling of the schooner. Nothing discovered is inconsistent with those characteristics expected for *Clotilda*. As noted, although a rigorous assessment of the evidence against the questions in the project research design has not revealed any aspect that is counter to that identification, investigation has not found an artifact with a ship's name on it nor any evidence that clearly speaks about this vessel's engagement in the slave trade.

While SEARCH has completed a rigorous program of archaeological testing with limited excavation in zero visibility, and detailed archival research, there may be requests for a definitive identification of the site as *Clotilda*. Additional, and more extensive and intrusive archaeological excavation is one option, and the only option that potentially could yield additional material evidence construed as definitive. The recommendations that follow address this option. Even post-completion of a detailed, or complete excavation, "definitive" identification may be difficult or impossible.

With that caveat, SEARCH offers the following recommendations with the view that this site should be treated as the wreck of the last ship to bring enslaved persons to the US. This association, although representing a horrific aspect of history, is not only historically significant, but also freighted with meaning for people from many perspectives. A variety of conflicting views regarding handling the wreck site may follow an announcement of this report's conclusions. The recommendations made here are not intended nor should be taken as political. These are based on four decades of experience in dealing with historically and archaeologically significant sites with iconic and, at times, controversial associations.

MANAGEMENT AND POTENTIAL PARTNERS

AHC is the legal management agency and steward of 1BA704 on behalf of the people of Alabama and the nation. AHC's status should not only be acknowledged but also maintained to ensure the protection of the wreck for future generations. The first step moving forward is to assist the AHC in whatever steps are necessary for the immediate site protection and security, both for the short- and long-term.

AHC's dedication to public consultation, honest interpretation, and best practices in preservation offer a clear and strong path forward. The existing relationship and close work with Africatown

sets a standard by which these nationally, if not internationally, significant sites of Africatown and *Clotilda* are recognized. AHC makes decisions regarding these resources with the understanding that they are powerful and significant locally and regionally, especially to the descendants of those brought against their will to America in the crowded hold of *Clotilda*. First and foremost, this is their story. Proactive public engagement and inclusive interpretation is essential. Key aspects for discussion beyond security should address issues of further archaeological work, which also must continue to address professional standards and best-practices for archaeology, but also to address questions of interpretation, memorialization, public stewardship and education.

Obvious issues surround the preservation, memorialization, and management of sites that reflect negative aspects of history, in this instance the enslavement of people. In addition to the outstanding work done by the AHC, two other partners in this project have considerable experience; NMAAHC, and NPS. Both the NMAAHC and the NPS are key, founding participants in the SWP. Their advice and participation will highly benefit the process as preservation and memorialization plans advance.

SIGNIFICANCE AND THE ISSUE OF PRESERVATION IN SITU

The first step in preservation planning is a formal assessment of significance under the criteria of the NRHP. SEARCH has to offer a recommendation regarding the significance of this site. A supporting narrative for nomination of the Twelvemile Island ship graveyard (Twelvemile Island Ship Graveyard), which encompasses Site 1Ba704, follows the recommendations in **Appendix A**. A supporting narrative for the individual nomination is part of this report. It is the opinion of the SEARCH principal investigator, based on the multiple studies of ships and shipwrecks for designation as NHLs, that 1Ba704 as the likely *Clotilda* is also a strong candidate for possible designation by the Secretary of the Interior as an NHL.

As a former member of the International Council on Monuments and Sites (ICOMOS) International Committee on the Underwater Cultural Heritage, with responsibility while on that body for assessing the criteria for designation of shipwrecks as World Heritage Sites, Dr. Delgado believes 1Ba704 could qualify for World Heritage status as the likely *Clotilda*.

In the management of historic shipwrecks, a long-established principle is recognizing that these sites represent more than one inherent value (Delgado 1988). The Implementing Guidelines for the Abandoned Shipwreck Act of 1987 (Pub.L. 100-298; 43 U.S.C. 2101-2106) codifies it.

The recommendations made in this report are in accord with the guidance provided for State management of historic shipwrecks under the Abandoned Shipwreck Act, which also include using the NRHP as an assessment tool. These recommendations also incorporate the advice of the 1996 United Nations Educational, Scientific and Cultural Organization (UNESCO)/ICOMOS

Charter on the Protection and Management of the Underwater Cultural Heritage, which offers as the fundamental principles:

- The preservation of underwater cultural heritage in situ should be considered as a first option.
- Public access should be encouraged.
- Non-destructive techniques, non-intrusive survey and sampling should be encouraged in preference to excavation.
- Investigation must not adversely impact the underwater cultural heritage more than is necessary for the mitigatory or research objectives of the project.
- Investigation must avoid unnecessary disturbance of human remains or venerated sites.
- Investigation must be accompanied by adequate documentation (ICOMOS 1996).

While the ICOMOS Charter is advisory and has no regulatory authority in the US, this project followed the fundamental principles. One other aspect of the ICOMOS Charter that is relevant is the issue of the public. The Charter's guidelines offer a clear statement pertinent to this wreck and its future management:

Archaeology is a public activity; everybody is entitled to draw upon the past in informing their own lives, and every effort to curtail knowledge of the past is an infringement of personal autonomy. Underwater cultural heritage contributes to the formation of identity and can be important to people's sense of community. If managed sensitively, underwater cultural heritage can play a positive role in the promotion of recreation and tourism (ICOMOS 1996).

Below SEARCH offers a series of management recommendations.

RECOMMENDATIONS

These recommendations address issues such as additional field work, the issues surrounding full recovery, and the recommended alternative. The latter is the stabilization of the site and embarking on a consultative public process to determine if a National Slave Ship Memorial could be established at Africatown. That memorial could incorporate 1Ba704 as part of the memorial.

The first and immediate step, as previously noted, is to provide the immediate and longer-term security of the site following any announcement of the project results.

Option 1: No Further Action Beyond NRHP Nomination

SEARCH starts with assessing a “no action” alternative. This would entail no further archaeological fieldwork on the site beyond nominating it to the NRHP with the other wrecks and resources of the Twelvemile Island Ship Graveyard, and then, if desired, pursuing a separate more detailed NRHP nomination at a national level of significance for 1Ba704 as the likely *Clotilda*. SEARCH does not recommend this alternative. The nomination should be completed very soon.

Option 2: Limited Archaeological Excavation and Condition Assessment

Additional archaeological fieldwork is an alternative to further define the extent of 1BA704 in areas that previous projects were not able to access. This process would require permits from AHC and USACE as the resource is NRHP-eligible and therefore no longer covered under a nationwide permit; the process will require a more involved Section 106 consultation under the provisions of the National Historic Preservation Act.

SEARCH recommends following priorities for additional archaeological work:

1. Excavation inside the hull, which is the area of the wreck most likely to yield additional information including more discrete evidence of the wreck’s use in transporting captives for enslavement. Artifacts will provide additional details about vessel age, use, and possibly disposal methods. Items may help identify cultural affiliation of crew or other people onboard. This work would entail a more industrial approach to the overall work while adhering to an archaeological methodology and standards.
2. The stern is of particular importance to confirm its condition and any evidence of the aft cabin.
3. Exterior excavation of the hull by the stern will also likely encounter sheathing, especially in areas unreachable by any later salvage attempts or recovery.
4. Recovery of the disarticulated timber and other artifacts, such as the section of the centerboard trunk and the pump log, for additional documentation and to assess options for conservation, display or reburial on the site.

Current results also lack an adequate assessment of the overall 1Ba704 condition or the factors influencing its preservation. Although the wreck is resting against the shallow river bank on its starboard side, an erosional channel is likely along the port side for approximately one half to two thirds of the length of the hull.

The wreck may be vulnerable to extreme current events, such as seasonal winter flooding. Furthermore, the marine borers, which were alive during the samples recovery, colonized the wreck. SEARCH does not have a baseline assessment of whether their consumption of the wreck

is progressive. However, given the environmental conditions of the site, namely brackish water with increased salinity on the river bottom where the wreck is located, the logical conclusion is that marine borers continue the wood consumption.

Consultation and active involvement by scientists familiar with the marine environment and species will be a necessity.

Option 3: Partial or Full Recovery of the Vessel and/or Artifacts

If complete or even partial recovery of 1Ba704 is desired, the work would require an industrial scale effort due to the hazards at the site, including current and the lack of visibility. The recommended industrial scope would, in SEARCH's opinion, require a cofferdam, possible dewatering, excavation and then recovery through progressive dismantling, with immediate placement in an adjacent, custom-built, large conservation facility.

While additional archaeological excavation and recovery of individual artifacts is, in SEARCH's opinion, necessary, the condition of the hull as noted above strongly suggests that it cannot be raised intact. The wreck may collapse or disintegrate if completely excavated, or partially tunneled beneath the keel to place slings for an attempt to raise it.

After a century and a half of immersion in water, the wood, especially the soft wood, i.e. the southern yellow pine planking, has become saturated in addition to biological attack, and has likely lost structural integrity.

The attempted raising of the Civil War ironclad USS *Cairo* from the Yazoo River in 1962, after excavation of the mud that had buried it and the placement of slings, ended with the lift failure. USS *Cairo* broke into large sections, spilling broken portions of the ship and artifacts back into the river. Although it may be possible to carefully excavate and engineer an adequate cradle or other means by which to raise 1Ba704, an industrial project of that scale would likely cost millions of dollars.

Some projects successfully raised mostly intact wooden shipwrecks. The notable examples are:

- The Swedish Warship *Vasa* (1628) Stockholm (Hocker 2006).
- A series of Viking vessels (ca. 1000) Roskilde, Denmark (Olsen and Crumlin-Pederson 1968).
- A Hanseatic cog (ca. 1400), Bremen, Germany (Hoffman and Schnall 2003).
- The French ship *La Belle* (1682), Austin, Texas (Bruseth and Turner 2005).
- The English carrack *Mary Rose* (1545), Portsmouth, England (Marsden 2003).
- CSS *Neuse* (1863) at Kinston, North Carolina (Bright et al. 1981).

These recoveries range from complete recovery through raising in a cradle or with slings, dismantling underwater and raising them, or placing a cofferdam around the wreck, dewatering

the interior, excavation and complete dismantling of the hulls, and raising them. Some of the earlier recoveries were non-archaeological (*Vasa*, *CSS Neuse* and *USS Cairo*) and quick, albeit at some cost.

The other, archaeologically-focused recoveries involved considerable expense in order to properly treat the wrecks as significant sites, thoroughly document them in situ prior to recovery, stabilize, and then carefully, systematically recover them. The costs were significant; the excavation and recovery of *La Belle* reportedly cost nearly \$3 million dollars.

Conservation necessarily follows recovery, whether recovery was archaeological or not. The natural and chemical processes of immersion have different effects on different materials; wood varies according to species and density; iron and copper undergo different changes. Conservation must begin immediately to halt additional change once an artifact or a vessel is removed from its archaeological context. Wood begins to dry and collapse, metals corrode and fracture as salt dries and resumes crystalline form inside the artifact.

