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Contents

iii From the Director
Christopher Dostal

1 The Digitization of Sicilian Tuna Fishing Boats: An International Collaboration
Claire Zak

4 Shelburne Shipyard Steamboat Graveyard
Carolyn Kennedy

7 The Archaeological Remains of Queen Anne’s Revenge
Annaliese Dempsey

10 The Last Laguna Madre Scow Sloop: La Tortuga
Robin L. Galloso & Taryn S. Johnson

13 The Sociocultural Existence of Roman Merchant Sailors
Rachel Matheny

On the Front Cover: Field school students Dan Bishop and Rebecca Ingram holding up clipboards with notes from one of the Shelburne steamboat wrecks. Photo courtesy of the Shelburne Shipyard Project.

On the Back Cover: Chelsea Cohen and Kelsey Rooney after recording a frame near the stern of Phoenix II. Photo courtesy of the Shelburne Shipyard Project.
Welcome to another edition of *News & Reports* from the Center for Maritime Archaeology and Conservation (CMAC) at Texas A&M University. This issue features thesis and dissertation research by CMAC scholars in the Nautical Archaeology Program, the graduate degree granting arm of CMAC. Together with the Institute of Nautical Archaeology, CMAC has supported the thesis and dissertation research of our students all around the world. Despite the fact that on the surface this issue seems to feature research based in just the US and Italy, the global nature of seafaring means there is much more to the story.

The pirate Blackbeard’s ship *Queen Anne’s Revenge* was built in France and operated in West Africa and the Caribbean before meeting its end on the shores of North Carolina. The relatively modern *Mattanza* fishing vessels of southern Sicily are heavily influenced by their Greek, Roman, Muslim, Norman, and Spanish traditions of tuna fishing. The early steam engine designs of *Phoenix II* were part of the technological tipping point that would revolutionize global transportation and move vast populations around the world.

It is impossible to adequately study maritime archaeology without taking a global approach; every research thread we pull reveals influences from a wide variety of peoples and cultures. We tend to think of the interconnectedness of our world as a somewhat modern phenomenon, but in reality, as soon as human beings learned to sail our cultures began to intertwine. We hope that as we continue to delve into our maritime past, we can learn from our forebearers better ways to navigate our global future.

As always, if you find yourself impressed with our research and wish to support specific projects or the general mission of CMAC, you can either reach out to me directly or donate through the Texas A&M Foundation (txamfoundation.com). Our account is under the College of Liberal Arts, in the Department of Anthropology.

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During the summer of 2019, the Marzamemi Maritime Heritage Project (MMHP), an international collaboration between former Nautical Archaeology Program students Dr. Elizabeth Greene of Brock University and Dr. Justin Leidwanger of Stanford University, Dr. Leopoldo Repola of Suor Orsola Benincasa University, and the Sicilian Soprintendenza del Mare, hosted myself and Dr. Christopher Dostal to digitally record several derelict tuna fishing boats from the early 20th century, located in Marzamemi and Portopalo di Capo Passero, Sicily. The MMHP enacts an interdisciplinary and holistic approach to the study of the

Figure 1: The collapse of the shed roof on the Isola di Capo Passero meant disaster for the several mattanza boats under its shelter. Photo by the author, 2019.
and culminated in a harvesting known as la mattanza. The Italian word mattanza comes from the Spanish verb matar, which means “to kill” and the Latin mactare meaning “slaughter,” indicating the bloody nature of the tuna industry, which was a staple in the Sicilian economy from ancient times through the 20th century. Sicilian coastal communities especially benefitted from the industry’s prosperity, constructing vessels known as mattanza for the summer fishing campaigns and tuna processing plants called tonnare. Since the boats possess distinct construction features that assist in the capture of tuna, they allowed Sicilians to practice a unique fishing method.

However, with the advent of modern fishing methods, tuna fishing has diminished drastically in scope and the mattanza boats have been abandoned and left to fall apart. As these boats were integral to the social and economic development of southern Sicily along with the exposed locations of the vessels and the rapid degradation of the timbers, Leidwanger and Greene realized the importance of documenting these cultural heritage projects as swiftly and accurately as possible to aid in the production of a conservation and construction report.

In collaboration with the MMHP, Dr. Dostal and I, along with Dr. Leopoldo Repola, his student team, and Elizabeth Hoffer of Brock Uni-
versity, digitally recorded three mattanza boats located in the piazza of the city of Portopalo di Capo Passero using photography and laser scanning. These data sets allowed us to produce 3D photogrammetric and laser scan models as well as a combined method of photogrammetry and laser scanning, known as photogrammetric texture mapping (PTM). Additionally, the 3D PTM models were used further to produce sections and hull lines, as well as an orthophotograph.