One factor in the conservation of shipwreck materials from a salt water (or brackish) environment is that the processes for conservation of metal are destructive for wood, and conversely the treatment for wood is destructive to the metals. In the case of 1Ba704, even if raised intact, the vessel would then require complete disassembly for separate conservation treatment of its various elements. Fix (2015) offers a detailed review of the issues and their relevance a project such as 1Ba704 might face. Fix is highly recommended as the most up to date and comprehensive study, especially because the writer is an archaeological conservator.

Major conservation efforts were necessary for the Viking ships at Roskilde, for the Bremen cog, *Mary Rose*, *Vasa*, *La Belle*, and after much loss and degradation, for the stabilization and partial reconstruction of the largely fragmentary remains of *USS Cairo*. In all these cases, major conservation laboratories were required and the projects lasted decades, especially in the case of *Vasa* and *Mary Rose*. Highly specialized teams worked through those years on the various projects; conservation also involved artifacts of various types and materials found within the wrecks.

These major projects concluded with each conserved wreck and its associated artifacts located within a specially built, climate-controlled museum. Simply stated, these were national-scale projects, funded primarily by their respective governments, and at costs that, although not publicly released, are presumably totaled tens of millions of dollars in the economies of the times. Since the work on *Mary Rose*, no other wooden wreck of any major size was completely archaeologically recovered and conserved due to cost. The UNESCO guidelines' recommendation of preservation in situ is based in part on pragmatism.

Smaller vessels, such as Roman and Byzantine wrecks ranging from 22 to 49 ft (7 to 15 m), were recovered from sites in Italy and Turkey; in Sydney, Australia, the remains of a small wooden vessel of the colonial era, ca. 1850, were raised for conservation in 2018. These costly projects were focused on vessels of smaller size than 1Ba704.

Option 4: In Situ Preservation

The recommended alternative is preservation in situ after additional work on the site to stabilize it. That work includes more extensive archaeological excavation. In this process, the displaced elements of the wreck, such as the centerboard trunk, the pump log, planks, and other artifacts when encountered could be recovered, conserved and made ready for museum display. Reburial of 1Ba704, essentially encapsulating it in river bed, no longer exposed to current or to potential human disturbance, can stabilize the site. With the caveat of unknown conditions and costs, partial recovery of elements of the hull or structure as well as artifacts could be considered as part of Option 4.

Among a few examples are two nineteenth century wrecks in Australia, *Clarence* and *James Matthews*, that were preserved in this fashion post-excavation (Richards 2011:33; Richards et al. 2016:241). Another major example is the Spanish galleon/whaler *San Juan*, a sixteenth century wreck completely excavated by Parks Canada in Red Bay, Newfoundland, dismantled, documented and then carefully packaged and reburied in situ (Stewart et al. 1995).

The discussion on preservation in situ generally follows a more complete program of excavation, particularly where shipbuilding techniques were scarcely documented or unknown, such as *San Juan*. Or where while the shipbuilding techniques were better known and documented, such as a nineteenth century vessel, the intactness of the wreck essentially preserved that information as an entity, i.e. an historic structure, as opposed to data alone. *James Matthews* is a particular case in point:

James Matthews (1841) was a copper-sheathed, wooden-hulled vessel, constructed in France in the late 1700s. During the 1830s, it operated in the illegal slave trade between Africa and America until it was captured by the British in 1837. The ship was re-registered and in 1841, the ship sailed for the Swan River colony in Fremantle, Western Australia but the day after arrival in Careening Bay, near Woodman Point, a violent storm struck and the vessel was wrecked on 22 July 1841. The *James Matthews* has been identified as historically and archaeologically important not only because of its significance to the early colonial history of Western Australia but because the near-complete starboard side of the vessel remains intact. As most of these types of vessels were destroyed when captured under the anti-slave trade legislation of the time, it is one of the world's best-preserved examples of a 19th century purpose-built illegal slaver. However, over the past few years, the site has been under considerable threat from increased exposure due to natural near-shore sedimentary processes and localized industrial activity (Richards 2011:33).

In this context, as 1Ba704, likely *Clotilda*, is relatively well-preserved archaeologically, and rests in an environment where it could be likely preserved after study at lesser risk and cost, SEARCH proposes that the approach taken with *James Matthews* is the most relevant example of in situ preservation.

SEARCH is not a marine engineering company, and suggests that a marine engineering firm is retained if this option is chosen to assess whether encapsulation requires the placement of a barrier, such as sheet piling, to surround the bow, port side and stern area, and how-to best cover 1Ba704 with an environmentally neutral shield prior to reburial. This will involve detailed study of both the natural and physical processes at the site, as well as detailed consultation with a conservator. A recent review of in situ preservation also notes that:

Both the natural conditions and the material which is used for reburial have a big impact on the effectiveness of this method. Continuous monitoring is required in order to ensure preservation in the long term (Khakzad and Van Balen 2012:470).

In Australia, as noted, two nineteenth century wooden shipwrecks, *Clarence* and *James Matthews*, were preserved in situ through reburial. The assessment made on each site is pertinent to discussion of needs for 1Ba704:

The characteristics of the pre-disturbed local burial environment and the extent of deterioration of the major material types were assessed by conducting on-site conservation surveys on both sites. The surveys included: pH profiles, pilodyn (density) measurements and maximum water contents of structural timbers, corrosion surveys of any metal features and physico-chemical, geological and microbiological analyses of the pre-disturbed sediments. This information enables the determination of site stability and the major deterioration processes so the most appropriate in situ preservation strategy can be selected. The results from these conservation surveys are also used as baseline data for long-term comparative analysis so the success of the applied mitigation strategy can be quantitatively assessed (Richards et al. 2016:241).

Following such an assessment, and after encapsulation, the site will require ongoing assessment; “long-term monitoring must become an integral part of these management programs in order to quantitatively evaluate the effectiveness of the *in-situ* preservation techniques employed” (Richards et al. 2016:240). In the case of *Clarence* and *James Matthews*, a scientific monitoring program was developed:

analyzing sediment core and sacrificial samples recovered from the reburied areas to quantitatively determine whether the applied mitigation strategy will be conducive to long-term site preservation. Analyses included the chemistry of the seawater, sediments and the associated pore water (pH; redox potential, salinity, dissolved oxygen levels, total iron and organic content; sulphide and sulphate concentrations; nutrient [nitrogen and phosphorus] levels) and the type and nature of the sediments (moisture content; particle size distribution). The sacrificial samples were analysed for maximum water content (U_{max}) (Richards et al. 2016:242–243).

The results, published after two years of post-burial study, were that in situ preservation was successful for *Clarence* (Richards et al. 2016:248, 251).

Memorialization and Public Engagement

If in situ preservation is the selected preservation approach for 1Ba704, SEARCH notes that the general location of 1Ba704 is already the site of a pilgrimage from Dahomey in response to the initial mistaken identification of the other wreck as *Clotilda* (Raines 2018b). The site of 1Ba704 might, if encapsulated and protected, be designated as a memorial with some form of memorial structure that could span but not impact the site.

SEARCH endorses the idea that Africatown, as a community founded by and home to the descendants of *Clotilda*'s captives, as well as 1Ba704 as the likely wreck of *Clotilda*, could be the setting for a national slave ship memorial. Alabama's precedent with the National Lynching Memorial is one factor that argues for a slave ship memorial in Africatown. Furthermore, the 400th anniversary of the arrival in Jamestown of the ship carrying the first enslaved people in America makes relevant a national memorial to the victims of the slave ships. It makes sense to place such a memorial at the community that is the legacy of the very last vessel to commit that crime. While a process of public consultation and much discussion will follow, SEARCH stands ready to assist in whatever way it can. SEARCH was privileged and entrusted with the task of undertaking a comprehensive program of archaeological and archival research, and laboratory analysis to resolve the question of where *Clotilda* is located. As it turns out, SEARCH now believes that *Clotilda* was always more or less "hidden in plain sight," just as some had suggested.

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GLOSSARY

Admeasurement: A term used in wooden shipbuilding that described the mathematical means by which a ship's basic dimensions were used in a formula to determine how much cargo a ship's hold could carry (and be taxed for). This figure was then cited as the ship's **tonnage**.

Aft: Toward and at the rear of a ship. In naval and nautical use, it is an adverb (to go aft) as well as an adjective (the aft cabin).

Aground: When a vessel is resting hard on the land at the bottom of a body of water and in contact with it.

Aloft: Up high, as high up on a mast; when sailors went aloft in the days of sail, they were climbing up a mast.

Astern: Toward the back, or the aft end of a ship. It also can mean when a vessel is following, or is moored behind another ship.

Ballast: Weight added inside a hull to stabilize a ship; in earlier times, ballast was usually stone or gravel. Military ships of the eighteenth and nineteenth centuries carried iron pigs known as kentledge as ballast. In modern vessels, water and fuel stowed in tanks are used as ballast.

Beam: The extreme width of a ship. When officially registered, this is the legal "width" of a ship.

Berth: Both an anchorage or mooring place as well as where a sailor sleeps.

Bilge(s): The inside bottom of a ship.

Billethead: A simple ornamental cap on a ship's bow that decorates it instead of a carved figurehead.

Boat: A small craft capable of being hoisted and carried onboard a ship.

Bolts: Strong iron, copper or bronze pins used in great numbers in wooden shipbuilding to fasten timbers together.

Boom: A horizontal spar hinged at the forward end of a mast, or a spar projecting from another piece; the jib-boom extends forward of the bowsprit, for example.

Bowsprit: A spar extending forward from the prow (bow) of a vessel.

Breasthooks: Wooden knees fitted at an angle inside the bow and stern of a ship to help reinforce these areas of the hull.

Brig: A two-masted square-rigged vessel.

Brigantine: A two-masted vessel with the fore mast square-rigged and the aft mast fore-and-aft rigged.

Bulkhead: A wall or partition inside a ship.

Bull's eye: A wooden fitting, shaped like a donut, through which lines pass.

Bulwark: A section of a ship's side carried up beyond the main deck to protect the decks from heavy weather.

Cabin: Quarters on-board a ship for officers.

Camber: The curve of a ship's deck from beam to beam; ships are built to shed water (also see **shear**).

Carvel: In wooden shipbuilding, planks laid on hull with the edges abutting one another to make a smooth side.

Cathead: Catheads are timber that project out from the sides of a ship's bow at the deck level; the gear for anchors is attached to them, and these are the main beams by which an anchor is handled.

Ceiling: Planking inside a ship's hull.

Centerboard: A centerboard is a wooden structural member that could be raised and lowered within a watertight housing inside the hold and known as the centerboard trunk. It is offset from the keel (and thus does not pass through it). It acts as an additional "keel" to stabilize a vessel in deep water sailing.

Chainplates: Round (later flat) iron bars fitted to the bulwarks and the sides of the hull on each beam (side) of a mast and slightly aft of its position. The shrouds, or the rigging used to hold the masts in position, run from the chainplates to the top of each mast.

Clinker: Both partially burned coal and in wooden shipbuilding, a term used to describe planks laid on a hull with overlapping edges.

Clipper: A fast sailing ship of the nineteenth century.

Cofferdam: A waterproof compartment or walled area.

Concretion: A solid mass that forms around metal objects and artifacts, composed of corrosion byproducts and the surrounding sand or silt.

Conservator: A scientist trained in the treatment of artifacts to stabilize, stop ongoing corrosion within, and restore artifacts.

Cordage: Rope and line of all kinds on-board a ship.

Davit: A fixed or movable crane on the side of a ship used to raise and lower boats.

Deadeye: A circular wooden block with a groove for and three or more holes; it is used to fasten and tighten the shrouds that support the masts.

Deadlight: A hinged metal cover for a port; also a heavy glass set flush with a deck to let light in below.

Depth of Hold: The officially registered measurement of the space in the hold from the ceiling (bilge) to the inside of the main hatch; in lay terms, this was the "head room" inside the hold.

Displacement: The weight of water displaced by a ship and the standard means of expressing the size of a warship.

Draft: The depth of a ship below the waterline.

Drift: A metal fastener, usually an unthreaded bolt, driven through timbers to fasten them to one another.

Fasteners: The metal and wooden hardware used to fasten or hold a wooden ship together.

Fathom: A maritime measure of depth equivalent to 6 feet.

Fore: The front or forward end of a ship.

Forecastle: The forward section of a ship's hull; the term originated with elevated wooden fighting stages, hence a "castle" with another aft, thus the "stern castle." The term later came to mean an area forward where the crew berthed and ate.

Frame: A structural element that forms the hull; known colloquially as a ship's "rib." Frames for wooden ships were built up from smaller pieces known as futtocks.

Futtock: An older term used by wooden shipbuilders to foot hooks, or wooden timbers that together composed the full form of a wooden frame.

Galleries: An old form of nautical balcony, sometimes housed over with windows that were fitted along the stern of larger wooden ships.

Galley: The area of a ship where meals are prepared; in ancient to Renaissance times, the term for rowed (oared) warships.

Gammon: Gammons are lines that fasten the bowsprit to the bow of a vessel.

Garboard: The lowest strake or plank on a hull, butting up against the keel.

Gudgeon: The lower part of the hinged assembly that allows the rudder to move to steer a ship; a pintle, with its projecting pin, fits into the gudgeon.

Gunwale: The upper edge of a boat's side.

Hatch: An aperture cut through the deck of a ship for access. They are sealed by hatch covers.

Hawse; Hawsepipe(s): Apertures where the anchor chain or cable runs from the ship to the anchors.

Helm: The steering position on a ship. The helmsman steers the ship from the helm.

Hoist: To raise aloft, as in hoisting a flag.

Hold: The space below a vessel's deck allotted for the stowage of cargo.

Inboard: Toward the center of a ship.

Jettison: To throw something over the side of a ship.

Jibboom: A spar that extends from a bowsprit. This lengthens the bowsprit.

Keel: The central beam or timber on a ship that forms its backbone.

Keelson: A longitudinal beam or timber bolted on top of a keel to form additional support for the hull.

Knees: Curved timbers, later iron and steel structural members, used to support deck beams and to reinforce the edges of hatches.

Knight-Heads: These are the foremost frames on a wooden ship that rise up on each side of the stem post.

Knot: Both a knob in a line or rope, or the nautical unit of speed, equivalent to one nautical mile (6,076 feet) per hour.

Ladders: A sailor's term for stairways on a ship.

Lee: The direction away from the wind.

Length: A ship's length can be the length of the keel, the maximum length of the hull from the stem to the sternpost, or the length of the ship as it extends to its greatest projection of the bowsprit. Length is usually recorded in official registries as the length from stem to stern.

Lugger: A small sailing vessel, usually used for fishing.

Mainmast: The second mast of a ship with two or more masts, aft of the foremast and forward of the mizzenmast.

Midships: The center portion of a vessel; the midway point heading either fore or aft.

Moor: To secure alongside a pier.

Nautical mile: A measurement of distance at sea measured at a one-minute arc of the great circle of the earth, or 6,076 feet (1,851 meters). A statute mile is 5,280 feet (1,609 meters).

Navigation: The means by which, using a variety of methods, sailors take a ship or aircraft from one position to another.

Outboard: Any distance away from the center line of a ship and the opposite of inboard.

Passageway: A corridor or hallway in a ship.

Pintle: The upper part of the hinged assembly that allows the rudder to move to steer a ship; a pintle, with its projecting pin, fits into the gudgeon.

Plank: A piece of sawed timber; there are various types of planks used in wooden ship construction, from ceiling, outer hull, bulwark, interior, etc. planking.

Poop: The aft deck on a ship and the command position on ships in the days of sail and early steam.

Port: The left side of the ship and anything in that direction; that is, "ship off the port bow."

Quarter: The aft end of a ship near the stern; there is a port and starboard quarter.

Rabbet: A long, rectangular groove in a wooden hull piece such as a keel into which the edge of another timber, such as garboard, fits into it.

Rail: An open fence on a ship made of pipe or other immovable materials.

Rigging: The lines, in the past cordage, and later wires, used to support and manage the masts, yards, and sails, as well as funnels and other structures above deck. Standing rigging is more or less permanently fixed, whereas running rigging is adjustable, as in the lines used to sail.

Sailor: A person who has spent time at sea and is accustomed to ways of the sea and ships. It is a term to be earned.

Samson post: A vertical timber or beam that rises from the keel and through the deck near the bow used to support an anchor or tow line.

Scarph (Scarf): An overlapping joint that connects two pieces of timber in shipbuilding.

Schooner: A two- or more masted vessel rigged fore-and-aft.

Scow: A flat-bottomed, shallow-draft vessel, usually rigged as a schooner, used to haul heavy cargoes in shallow water.

Shear (Sheer): The curve of a hull from the bow to the stern; ships are built to shed water (also see **camber**).

Scuppers: Fittings on deck that act as troughs and feed water on deck to scupper pipes that allow the water to drain off the deck.

Sheathing: A covering on an outer hull, originally metal (copper and latter alloys) that protected the planks from marine organisms that would consume them or foul them, reducing a vessel's speed.

Sloop: A one-masted, fore-and-aft rigged sailing vessel.

Spar: A long, round stick of wood, iron, or steel; spars were employed as yards or booms on ships.

Starboard: The right side of a ship and a direction; that is, "torpedo off the starboard quarter!"

Stay(s): A line or lines or other rigging that run fore to aft on a ship; they connect the bowsprit and masts and help stabilize them.

Stem: The foremost portion of a ship; the stem post is at the front of the bow.

Stern: The aftermost section of a ship. The stern post is where the rudder is attached.

Tonnage: A term for either the official, admeasured tonnage (cargo capacity) or the displacement, or the weight of water displaced by the form of the ship in the water.

Transom: Planks or metal plates that form the upper part of the stern of a ship. The name of a ship is usually found on the transom.

Treenail (pronounced Trunnel): A wooden fastener used in ship construction.

Trials: Tests of a ship after it is launched.

'Tween deck: Any deck in a ship below the main deck.

Vessel: Any craft that carries people or goods by water.

Waterline: The line to which a vessel settles in the water, and designated by a painted line on the hull that indicates when a vessel is properly trimmed and not listing or sinking.

Weather deck: The topmost deck of a ship, and the one exposed to weather, hence the name.

Windlass: A mechanism used to handle the anchor chain.

Yard: A spar attached to a mast and used to carry sail.

Yardarm: The end of a yard.

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REFERENCES CITED

Advertiser and Register

1859 Marine List. July 26:3. Mobile, Alabama.

Alabama Marriage Indexes

1860 Alabama, Marriage Indexes, 1814–1935. Alabama Department of Archives and History, Montgomery, Alabama. Electronic document, <https://search.ancestry.com/search/db.aspx?dbid=60922>, accessed February 19, 2019.

Alabama on the Go

1965 Fort Gaines Museum Acquires "Anchor Eye" of Last Slave Schooner. Jun. 1965, p. 29.

Alabama Planter

1852 Launch. October 30:7. Mobile, Alabama.

1856 Exports of Sawed Lumber – Port of Mobile Commencing September 1st 1855. 19 July:8. Mobile Alabama.

Alabama Probate Court

1913 Original Will Records (Mobile County, Alabama), Ca. 1813–1961; Index, 1813–1957. Electronic document, <https://www.familysearch.org/search/catalog/670134?availability=Family%20History%20Library>, accessed February 19, 2019.

Albion, Robert Greenhalgh

[1938] 1965 *Square-Riggers on Schedule: The New York Sailing Packets to England, France and the Cotton Ports*. Princeton University Press, Princeton and London.

[1939] 1984 *The Rise of New York Port, 1815–1860*. Northeastern University Press, Boston.

American Lloyd's

1859 *American Lloyd's Registry of American and Foreign Shipping*. E. & G. W. Blunt. New York, New York.

1860 *American Lloyd's Registry of American and Foreign Shipping*. E. & G. W. Blunt. New York, New York.

1861 *American Lloyd's Registry of American and Foreign Shipping*. E. & G. W. Blunt. New York, New York.

Annual List of Merchant Vessels of the United States

1892 *Annual List of Merchant Vessels of the United States*. Government Printing Office. Washington, DC.

1894–1895 *Annual List of Merchant Vessels of the United States*. Government Printing Office. Washington, DC.

Armes, Ethel

1910 *The Story of Coal and Iron in Alabama*. Chamber of Commerce, Birmingham, Alabama.

Atauz, A. D., W. Bryant, T. Jones, and B. Phaneuf

2006 Mica Shipwreck Project: Deepwater Archaeological Investigations of a 19th Century Shipwreck in the Gulf of Mexico. Prepared by Texas A&M University, College Station, Texas. *Minerals Management Service Report: OCS Study MMS 2006-072*. New Orleans, Louisiana.

Baptist, Edward E.

2014 *The Half Has Never Been Told: Slavery and the Making of American Capitalism*. Basic Books, New York.

Barkhausen, Henry N.

1990 *Focusing on the Centerboard*. Manitowoc Maritime Museum, Manitowoc, Wisconsin.

Baumer, David R.

1990a Bethune Blackwater Schooner Report: A Preliminary Survey for the Florida Bureau of Archaeological Research and the Santa Rosa Historical Society. Report prepared by East Carolina University, Greenville, North Carolina.

1990b *Bethune Blackwater Schooner Report*. Unpublished Master's Thesis, East Carolina University, Greenville, North Carolina.