Digital recording of archaeological vessels is beneficial in several ways, which include ease of model manipulation, high accuracy of detail for study and analysis, and simple data sharing and dissemination among collaborators and the community. This research effort serves not only as an evaluation of 3D modeling for the MMHP’s cultural heritage documentation, but also as the groundwork for the potential conservation of these vessels. By recording and studying these cultural heritage objects, the information and significance they contain and represent is preserved for other scholars and members of the local Sicilian community. This evaluation is the preliminary work for a future ethnography and conservation initiative conducted by the MMHP, which aims to record the stories of fisherman who participated in la mattanza and preserve the vessels as symbols of local history and cultural significance.

Figure 4: Sciere Vessel in Portopalo. Photo by the author, 2019.

Figure 5: Photogrammetric model of Sciere. Image by the author, 2021.
The 19th century saw the introduction of a novel form of propulsion for naval architecture: the steam engine. Shipwrights during this period typically learned their craft in a master-apprentice format, and so most shipwrights at the time of the introduction of the steam engine were well-versed in the optimal hull shape for a sailing vessel, but had no experience on which to base hull designs for the new steam technology. Since experimentation in shipbuilding could result in dramatic consequences if a new design went wrong, shipwrights tended to lean conservative in their vessel design. However, the advent of steam necessitated a trial and error approach to achieve a design that was both strong enough to support the massive engine machinery, large enough to carry many passengers, but also light enough to be swift in the water. The steamboats that could carry the most passengers to and from their destinations ultimately made the most money for their owners. As such, beginning with the very first steamboats and continuing throughout the 19th century, steamboat builders raced to design the fastest hulls, rarely relying on written or drawn plans. In fact, the race to optimal steamboat hull design in many cases resulted in steamboats being hauled out after some initial period of operation so they could be altered to improve upon their speed or capacity.

Because of the exponential advancements in...
steamboat hull design and shipwrights’ underuse of written ship plans in the 19th century, the historical record does not provide the full story. Fortunately, these changes are preserved in the material record and can be studied through the archaeological remnants of steamboats. Four such steamer hulls whose operational dates spanned most of the 19th century (1820-1893) were left to sink in Shelburne Shipyard (Lake Champlain) (Figure 1). Shelburne Shipyard was the home of the two most prolific passenger steamboat companies on Lake Champlain, starting in 1820 up until 1953. Its central location on the lake and situation in a bay that provided natural protection from prevailing winds made it an ideal location to build, repair, and annual outfit these boats. It also worked as a dumping (or, more correctly, a sinking) area for the steamers that were old, rotted, and retired.

From 2014 to 2016, Kevin Crisman and I studied the archaeological remnants of four steamboats deposed in Shelburne Shipyard Steamboat to evaluate how hull designs were adapting to steam-power, and addressing demands for bigger and faster boats (Figure 2). The project, run as a field school in cooperation with the Lake Champlain Maritime Museum (co-organized with Christopher Sabick, the museum’s director of archaeology & research) with permission from the Vermont Division for Historic Preservation. The project was funded by grants from the Center for Maritime Archaeology and Conservation, the Institute of Nautical Archaeology, and the National Parks Services Maritime Heritage Program. The project goals were to establish the identities and study the construction of four historic steamboats resting on the bottom of the shallow harbor to better understand how early steamboat builders on Lake Champlain were adapting traditional shipbuilding methods to best suit the new form of propulsion that was the steam engine.

Through comparing the archaeological information with historical records, all four of the ship remains in Shelburne Shipyard were identified. The earliest of the four, Phoenix (II) (1820-1837), was also the most difficult to identify due to its misrecorded length in historical sources. Luckily, archival research revealed its Certificate of Registry which included the steamer’s actual length that much more closely matched the archaeological remains. Even more luckily, in the final season...
on site archaeologists discovered a chisel with ‘SB Phoenix’ stamped into its shaft, confirming the wreck’s hypothesized identity (Figure 4). The other three wrecks were found to be Burlington (1837-1854), Whitehall (1838-1853), and A. Williams (1870-1893). These identities were important to establish in order to track which changes in the steamboat hull designs had occurred earlier or later.

Data accumulated from divers were synthesized into a to-scale site plan, scaled drawings of six hull sections including the bow and stern assemblies, the midships section, two more frame sections, and a section of hull where evidence for the engine machinery was located (Figure 5 and 6). These plans were analyzed and used to reconstruct a set of Phoenix (II)’s ship lines which showed a long, shallow, boat comparable to other early steamers like Heroine, Ticonderoga, and the Phoenix (II)’s predecessor, Phoenix (1815-1819) (Figure 7). Additionally, a reconstruction of the steamboat’s crosshead-beam engine was created using evidence from the archaeological remains and comparative examples from contemporary Hudson River steamers (Figure 8).