Beckert, Sven

2014 *Empire of Cotton: A Global History*. Vintage Books, New York.

Bellin, Nicolas

1764 *Carte de la Coste de la Floride depuis la Baye de la Mobile Jusqu'aux Cayes de St. Martin* in *Le Petit Atlas Maritime Recueil de Cartes et Plans de Quatre Du Monde*. N. Bellin, Paris.

Bernard, Shane K.

2016 *Teche: A History of Louisiana's Most Famous Bayou*. University Press of Mississippi, Jackson, Mississippi.

Biddlecombe, George

1969 *The Art of Rigging*. Edward W. Sweetman Company, New York.

Blackman, Berkeley and C. P. Lindner

1951 Harbor and Coastal Problems in the East Gulf Coast, in *Proceedings of the Second Conference on Coastal Engineering, Houston, Texas*. No publisher cited, Houston, pp. 226–235.

Boesenberg, J. S.

2006 Wrought iron from the USS *Monitor*: Minerology, Petrology and Metallurgy. *Archaeometry* 48 (4), pp. 613–631.

Borgens, Amy

2011 Maritime Archaeology of the Northern Gulf of Mexico: Archaeology from the Age of Exploration to the Twilight of Sail, in Alexis Catsambis, Ben Ford, and Donny L. Hamilton, eds. *The Oxford Handbook of Maritime Archaeology*. Oxford University Press, Oxford and New York.

Boston Shipping List

1856 Mobile Arrivals. 6 February:1. Mobile, Alabama.

Bright, Leslie S., William H. Rowland, and James C. Bardon

1981 *C.S.S. Neuse A Question of Iron and Time*. North Carolina Department of Cultural Resources, Division of Archives and History, Raleigh.

Bruseth, James E., and Toni S. Turner

2005 *From a Watery Grave: The Discovery and Excavation of La Salle's Shipwreck La Belle*. Texas A & M University Press, College Station.

Burchard, Ernest F.

1907 The Brown Iron Ores of the Russellville District, Alabama, in *United States Geological Survey Bulletin No. 315, Contributions to Economic Geology, 1906, Part 1 – Metals and Non-Metals, Except Fuels*. Government Printing Office, Washington, DC, pp. 152–160.

Burgess, Robert H.

1978 *Coasting Schooner: The Four-Masted Albert F. Paul*. The Mariners Museum, Newport News / University Press of Virginia, Charlottesville.

Burroughs, Polly

1972 *Zeb: A Celebrated Schooner Life*. The Globe Pequot Press, Chester, Connecticut.

Byers, S.H.M.

1906 The Last Slave Ship, *Harpers' Monthly Magazine*, CXII, pp. 742–746.

Cabana, Graciela, Alexandra Emmons, and Frankie West

2018 In Pursuit of the *Clotilda*: Environmentally-Derived Ancient DNA from a Candidate Shipwreck in the Mobile River, Alabama. Research Proposal from University of Tennessee and Western Carolina University to Fredrik Heibert, National Geographic Society.

Chapelle, Howard I.

1935 *The American Fishing Schooners, 1825–1935*. W.W. Norton & Company, New York.

Chapelle, Howard

1994 *Boatbuilding: A Complete Handbook of Wooden Boat Construction*. WW Norton & Co Ltd.

Clarke & Murrell

188_ Clarke & Murrell, Insurance Agents. *Clotilda* Collection. Mobile Public Library, Mobile, Alabama. Electronic document, <http://digital.mobilepubliclibrary.org/items/show/1819>, accessed February 1, 2019.

Colten, Craig E., ed.

2000 *Transforming New Orleans and Its Environs: Centuries of Change*. University of Pittsburgh Press, Pittsburgh.

Commercial Bulletin

1856 Thursday, November 6. November 8:3. New Orleans, Louisiana.

1857 Port of New Orleans. January 31:3. New Orleans, Louisiana.

1857 Port of New Orleans. May 13:3. New Orleans, Louisiana.

1857 Cleared. May 23:3. New Orleans, Louisiana.

Cotham, Edward Jr.

2004 *Sabine Pass: The Confederate Thermopylae*. University of Texas Press, Austin, Texas.

Craighead, Erwin

1930 *Mobile: Fact and Tradition*. Powers Company. Mobile, Alabama.

Crawford, Martin, ed.

1992 *William Howard Russell's Civil War: Private Diary and Letters, 1861–1862*. University of Georgia Press, Athens and London.

Crothers, William L.

2000 *The American-Built Clipper Ship: Characteristics, Constructions, Details*. International Marine, Camden, Maine.

[1912] 2013 *American-Built Packets and Freighters of the 1850s*. An illustrated Study of Their Characteristics and Construction. McFarland & Company, Inc., Publishers.

Damour, Melanie and Christopher E. Horrell

2002 *Dog and St. Georges Islands Shipwreck Survey*. Report of Field Operations: March through July 2001. Florida State University.

Dattell, Gene

2009 *Cotton and Race in the Making of America: The Human Costs of Economic Power*. Ivan R. Dee, Lanham, Maryland.

Delgado, J. P., A. G. Pastron, and R. K. Robichaud

2007 *This Fine and Commodious Vessel: Archaeological Investigations of the Gold Rush Storeship General Harrison*. *Final Archaeological Report of the Battery Street Hotel Project*. Archeotec, Oakland, California.

Delgado, James P.

1990 National Historic Landmark Study, *Governor Stone* (1877), Maritime Heritage of the United States NHL Theme Study – Large Vessels. Electronic document, <https://npgallery.nps.gov/pdfhost/docs/NHLS/Text/91002063.pdf>, accessed February 19, 2019.

Delgado, James P., A. DeCaro, J. Enright, J. Grinnan, K. Lent, N. Linville, D. Marx, and R. Tubby
2018a Mobile River Shipwrecks Survey, Baldwin and Mobile Counties. Draft Report prepared by SEARCH for the Alabama Historical Commission.

Delgado, James P., K. Lent, J. Grinnan, Hathorn, S., D. Morgan, and D. Conlin

2018b Report on a Mid-to-Late Nineteenth-Century Wooden Shipwreck in the East Channel of the Mobile River Suggested as a Candidate for the 1855 Schooner *Clotilda*, Baldwin County, Alabama. Report prepared by SEARCH for the Alabama Historical Commission.

Demeritt, David

1991 Boards, Barrels, and Boxshooks: The Economics of Downeast Lumber in Nineteenth Century Cuba, *Forest & Conservation History*, v. 35, pp. 108–120.

Desmond, Charles

1919 *Wooden Ship-Building*. The Rudder Publishing Company, Chicago.

Diouf, Sylviane A.

2007 *Dreams of Africa in Alabama*. Oxford University Press, Oxford, England.

Dodd, George

1852 *The Curiosities of Industry and the Applied Sciences*. George Routledge & Co., London.

Doyle, Don H.

1990 *New men, New Cities, New South: Atlanta, Nashville, Charleston, Mobile, 1860–1910*. University of North Carolina Press, Chapel Hill and London.

Dupre, Daniel S.

1997 *Transforming the Cotton Frontier: Madison County, Alabama, 1800–1840*. Louisiana State University Press, Baton Rouge.

Eltis, D.

2010a Trans-Atlantic Slave Trade Database. Construction of the Trans-Atlantic Slave Trade Database: Sources and Methods. Introduction. Emory University. Electronic document, <http://www.slavevoyages.org/voyage/understanding-db/methodology-1>, accessed February 19, 2019.

2010b Trans-Atlantic Slave Trade Database. Construction of the Trans-Atlantic Slave Trade Database: Sources and Methods. Coverage of the Slave Trade. Emory University. Electronic document, <http://www.slavevoyages.org/voyage/understanding-db/methodology-2>, accessed February 19, 2019.

Encyclopedia Britannica

1910 The Encyclopedia Britannica: A Dictionary of Arts, Sciences, Literature and General Information. Eleventh Edition Volume XI. University Press, Cambridge, England.

Estep, H. Cole

1918 *How Wooden Ships Are Built*. The Penton Publishing Company, Cleveland.

Falola, Toyin and Amanda Warnock, eds.

2007 *The Encyclopedia of the Middle Passage*. Greenwood Press, Westport, Connecticut.

Farrow and Dennett

1861 *Farrow and Dennett's Mobile City Directory*. Farrow and Dennett, Mobile, Alabama.

Fincham, John

1852 *Outline of Ship-Building in Four Parts*. Whittaker and Co., London, England.

Fix, Peter

2015 Archaeological Watercraft: A Review and Critical Analysis of the Practice. PhD Dissertation, Texas A & M University, College Station, Texas.

Foscue, Virginia O.

1989 *Place Names in Alabama*. The University of Alabama Press, Tuscaloosa and London.

Foster, William

1890 Last Slaver from US to Africa. A.D. 1860. Account of the *Clotilda* by Captain William Foster. September 29, 1890. *Clotilda* Collection. Mobile Public Library, Mobile, Alabama. Electronic document, <http://digital.mobilepubliclibrary.org/items/show/1802>, accessed February 13, 2019.

Francaviglia, Richard V.

1998 *From Sail to Steam: Four Centuries of Texas Maritime History 1500–1900*. University of Texas Press, Austin.

Friend, Jack

n.d. *Clotilda* files. Jack Friend Collection. History Museum of Mobile. Mobile, Alabama.

Friends of the *Governor Stone*.

2019 Webpage of the Friends of the *Governor Stone*. Electronic document, <http://www.governorstone.org/>, accessed May 20, 2019.

Garrett, William

1872 *Reminiscences of Public Men in Alabama, for Thirty Years*. Plantation Publishing Company's Press, Atlanta.

Graham, Washington Henry S.

1861 Map showing the distribution of the slave population of the southern states of the United States. Compiled from the census of 1860. Library of Congress, Washington, DC. Electronic document, <https://www.loc.gov/resource/g3861e.cw0013200/?r=-0.406,-0.005,1.854,0.887,0>, accessed May 20, 2019.

Garrison, E. G., C. P. Giammona, F. J. Kelly, A. R. Tripp, and G. A. Wolff

1989 *Anomalies from Remote-sensing Surveys and Historic Shipwreck Patterns Within the Northern Gulf of Mexico, Reevaluation of Historic Shipwreck Studies of the Northern Gulf of Mexico, Volume II*. Prepared for Minerals Management Service.

Gordon, R. B.

2001 *American Iron: 1607–1900*. The Johns Hopkins University Press, Baltimore, MD.

Graf, S. H.

1949 *Ignition Temperatures of Various Papers, Woods, and Fabrics, Bulletin No. 26*. Engineering Experiment Station Oregon State System of Higher Education Oregon State College, Corvallis.

Griffiths, John W.

1854 *Treatise on Marine and Naval Architecture, or Theory and Practice in Ship Building, Fourth Edition*. D. Appleton and Company, New York.

Haddock, Daniel

2014 *Where Fire Meets Water: Archaeological Investigations of the Centerboard Schooner*. Unpublished master's thesis, University of West Florida, Pensacola, Florida.

Hall, Henry

1882 *Report on the Shipbuilding Industry of the United States*. Government Printing Office, Washington, DC.

Haviland, E. K.

1970 Classification Society Registers from the Point of View of a Marine Historian, *The American Neptune*, XXX (1):9–39.

Head, David

2015 *Privateers of the Americas: Spanish American Privateering from the United States in the Early Republic*. University of Georgia Press, Athens and London.

Hocker, Fred, editor

2006 *Vasa 1: The Archaeology of a Swedish Warship of 1628*. National Maritime Museums of Sweden, Stockholm.

Hoffmann, Gabriele and Uwe Schnall, editors

2003 *The Cog: Triumph of German Nautical Archaeology (Die Kogge: Sternstunden der Deutschen Schiffsarchäologie)*. Schriften des Deutschen Schiffahrtsmuseums, Band 60. Convent Verlag, Hamburg, Germany.

Holdcamper, Forrest R.

1964 Biography of the *List of Merchant Vessels of the United States, The American Neptune*, XXIV (2):119–123.

Horrell, Christopher

2005 *Plying the Waters of Time: Maritime Archaeology and History on the Florida Gulf Coast*. Unpublished PhD Dissertation, Department of Anthropology, Florida State University.

Hugill, Peter J.

1997 *World Trade Since 1431: Geography, Technology and Capitalism*. Johns Hopkins University Press, Baltimore and London.

Hurston, Zora Neale

1927 *Barracoon: The Story of the Last "Black Cargo."* HarperCollins/Amistad, New York.

Independent Monitor

1853 Another New Ship. July 15:1. Tuscaloosa, Alabama.

International Council of Monuments and Sites (ICOMOS)

1996 Charter on the Protection and Management of Underwater Cultural Heritage, Electronic document, https://www.icomos.org/charters/underwater_e.pdf, accessed March 14, 2019.

James, Stephen and Michael Krivor

1998 Summary of Investigations, The Search for Slave Ship *Clotilda*. Panamerican Maritime, LLC. Prepared for the Alabama Historical Commission, December 1998.

Jameson, Robert Francis

2010 *Letters from the Havana, Written During the Year 1820: Containing an Account on the Present State of the Island of Cuba, and Observations on the Slave Trade*. Cambridge University Press, Cambridge and New York.

Janesville Daily Gazette

1860 News story on schooner *Clotilda*. July 14:3. Janesville, Wisconsin.

Jordan, Weymouth T.

1948 *Hugh Davis and His Alabama Plantation*. University of Alabama Press, Tuscaloosa.

Kennet-Ware, Thomas

1860 Steamboat on the Alabama River, Mobile. Western Trails-Wyoming Collection. University of Wyoming Library. Electronic document, <http://hdl.handle.net/10176/wyu:3939>, accessed March 1, 2019.

Khakzad, Sorna and Konraad Van Balen

2012 Complications and Effectiveness of In Situ Preservation Methods for Underwater Cultural Heritage Sites, *Conservation and Management of Archaeological Sites*, Vol. 14 Nos 1–4, pp. 469–478.

Kleiner, Diana

2010 Matagorda County. Handbook of Texas Online. Electronic document, <https://tshaonline.org/handbook/online/articles/hcm05>, accessed February 15, 2019.

L'Isle, Guillaume de

1718 *Carte de la Louisiana et du Cours du Mississippi*. Guillaume de L'Isle, Paris.

Lakwete, Angela

2012 Antebellum Industrialization. Encyclopedia of Alabama. Electronic document, <http://www.encyclopediaofalabama.org/article/h-2924>, accessed February 19, 2019.

La Tourette, John

1838 *An Accurate Map of the State of Alabama and West Florida; carefully Compiled from the original surveys of the General Government; designed to exhibit at one view each Section and Fractional Section; so that each person can point to the tract on which he lives, by John La Tourette, Mobile Ala.* Engraved by S. Stiles & Co., New York, Printed by Colton & Co.

Lavery, Brian

1987 *The Arming and Fitting of English Ships of War, 1600–1815*. Conway Maritime Press, London.

Leather, John

2009 *The Gaff Rig Handbook: History, Design, Techniques, Developments, Second Edition*. Bloomsbury/Adlard Coles Nautical, London.

Leatherwood, Art

2010 Brazos de Santiago, TX. Handbook of Texas Online. Electronic document, <https://tshaonline.org/handbook/online/articles/rrb12>, accessed February 14, 2019.

Lydecker, Andrew D. W. and Michael Krivor

2003 *Report of Findings. Additional Investigations for the Slave Ship Clotilda*. Prepared for the Museum of Mobile. Panamerican Consultants, Inc.

McCarthy, Michael

2005 *Ship's Fastenings: From Sewn Boat to Steamship*. Texas A&M University Press, College Station.

McComb, David G.

2010 Galveston, Texas. Handbook of Texas Online. Electronic document, <https://tshaonline.org/handbook/online/articles/hdg01>, accessed February 15, 2019.

McGrath, C. Peter

1966 *Yazoo: Law and Politics in the New Republic: The Case of Fletcher v. Peck*. Brown University Press, Providence.

Manufacturers' and Farmers' Journal

1855 Arrivals, Clearances, &c. 31 December:2. Providence, Rhode Island.

Marques, Leonardo

2012 Slave Trading in a New World, The Strategies of North American Slave Traders in the Age of Abolition, *Journal of the Early Republic*, v. 32, pp. 233–260.

Marsden, Peter

2003 *Sealed by Time: The Loss and Recovery of the Mary Rose. Archaeology of the Mary Rose, Vol. 1*. Mary Rose Trust, Portsmouth, England.

Marx, Deborah, Alexander DeCaro, Joseph Grinnan, Kyle Lent, Ray Tubby, and Jeffrey Enright.

2018 Underwater Remote-Sensing Survey and Hazard Assessment of the Proposed Mobile River Barge Mooring Area, Baldwin County, Alabama. Conducted for the Alabama Department of Conservation and Natural Resources by SEARCH.

Massey Jr., Richard W.

1960 History of the Lumber Industry in Alabama and West Florida, 1880–1914. Thesis submitted to Vanderbilt University, Nashville, Tennessee.

Merchants and Planters Price Current and Shipping List

1855 List of Shipping in the Port of Mobile. 27 October 27:1. Mobile, Alabama.

Merrill, James M.

1962 Confederate Shipbuilding at New Orleans. *The Journal of Southern History* 28(1):87–93.

Mobile Daily Advertiser

1842 Notice. October 29:3. Mobile, Alabama.

1855 *Clotilda*. October 17:3. Mobile, Alabama.

1855 Marine List. October 27:3. Mobile, Alabama.

1855 Schooner *Louisa*. November 9:3. Mobile, Alabama.

Mobile Public Library

1890 Last Cargo of Slaves. November 30, 1890. *Clotilda* Collection. Mobile Public Library, Mobile, Alabama. Electronic document, <http://digital.mobilepubliclibrary.org/items/show/1793>, accessed February 1, 2019.

Mobile Register

1859 Arrived. September 10:1. Mobile, Alabama.

1917 Last Slave Ship Sunk Here Raised. February 25:12A. Mobile, Alabama

Montgomery Advertiser

1932 Survivor of Last Slave Cargo Lives on Plantation near Selma. January 31:13.

Montgomery Weekly Advertiser

1853 The Launch of the Wm. R. Hallett. June 8:1. Montgomery, Alabama.

1853 Article on shipbuilding. July 6:1. Montgomery, Alabama.

1855 Home Industry. March 7:2. Montgomery, Alabama.

Montgomery Weekly Post

1860 Arrival of a Slaver at Mobile. July 18:1. Montgomery, Alabama.

Morris, Edward Parmalee

1927 *The Fore and Aft Rig in America: A Sketch*. Yale University Press, New Haven.

Morris, Paul C.

1973 *Sailing Coasters of the North Atlantic*. Bloch and Osborn, Chardon, Ohio.

National Geographic Society

2019 1Ba7604 XRF Results. On File with National Geographic Society, Washington DC.

National Oceanic and Atmospheric Administration

1877 Excerpt from an 1877 Mobile Bay chart up to Twelvemile Island's southern tip 's Historical Map & Chart Collection. Electronic document, <https://historicalcharts.noaa.gov/>, accessed May 20, 2019.

1958 Nautical chart. Historical Map & Chart Collection. Electronic document, <https://historicalcharts.noaa.gov/>, accessed May 20, 2019.

2001 Nautical chart. Historical Map & Chart Collection. Electronic document, <https://historicalcharts.noaa.gov/>, accessed May 20, 2019.

National Tribune

1892 Gunboat USS *Ethan*. July 28:9. Washington, DC.

New Orleans Crescent

1859 Imports. May 16:6. New Orleans, Louisiana.

1860 Africans Around. July 21:1. New Orleans, Louisiana.

New York Marine Register

1858 *New York Marine Register: A Standard Classification of American Vessels*. R.C. Root, Anthony & Co. New York, New York.

The New York Times

1859 The Trade of Cuba. 28 January:2. New York, New York.

O'Meagher, Joseph Casimir

1890 *Some Historical Notices of the O'Meaghers of Ikerrin*. American Edition. New York City, NY.

Oertling, Thomas J.

1996 *Ships' Bilge Pumps. A History of Their Development, 1500–1900*. Texas A&M University Press. College Station, Texas.

Olsen, Olaf and Ole Crumlin-Pedersen

1968 The Skuldelev Ships: A Report of the Final Underwater Excavation in 1959 and the Salvaging Operation in 1962, *Acta Archaeologica* 38 Reprint 1968, Copenhagen, Denmark.

Paasch, Captain H.

1890 *Illustrated Marine Encyclopedia*. Published by the Author, Antwerp.

Pargas, Damian Alan

2015 *Slavery and Forced Migration in the Antebellum South*. Cambridge University Press, New York.

Patrick, Rembert W.

2010 *Florida Fiasco: Rampant Rebels on the Georgia-Florida Border, 1810–1815*. University of Georgia Press, Athens and London.

Phillips, William Battle

1898 *Iron Production in Alabama, Second Edition*. Alabama Geological Survey, Montgomery.

Pierce, Frank C.

1917 *A Brief History of the Lower Rio Grande Valley*. George Banta Publishing Company, Menasha, Wisconsin.

Pittsburgh Daily Post

1894 The Last Cargo. April 15:1. Pittsburg, Pennsylvania.

Pratt, J. M.

1912 Dredges and Dredging in the Mobile District, in *Professional Memoirs, Corps of Engineers, United States Army, and Engineer Department at Large*, 14(5), March–April, pp. 157–198.