The final results of the project revealed that the 1820-built Phoenix (II) was constructed with heavy structural timbers, especially compared to the later three boats. The hefty design shows how early steamboat shipwrights prioritized the hulls’ ability to support the heavy steam engines they carried. This early trend was later replaced with designs for lighter-weight boats that travelled much faster. As one of few archaeological examples of a steamboat built prior to 1850, Phoenix (II) provided evidence that shipwrights had either not yet recognized the potential for speed in lighter-weight boats by 1820, or at least had not yet made that a priority.

Figure 4: Close-up of the chisel recovered from Wreck 2, confirming the identity of the wreck as Phoenix (II). Photo by George Schwarz, 2016.

Figure 5: The to-scale site plan of Phoenix (II) based on the cumulative field notes from the 2014, 2015, and 2016 seasons. Drawing by the author, 2018.
The Archaeological Remains of *Queen Anne’s Revenge*

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In 1996, while attempting to locate the wreck site of *Queen Anne’s Revenge*, flagship of the infamous pirate Blackbeard, the salvage company Intersal Inc. identified a shipwreck site roughly two km off Beaufort Inlet, North Carolina. Control of the site was given to North Carolina state underwater archaeologists, and the initial identification of certain artifacts as well as the results of archival research confirmed that the identity of the wreck was in fact *Queen Anne’s Revenge*. The wreck site has been continually excavated and studied since its discovery, and has yielded

Figure 1: Possible rig configuration, based on archaeological evidence, of *Queen Anne’s Revenge*. Drawing by the author, 2017.
thousands of artifacts, ranging from large anchors and cannons, to small gold flakes. In addition to the artifacts that would have been carried on board, the wreck site has preserved evidence of the vessel itself, in the form of small pieces of rigging elements, an articulated section of the hull, and an articulated section of the sternpost assembly. Using these remains as the basis for a theoretical reconstruction of the vessel will provide important practical information regarding the age of the vessel, its construction, and its sailing capabilities and characteristics. In addition, this research will contribute important insight regarding the interaction between human and machine, and the impact of the vessel itself on the individuals on board.

Before the vessel was captured by Blackbeard and used for piracy, *Queen Anne’s Revenge* sailed as *La Concorde*, a slaving vessel owned by a French slaver and operating out of Nantes. The earliest archival reference of *La Concorde* is from 1710, when the vessel is listed as a privateer, and subsequently appears in archival records for slaving voyages. *La Concorde* completed two voyages in the triangular trade, from France to West Africa then Martinique, and was on the second leg of its third voyage in 1717 when it was captured by pirates. Blackbeard and his crew stranded the roughly 300 captive Africans on a small nearby island, set most of the French crew adrift in one of *La Concorde*’s boats, and absconded with the vessel. Blackbeard and his flotilla, led by the renamed *Queen Anne’s Revenge*, sailed north, and in June, 1718, blockaded the port of present-day Charleston, South Carolina. After the governor ransomed the port for money and medical supplies, the pirates continued north. About a week later, while attempting to sail for present-day Beaufort Inlet, *Queen Anne’s Revenge* ran aground on a submerged sandbar. After losing a second vessel in the attempts to free it, Blackbeard abandoned *Queen Anne’s Revenge*, as well as members of his crew, and was killed several months later attempting to evade capture by British naval officials.

While many other aspects of the wreck of *Queen Anne’s Revenge* have been researched and published, the remains of the vessel itself are still under study. An analysis of the rig remains, including a theoretical rig reconstruction, was published in 2020, and an in-depth study of the hull remains is nearing completion. This research will be used to inform a theoretical reconstruction of the hull, as well as address longstanding research questions regarding the vessel’s age and national origin. The articulated section of the sternpost assembly will provide the general dimensions of the vessel, and evidence of replanking will give a general indication of age. This information, combined with historical vessel maneuvering

Figure 2: An engraving of Edward Teach, otherwise known as Blackbeard, by Benjamin Cole in *A General History of the Robberies and Murders of the Most Notorious Pirates*, 1724.
techniques, will provide insight into how *Queen Anne’s Revenge* was practically sailed, which in turn sheds light on the experience of those on board.