Raines, Ben

2018a Wreck found by reporter may be last American slave ship, archaeologists say. *AL.com*. Electronic document, http://www.al.com/news/mobile/index.ssf/2018/01/alcom_reporter_may_have_found.html, accessed January 30, 2018.

2018b 'Forgive us, because we sold them,' says African ambassador on possible slave ship, Electronic document, https://www.al.com/news/mobile/2018/02/i_am_just_begging_them_to_forg.html, accessed March 21, 2019.

Redard, Thomas E.

1986 *The Port of New Orleans: an Economic History, 1821–1860. (Volumes I and II) (Trade, Commerce, Slaves, Louisiana)*. Doctoral dissertation, Department of History, Louisiana State University and Agricultural & Mechanical College, Baton Rouge. Electronic document, https://digitalcommons.lsu.edu/gradschool_disstheses/4151/, accessed February 17, 2019.

Rees, Gareth

1971 Copper Sheathing: an Example of Technological Diffusion in the English Merchant Fleet, *Journal of Transport History*, 1(2):85–94.

Reinders, Robert C.

1964 *End of An Era: New Orleans, 1850–1860*. Pelican Publishing, Gretna, Louisiana.

Richards, Vicki

2011 In situ preservation and reburial of the ex-slave ship *James Matthews*, *AICCM Bulletin*, Vol. 32, pp. 33–43.

Richards, Vicki, Ian MacLeod & Peter Veth

2016 The Australian Historic Shipwreck Preservation Project: In situ Preservation and Long-Term Monitoring of the Clarence (1850) and James Matthews (1841) Shipwreck Sites, *Conservation and Management of Archaeological Sites*, volume 18, nos. 1–3, pp. 240–253.

Robertson, Natalie G.

2008 *The Slave Ship Clotilda and the making of AfricaTown, USA: Spirit of Our Ancestors*. Praeger, Westport, Connecticut and London.

Roche, Emma Langdon

1914 *Historic Sketches of the New South*. The Knickerbocker Press, New York.

Russell, Philip L.

2011 *The History of Mexico: From Pre-Conquest to Present*. Routledge, New York, New York.

Russell, William Howard

1863 *My Diary North and South*. Bradbury and Evans, London.

Saltus, Allen, and Sidney H. Schell

1985 *The CSS Huntsville and CSS Tuscaloosa Project, Mobile River, Alabama*. Prepared for Mobile Jaycees and U.S. Army Corps of Engineers.

Sanford, Thaddeus

1860 Letter from T. Sanford, Collector's Office, Mobile, Alabama, to Howell Cobb, Secretary of the Treasury. July 17, 1860. *Clotilda* Collection. History Museum of Mobile, Mobile, Alabama.

Schroeder, William W.

1978 *Riverine Influence in Estuaries: A Case Study*, in Martin C. Wiley, ed. *Estuarine Interactions*. Academic Press, New York.

Shipping and Commercial List and New-York Price Current

1855 Marine List. 28 November:1. New York, New York.

Sikes, Kathryn

2004 *Governor Stone: Analysis of an 1877 Two-Masted Schooner from the Gulf of Mexico*. *International Journal of Nautical Archaeology*. 33(2):297–314.

Slave Cargoes

1890 *Slave Cargo. Notes Concerning Clotilda*. Interview of Timothy Meaher and Captain Foster March 1890. *Clotilda* Collection. Mobile Public Library, Mobile, Alabama. Electronic document, <http://digital.mobilepubliclibrary.org/items/show/1838>, accessed February 13, 2019.

Sledge, John S.

2015 *The Mobile River*. University of South Carolina, Columbia, South Carolina.

2018 Personal Communication. September 24, 2018. Mobile, Alabama.

Stephens, Robby

- 2018 Personal communications with James P. Delgado. On file at SEARCH, Jacksonville, Florida.
2019 Dr. Robby M. Stephens Jr. Electronic document, <https://zw.linkedin.com/in/drrobbystephens>, accessed March 10, 2019.

Stewart, Charles W., compiler

- 1903 *Official Records of the Union and Confederate Navies in the War of the Rebellion, Series 1, Volume 16*. Government Printing Office, Washington, DC.

Stewart, J., L. D. Murdock and P. Waddell

- 1995 Reburial of the Red Bay Wreck as a form of preservation and protection of the historic resource, in *Materials Issues in Art and Archaeology IV: Symposium held May 16–21, 1994*, Cancun, Mexico, pp. 791–805.

Survey of Federal Archives

- 1942 *Ship Registers and Enrollments of New Orleans, Louisiana. Prepared by the Survey of Federal Archives in Louisiana, Division of Community Service Programs, Work Projects Administration. Volume V 1851–1860*. Louisiana State University, Baton Rouge, Louisiana.

Tadman, Michael

- 1989 *Speculators and Slaves: Masters, Traders, and Slaves in the Old South*. University of Wisconsin Press, Madison.

Taylor, Maureen A.

- 1995 *Rhode Island Passengers Lists*. Genealogical Publishing Company, Ltd., Baltimore.

The Daily Delta

- 1852 Article on steamer *William Jones Jr.* launch. October 29:2. New Orleans, Louisiana.
1859 Marine Intelligence. October 11:4. New Orleans, Louisiana.

The Daily Exchange

- 1860 African Slaves Landed in Mobile Bay. July 11:1. Baltimore, Maryland.

The Morning Post

- 1860 The Slave Trade. October 5:8. London, England.

ThermoFisher Scientific

- 2019 XRF Technology. Electronic document, <https://www.thermofisher.com/us/en/home/industrial/spectroscopy-elemental-isotope-analysis/spectroscopy-elemental-isotope-analysis-learning-center/elemental-analysis-information/xrf-technology.html>, accessed March 7, 2019.

The Tennessean

1860 New Orleans, July 9. July 10:3. Nashville, Tennessee.

The Wilmington Daily Herald

1860 Arrival of Cargo of African Negroes in Mobile Bay and their Transportation into the Interior. July 12:3. Wilmington, North Carolina.

Thornton, J. Mills

2014 *Politics and Power in a Slave Society, Alabama, 1800–1860*. Louisiana State University Press, Baton Rouge.

Times-Picayune

- 1843 Large Panther. December 17. New Orleans, Louisiana.
1852 Trade with Florida. 4 February:1. New Orleans, Louisiana.
1854 Mobile. June 7:1. New Orleans, Louisiana.
1854 Schooner *S.E. Meaher*. July 2:1. New Orleans, Louisiana.
1856 Imports. October 30:3. New Orleans, Louisiana.
1856 Imports. December 5:8. New Orleans, Louisiana.
1856 Eastern Texas and New Orleans. December 26:1. New Orleans, Louisiana.
1856 Marine News. December 31:8. New Orleans, Louisiana.
1857 Arrived. January 29:8. New Orleans, Louisiana.
1857 Arrived. March 31:8. New Orleans, Louisiana.
1857 Imports. April 1:8. New Orleans, Louisiana.
1857 Exports. April 15:8. New Orleans, Louisiana.
1857 Imports. June 10:1. New Orleans, Louisiana.
1857 Brig *South*. October 6:2. New Orleans, Louisiana.
1857 Another Mobile Built Boat. October 7:1. New Orleans, Louisiana.
1859 Imports. February 17:8. New Orleans, Louisiana.
1859 Exports. March 6:7. New Orleans, Louisiana.
1859 Marine News. May 19:1. New Orleans, Louisiana.
1860 The Mobile Importation of Africans. Reprint from *The Mobile Mercury* July 28, 1860. July 29:3. New Orleans, Louisiana.

US Coast and Geodetic Survey (USC&GS)

- 1888 Historical Image Display: Mobile River: Twelve Mile Island. Electronic document, <https://historicalcharts.noaa.gov/historicals/preview/image/3NUM491>, accessed April 2018.
1889a *Report of the Superintendent of the US Coast and Geodetic Survey, Showing the Progress of the Work, During the Fiscal Year Ending with June, 1888*. Government Printing Office, Washington, DC.
1889b Manuscript Hydrographic Chart H-1918, from Records of the Charts Division (23.3.6), National Archives Records Group 23, Records of the Coast and Geodetic Survey, National Archives, College Park, Maryland.
1898 *Notice to Mariners, No. 240*. Government Printing Office, Washington, DC.

US Congress

1830 Chapter XLIX-An Act to change the port of entry from Nova Iberia to Franklin, in the state of Louisiana. Twenty-first Congress. Session I. Ch. 49, 50. P. 392. Electronic document, <https://www.loc.gov/law/help/statutes-at-large/21st-congress/session-1/c21s1ch49.pdf>, accessed February 15, 2019.

US Customs Service Cargo Manifests

1855–1860 *Clotilda* Finding Aid. Cargo Manifests, Mobile, Alabama 1822–1905. AC 06/33/04. Box 69–70, 74–77, 80–86, 90, and 93. National Archives and Records Administration, Atlanta, Georgia. Electronic document, <https://www.archives.gov/files/atlanta/finding-aids/clotilda.pdf>, accessed February 13, 2019.

US Customs Service Master Carpenter Certificates

1894 US Customs Service Master Carpenter Certificates, Mobile, Alabama. RG 36. National Archives and Records Administration, Atlanta, Georgia.

US Customs Service Registries

1850-1859 Mobile Abstracts and Registers of Vessel Tonnage, Mobile, Alabama. RG 36. National Archives and Records Administration, Atlanta, Georgia.

US Customs Service Coasting Licenses

1855 *Clotilda* Finding Aid. Coasting Licenses over 20 tons, v. 9, 1848–1859. Collector of Customs. S.O. 157 CP 01/05/06. National Archives and Records Administration, Atlanta, Georgia. Electronic document, <https://www.archives.gov/files/atlanta/finding-aids/clotilda.pdf>, accessed February 13, 2019.

United States Federal Census

1840 United States Federal Census. Mobile, Alabama. Page: 115; Family History Library Film: 0002334. Electronic document, <https://search.ancestry.com/search/db.aspx?dbid=8057>, accessed February 19, 2019.

1860a United States Federal Census. Mobile, Alabama. Mobile Ward 7, Roll: M653 17; Page: 172; Family History Library Film: 803017. Electronic document, <https://search.ancestry.com/search/db.aspx?dbid=7667>, accessed February 19, 2019.

1860b United States Federal Census. Mobile, Alabama. Mobile Ward 7, Roll: M653 17; Page: 732; Family History Library Film: 803017. Electronic document, <https://search.ancestry.com/search/db.aspx?dbid=7667>, accessed February 13, 2019.

1870 United States Federal Census. Mobile, Alabama. Beat 3, Roll M593 30; Page: 313B; Family History Library Film: 545529. Electronic document, <https://search.ancestry.com/search/db.aspx?dbid=7163>, accessed February 19, 2019.

1880 United States Federal Census. Mobile, Alabama. Whistler, Roll 24; Page 100B, Enumeration District: 116. Electronic document, <https://search.ancestry.com/search/db.aspx?dbid=6742>, accessed February 19, 2019.

1900 United States Federal Census. Mobile, Alabama. Whistler, Page 5. Enumeration District 0087, FHL microfilm: 1240031. Electronic document, <https://search.ancestry.com/search/db.aspx?dbid=7602>, accessed February 19, 2019.

Wiseman John D. Jr.

2004 The Iowa-Grimwood Formula: Rate of Flow Formula for Confined Fires, Fire International, v. 200, Electronic document, <http://www.highrisefire.co.uk/docs/TheIowaGrimwood.pdf>, accessed February 21, 2019.

Wittig, Nicole Elizabeth

2013 A 19th Century Fishing Schooner in the 21st Century: Preserving Virginia for the Next Hundred Years. Master's Thesis, East Carolina University, Department of History.

APPENDIX A: NRHP ELIGIBILITY ASSESSMENT

NATIONAL REGISTER OF HISTORIC PLACES ELIGIBILITY ASSESSMENT

The waterway along Mobile River's is an important and tangible element of maritime commerce and maritime trade within the Mobile-Tensaw River Delta, the city of Mobile, Alabama, and the larger American South as a whole. A portion of the Mobile River, where it splits into the eastern channel along Twelvemile Island's eastern side, contains the remains of numerous historic shipwrecked vessels which appear to exist within, and are part of, a historic ship graveyard. The vessels that make up this graveyard span multiple decades. These ships were wrecked, abandoned or intentionally scuttled. A project designed to systematically survey the eastern channel in 2018 confirmed the presence of fourteen anomalies, eight of which are historic vessels located in and surrounding the project area, including 1Ba704 (Delgado et al. 2018a).

To better understand the historical context and archaeological significance of 1Ba704, a discussion and evaluation related to its potential eligibility for nomination to the National Register of Historic Places (NRHP) is warranted. The NRHP is, "the official list of the Nation's historic places worth of preservation. Authorized by the National Historic Preservation Act of 1966 [NHPA], the National Park Service's [NPS] National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources." The list includes districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture. Properties can be significant at the local, state or national level.

Currently over 93,000 properties are on the NRHP representing 1.8 million resources (NPS 2018). As of February 25, 2019, 247 shipwrecks are on the NRHP (including 10 that are also designated as National Historic Landmarks). The only listed property within Alabama state waters is the Civil War Union ironclad monitor United States Ship (USS) *Tecumseh* (reference number 75000306). USS *Tecumseh* was listed in 1975 and lies just off Fort Morgan in Mobile Bay, Baldwin County (Marx 2019).

A successful determination of eligibility or listing in the NRHP affords a property many benefits and advantages ranging from tax incentives to qualification for federal historic preservation grants. The benefits from the NRHP process also includes:

- Consideration in planning for federal, federally licensed/permitted, and federally assisted projects through compliance with the NHPA Section 106 process. This promotes preservation of properties listed or determined eligible for the NRHP.
- Determination of eligibility (sans listing) identifies significant properties even without listing.
- NHPA preservation standards and criteria can guide research priorities, focus fieldwork questions, and maritime cultural landscape studies.
- NHPA criteria helps develop management strategies and protective measures.

- Facilitates recognition of a property as historic by public and government agencies based on a set of national standards and review by the NPS.
- Furthers education and outreach opportunities to raise public and agency awareness.
- Contributes to eco-cultural heritage tourism efforts by public and private entities.
- Provides substantive content of the importance of our maritime heritage for publications, exhibits, websites, etc.
- Provides notice to the public, an administrative record of what is protected under NHPA. This may assist with enforcement investigations and litigation.

The NRHP spells out a process and set of standards to evaluate a property for potential NRHP eligibility. As a general guideline for states, including Alabama pursuant to Alabama Historical Commission's (AHC's) Administrative Code for Archaeological Investigations (Chapter 460-X-9), and other cultural resource managers, a property is considered historic if it is over 50 years of age but more rigorous standards are employed by NPS for those properties seeking eligibility or listing on the NRHP.

The NRHP uses two main categories to evaluate a property, a set of Criteria and justification of a property's level of integrity. The combination of these factors is discussed within a nomination and are heavily weighed upon by the reviewers when determine significance. If a property does not meet at least one of these requirements then it is neither determined eligible nor listed. A property must meet one or more of the four following criteria to be considered potentially eligible for listing:

- A. Be associated with events that have made a significant contribution to the broad patterns of our history; or
- B. Be associated with the lives of persons significant in our past; or
- C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. Yield, or likely to yield, information important in prehistory or history.

An important aspect of nomination to the NRHP involves site integrity. The definition of integrity (as it relates to listing on the NRHP) is the ability of the property to convey its significance. Although subjective, integrity "must always be grounded in an understanding of the property's physical features and how they relate to its significance". The seven aspects of integrity include location, design, setting, materials, workmanship, feeling, and association. A property must retain several of these aspects of integrity to convey significance. In the case of an archaeological site, the relevant aspects to consider are location, setting, materials, and association. (NPS 2018). NPS further clarifies the steps necessary to assess integrity. These include:

- Define the essential physical features that must be present for a property to represent its significance.
- Determine whether the essential physical features are visible enough to convey their significance.
- Determine whether the property needs to be compared with similar properties; and,
- Determine, based on the significance and essential physical features, which aspects of integrity are particularly vital to the property being nominated and if they are present.

1Ba704 both as an individual site and within the larger Twelvemile Island Ship Graveyard are of state and possibly national significance due to Mobile's important role in the history of the Gulf region and the American South. As such, 1Ba704 merits a comprehensive evaluation and an immediate nomination to the NRHP. SEARCH also believes the preferred pathways to nominate 1BA704 to the NRHP at this time is to begin with a larger multiple property nomination of the ship graveyard which would place 1BA704 within the larger maritime cultural landscape of the Mobile River. A supplementary individual nomination of 1BA704 as *Clotilda* would follow that.

TWELVEMILE ISLAND SHIP GRAVEYARD

SEARCH recommends a comprehensive district nomination for the Twelvemile Island Ship Graveyard, with boundary encompassing the Mobile River's eastern channel around Twelvemile Island, including 1Ba704. This district would incorporate known historical resources and suspected submerged and buried features or artifacts. This nomination is key not only for recognizing the area's significance, but also for asserting that what lies in the Mobile River is important and should be seen as archaeological resources that will add to a more detailed understanding of the activities and people who worked there. SEARCH's historical research and archaeological surveys have uncovered an area rich in heritage allowing the diversity of how the Mobile River was historically utilized as the lifeblood for inland and oceanic commerce to be rediscovered and recognized. The archaeological resources present within the Mobile River are the tangible connections to this heritage and can be used as a mechanism to nominate the waters off Twelvemile Island.

Criteria

It is SEARCH's opinion that the Twelvemile Island Ship Graveyard is eligible for nomination to the NRHP under Criteria A and D as a historical and archaeological district. The district should include Mobile River's eastern channel east of Twelvemile Island, encompassing the eight known wrecks discovered during SEARCH's March and July/August 2018 investigations, and any potential wrecks that may exist within the boundary not yet documented. This boundary includes 1Ba704. Based upon the shipwrecks investigated so far at Twelvemile Island, the period of significance is the mid-nineteenth century to mid-twentieth century (1850–1950).

Mobile River's eastern channel is associated with events that have made a significant contribution to the broad patterns of our history (Criteria A). The waterway near Twelvemile Island remains a part of the ongoing industrial use of the river, and as a "back lot" for the port. Historical research shows that the area was an important place for Mobile River commerce as it was used as a refuge from storms. It may also have been a staging area for barge traffic, or as an area used to load barges during periods when this section of the river and Twelvemile Island were logged as part of Alabama's lumber industry. The group of wrecks identified by SEARCH indicate this section of the river as a convenient location to lay up, dispose of, and abandon vessels. In some circumstances, ship-breakers also have used both industrial, non-public areas of urban ports as well as "rural" settings for the partial or near-complete dismantling and recycling of vessels. This practice is not unique to the Mobile River. A number of waterways in the United States and abroad also reflect this type of maritime activity. 1Ba704 was not a vessel used on the Mobile River based off its hull form and construction characteristics, therefore it was taken to Twelvemile Island to be scrapped, abandoned, or scuttled. Historical accounts indicate Captain Foster burned and scuttled *Clotilda* at Twelvemile Island, an event that supports the nomination of the Twelvemile Island Ship Graveyard based on important historic events happening there. *Clotilda* is the earliest recorded vessel sunk there. The presence of 1Ba704 also provides justification for the district's historical significance as an established disposal site that was close enough to Mobile and had deep enough water to permit ocean-going sailing vessels to be sailed or towed upriver to their final disposition.

Historic aerial photographs confirm that the Mobile River, and in particular less active parts of the river and its surrounding watershed, were utilized for the laying up or abandonment of vessels (Wilson et al. 1983). Although today's archaeological sites are mostly below the water's surface, historic imagery and topographic maps supplement the visible extent of the ship graveyard by showing the location and condition of vessels over time and allowing more details about how the waterway was utilized.

Although individual shipwrecks sites at Twelvemile Island are potentially eligible for listing in the NRHP on their own, it is the combination of sites at Twelvemile Island that magnifies the significance of the whole. The diversity of vessel type and time periods demonstrate the continued use of the waterway to support Mobile's maritime pursuits. The archaeological sites documented at Twelvemile Island represent Alabama's diverse maritime pathways from oceanic deep-water and coastal trade to inland river traffic. The known and potential properties within the possible district will yield, or are likely to yield, information important in prehistory or history due to their connection with Mobile and other important maritime ports in the region. Research on Twelvemile Island archaeological sites will further knowledge about topics such as the development of the American barge, role steamboats played along the Mobile River as evidenced by the wrecking or abandonment practices, and uses of wooden and iron hulled sailing ships. Vessels represent the working watercraft of the state or region and show evidence of reuse, selective repair, and ongoing adaptation to prolong a vessel's lifespan. Additionally, ships may have been scuttled or abandoned as an easy way to dispose of a vessel at the end of its life. Information can be gathered about ship construction, wrecking events, disposal or abandonment patterns, life onboard Mobile River vessels, and use of waters near Twelvemile Island to support

trade and commerce. As an archaeological site, 1Ba704, is a contributing resource within the larger district and represents a mid- to late nineteenth century Southern-built potential schooner engaged in the coastal trade network.

Integrity

The Twelvemile Island Ship Graveyard has integrity based on its location, setting, materials, and association. “Location is the place where the historic property was constructed or the place where the historic event occurred” (NPS 2002:44). When applied to the graveyard in the Mobile River, the shipwreck sites retain integrity of location since it has not moved from the intended final disposition. The unceremonious abandonment of vessels in the Mobile River created a deposit of cultural material. Research to date placed some dates on vessels wrecked or disposed at Twelvemile Island. This information combined with aerial photography can generally determine a period of greatest use. With the case of *Clotilda*, historical accounts state that the vessel was burned and sunk but never moved therefore it would remain in its original 1860 location.

“Setting is the physical environment of a historic property” (NPS 2002:45). This can include natural or manmade features including topographic features, vegetation, and relationships between buildings, features, or open spaces. Twelvemile Island’s setting, or cultural landscape, was defined by the river, which was a highway for the movement of goods by water. The Mobile River is also the setting for shipwrecks and placement of abandoned vessels. The Mobile River, and its link to Mobile Bay, also made it a highway for inland maritime transportation. The area has integrity for its setting, and for the archaeology of that setting. The archaeological sites are all in the Mobile River or partially on the Mobile River bank upriver from the port of Mobile, including 1Ba704.

“Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property” (NPS 2002:45). Historic research and archaeological surveys have identified physical elements deposited in the Mobile River near Twelvemile Island to form a ship graveyard of wrecked and abandoned vessels. It is unknown the full extent of the use of the island’s eastern channel as a disposal location. Review of local newspapers report nine vessels lost or taken intentionally to Twelvemile Island, such as *Clotilda*. Archaeological surveys documented eight vessels resident in the Mobile River, including 1Ba704. The likelihood is there are additional materials buried in the sediment based on magnetometer data raising the level of material integrity.

Association is, “The direct link between an important historic event or person and a historic property. A property retains association if it is the place where the event or activity occurred and is sufficiently intact to convey that relationship to an observer” (NPS 2002:45). The Twelvemile Island Ship Graveyard may be considered of state or possibly national significance under Criterion A. However, a broader context must be considered. The link between Twelvemile Island and the port of Mobile is evident by the number and type of vessels historically lost or taken there. Aerial photographs confirm the presence of sites on the eastern channel’s river bank. Although the

exact reason for using Twelvemile Island as a ship graveyard is unknown, its proximity to Mobile, and to the main deep-water channel and available open space for pulling a vessel aground or tying it to a tree, are possible factors. It is also possible that land owner(s) sanctioned or profited from a vessel's disposal. Land ownership deeds have not been researched yet but the Meaher family still has property in the vicinity of the ship graveyard, dating back to 1860 when *Clotilda* was sunk nearby.

For eligibility under Criterion D, less attention to the essential physical features of Twelvemile Island is given than if the site was considered solely under Criteria A, B, or C. The NRHP recognizes that archaeological properties are often an exception and do not require visible features to convey significance (NPS 2002:46). It is also understood that few archaeological properties are exclusively undisturbed and the constant occupation of a site can result in a complex stratigraphic situation. It is understood that cultural and natural processes can alter deposited materials and their spatial relationships. The vessels in the Mobile River were affected by both natural and manmade formation processes. Natural processes, that have likely impacted the sites, include river current, the rise and fall of seasonal water levels, and movement of sediment. Manmade processes such as the bank stabilization efforts and barge moorage may have impacted the sites to unknown degrees. However, more importantly, integrity is based on the property's potential to yield specific data that addresses important research questions.

Similar Properties

Other ship graveyards have been assessed, listed, or determined eligible for the NRHP. These include the ship graveyard off Wilmington, North Carolina (Wilmington Historic and Archaeological District, reference number 74001364, and the ship graveyard at Mallows Bay (Mallows-Bay Widewater Historic and Archeological District, reference number 76000152), in the Potomac River, Maryland (Marx 2019). The Twelvemile Island Ship Graveyard is unique in the diversity of vessels found there and likelihood of locating additional historical, archaeological, or cultural resources due to un-dredging. Resources or smaller artifacts that remain submerged and protected by the soft mud anaerobic environment lining the Mobile River may yield, or are likely to yield, significant preservation characteristics that provide information important to Mobile's history or prehistory. Following an assessment of this section of the Mobile River, and concurrent and follow-up archival research, SEARCH believes a nomination for the Twelvemile Island Ship Graveyard, under Criteria A and D, would result in a potential determination of eligibility and/or a potential listing in the NRHP.

1BA704 AS AN INDIVIDUAL NOMINATION

While SEARCH recommends 1Ba704 for NRHP nomination as a contributing resource within the Twelvemile Island Ship Graveyard, 1Ba704 is also likely eligible for the NRHP as an individual property. Based on the level of knowledge about the site at this time, 1Ba704 may qualify under Criteria A as a commercial vessel used for maritime trade within the Gulf of Mexico and Criteria D as the archeological site has yielded or is likely to yield information important in history. 1Ba704's period of significance would be 1850–1900 with level of significance at the national level. An argument for Criteria B might also be considered because of the association with key individuals such as the founders of Africatown, as well as Meaher and Foster. Additionally, Criteria C might also be considered as a rare, archaeologically well-preserved example of a mid-nineteenth century Gulf-built schooner.

Criteria

1Ba704 represents a wooden-hulled Southern-built vessel, of centerboard schooner design, dating to the mid- to late nineteenth century. Under Criteria A, 1Ba704 is a representative example of a merchant cargo vessel of moderate size, in relation to other Gulf-built vessels, that participated in the region's maritime commerce. Vessels like 1Ba704 were essential to transport raw materials and merchandise to ports around the Gulf and Caribbean with an emphasis on lumber and cotton. The trade network relied on vessels like 1Ba704 to consolidate goods for transshipment to foreign ports as well as providing a vital link for merchants to distribute their commodities within the United States. 1Ba704's location just north of Mobile means it was probably associated with the port and its business interests and may have centered its trade around Mobile as well.

Under Criteria D, research questions can be developed related to ship design, construction, and use as well as those focused on crew demographics, shipboard life, cargo specifics, and the wrecking or disposal event that brought it to the Mobile River. 1Ba704 can provide data on coastal and ocean-going commerce within the Gulf of Mexico and the Caribbean with an emphasis on maritime activities in and around Mobile. The vessel is well preserved and is a potential source of additional archaeological information found within the unexcavated portions of its interior as well as buried outside the vessel within the debris field and shoreline.

The identity of 1Ba704 has not been 100 percent definitively determined but historical accounts place nine vessels sunk or abandoned near Twelvemile Island, including *Clotilda*. As 1Ba704 shows the same characteristics as *Clotilda* and therefore is likely *Clotilda*, the historical events surrounding its final trip, with the last cargo of enslaved individuals landed in the United States, would make the site potentially eligible under Criteria A due to its association with the slave trade, plantation economy, and founding of Africatown. 1Ba704, as the likely *Clotilda*, would still be significant under Criteria B for an artifact powerfully and directly associated with the principals in this story, namely the founders of Africatown, as well as captains Foster and Meaher. As the

likely *Clotilda*, it would be likely eligible under Criteria C because of its well-preserved hull and the characteristics of *Clotilda* as a unique Gulf-built schooner. Criteria D considerations include archaeological information associated with a vessel engaged in the slave trade, reuse and modification of a merchant cargo vessel to carry enslaved individuals, and the events surrounding its burning and scuttling.

Integrity

1Ba704 has integrity based on its location, setting, materials, and association. The shipwreck site retains integrity of location since it shows no evidence of being moved from its intended final disposition. 1Ba704 appears to have sunk in the location it resides at based on the level of sediment inside and around the hull. Twelvemile Island and Mobile River's eastern channel has integrity of setting and materials based on the historical context and archaeological potential of the vessels located there with 1Ba704 as the oldest wreck site located to date. 1Ba704 is a historic property and a physical element of maritime commerce around Mobile in the nineteenth century. Lastly, 1Ba704 has integrity of association based on the link between 1Ba704's vessel type indicating vessels used within the Gulf for trade and commercial activities. 1Ba704 is constructed out of wood native to Southern states therefore it retains its association with maritime commerce and transportation within the region.

Similar Properties

Forty-two schooners are listed on the NRHP outside the Great Lakes but most of them are associated with New England or the West Coast or are historic vessels still afloat. Within the Gulf of Mexico area three schooners are listed, all in Florida. One of them is a shipwreck, the Bethune Blackwater schooner (reference number 910000948), and two are museum vessels, *Governor Stone* (reference number 91002063) and *Western Union* (reference number 84000930). *Governor Stone* is also a National Historic Landmark (Marx 2019). 1Ba704 is unique as it would be connected to Alabama and more specifically Mobile, one of the most historically important ports but underrepresented within a maritime context on the NRHP.

RECOMMENDATIONS

SEARCH recommends the nomination of 1Ba704 within the Twelvemile Island Ship Graveyard but with a detailed nomination for the wreck as a key feature of that multiple property submission. The nomination would be both a historical and archaeological district because the collection of submerged vessels is an important, tangible, and NRHP-eligible element of maritime commerce for the City of Mobile and the American South during the nineteenth and early twentieth centuries. Such a nomination, with boundary encompassing the area around the length of the Mobile River along Twelvemile Island's eastern side, should incorporate both submerged resources and potential features and artifacts associated with the vessels, to protect both the currently identified and unidentified shipwrecks within the area. This nomination is key not only

for recognizing the area's significance, but also providing appreciation of the activities and people who worked there. In doing so, a district nomination, will assist with the protection of 1Ba704 and other undiscovered or undocumented cultural and historical resources that may exist within the boundary of the proposed district. In summary, the proposed district is a significant property under both Criteria A, B, C and D of the NRHP and retains integrity of location, setting, materials, and association, key aspects for a historical and archaeological district.

REFERENCES CITED

Delgado, James P., A. DeCaro, J. Enright, J. Grinnan, K. Lent, N. Linville, D. Marx, and R. Tubby
2018a Mobile River Shipwrecks Survey, Baldwin and Mobile Counties. Draft Report prepared by SEARCH for the Alabama Historical Commission.

Marx, Deborah

2019 National Register of Historic Places maritime database. Personal collection of Deborah Marx, Key Largo. Florida. Electronic document accessed February 25, 2019.

National Park Service (NPS)

2002 *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation*. US Department of the Interior, National Park Service, Cultural Resources. US Government Printing Office, Washington, DC.

2018 National Register of Historic Places. Electronic document, <https://www.nps.gov/subjects/nationalregister/index.htm>, accessed February 25, 2019.

Wilson, Eugene M., Philippe Osziscik, Cailup B. Curren, Jr., and JoAnn Luker

1983 *Cultural Resources Reconnaissance Study of the Black Warrior-Tombigbee System Corridor, Alabama, Volume IV, Special Topics*. Report Submitted to the US Army Corps of Engineers, Mobile District, Contract DACW01-81-C-001, electronic document, <http://www.dtic.mil/dtic/tr/fulltext/u2/a133020.pdf>, accessed February 7, 2018

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