*Queen Anne’s Revenge* represents a unique nexus of the historical events of the early 18th century, serving as both a slaving vessel and a pirate flagship. The ship also sailed in the middle of a technological shift in terms of rigging and sailing characteristics. Archaeological research focused on the remains of the vessel itself therefore sheds light on a significant transition period for one of the most vital pieces of technology of the era: the square-rigged sailing vessel. The technical and architectural characteristics of the vessel dramatically affected the lives of those on board. Many of those who lived or worked on the ship are underrepresented in the historical record: captive Africans, common sailors, and pirates. Technical and archaeologically-informed knowledge of the vessel, therefore, lays essential groundwork for exploring the ways that *Queen Anne’s Revenge* impacted those with whom the vessel came in contact.
The Last Laguna Madre Scow Sloop: *La Tortuga*

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First appearing on Spanish maps in the 16th century, Texas’s coastline is infamous for its low-lying monotonous nature, shallow lagoons, changing river mouths, barrier islands, and shifting sandbars. By the 19th century Texas’s coast and port facilities remained underdeveloped due to Spain’s and Mexico’s focus on controlling trade via internal land routes and the mercantilist system. Despite this, coastal residents cultivated a significant maritime landscape by utilizing pilots, lighters, and dredging near ports to engage in regional, national, and international trade. Texans further adapted to their landscape by building and using two variations of a working-class sailing scow: the Laguna Madre Scow Sloop and the Gulf Scow Schooner. The latter was present along the entire Gulf of Mexico coastline while the former was unique to the Southern Texas coast.

The Laguna Madre Scow Sloop (also called the Texas Scow Sloop, see Figure 1) is a shallow, box-like, double flat-transom vessel. They range

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Figure 1: Lines, sail plan, and rigging of *La Tortuga*. Image courtesy of the Texas Maritime Museum.
from 26 ft. to 32 ft. (7.9 m to 9.7 m) in length and 10 ft. to 12 ft. (3 m to 3.6 m) in beam. They are decked, have two trunk cabins, and have long centerboards which alter the boat’s draft from approximately 12 in. to 40 in. (30 cm to 101 cm). They have a gaff mainsail and jib sail configuration. While the scow shape had been utilized along the East Coast of North America since the 1700s, it was formally introduced to Texas via the Rio Grande River between 1845 and 1865. The scow sloops were used as fishing vessels by people of Mexican heritage; they were solely constructed for work and contained no elaborate embellishments or frills. There were two types of these sloops in use: campos, where the fishermen slept, and mercaderos, which were used to transport the catch to market and return with needed supplies. Campos and mercaderos typically worked in pairs to carry and lay out nets, with each towing a skiff.

The Laguna Madre Scow Sloops were not mass produced by large commercial shipping yards, and knowledge of their construction was passed down through apprenticeships and/or through families (Figure 2). The resultant vessels often had slight variations reflecting the skill and methods of each individual builder. Additionally, there were limitations on what materials could be used during the sloop construction process. Material availability varied throughout the 20th century and by locality as infrastructure developed along the South Texas coast. In 1951 Howard Chapelle stated that local pine and cypress was used to build the sloops, with mesquite wood replacing cypress in the ship’s knees on vessels near the Rio Grande River. Four decades later, Edward Doran documented oak and fresno (a type of ash) also being used. In 1990, the scow sloop La Tortuga was constructed at the Texas Maritime Museum by volunteers using fir for its frames and cypress for planking.

These fishing boats operated from northern Mexico to Corpus Christi for nearly a century from about 1850 to 1950 within their area of optimal operation: the Laguna Madre. Today, this shallow body of water extends from Port Isabel to Rockport and lies between the barrier island of Padre Island and the Texas mainland. The Laguna Madre Scow Sloops, due to their shallow hulls and box shapes, lack the ability to sail safely in deep open waters. As a result, it was rare for these boats to enter the Gulf of Mexico. Furthermore, they did not use compasses or charts, instead navigating by sighting landmarks and following schools of fish.

During the Fall of 2020 Taryn Johnson and I, as a part of my dissertation research on South Texas Maritime Heritage, traveled to Rockport, Texas to document and collect archival information on the last scow sloop constructed in Texas, La Tortuga. The boat was built in 1990 by volunteers under boat builder Miguel Garza who, along with his father and grandfather, built Laguna Madre Scow Sloops during the first half of the 20th century. Only traditional hand tools were used throughout the vessel’s assembly. In general, La Tortuga was constructed in three phases. The first consisted of the assembly of the main skeletal components (frames, keel, transoms, etc.), while the
second stage focused on the addition of external hull features such as planking and deck features. The final building phase included the completion of the bottom of the scow sloop. Details on the vessel’s construction processes and rigging will be covered in future work (Figure 3).

Between 1920 and 1950 almost ninety percent of commercial fishing along the Texas coast was conducted within the state’s bays and the Laguna Madre with millions of pounds of fish caught each year. The majority of the commercial fishing vessels rapidly depleting these natural resources were the scow sloops. As early as 1929, bills to ban and limit commercial fishing and trawling were proposed in the Texas Legislature. These bills were backed by coastal resorts and the hotel industry to further develop tourism and sports fishing. By the mid-20th century all commercial fishing was banned from Texas bays, and most of the sloops from the Port Isabel fleet (several hundred) were sold off to Mexican fishermen operating on the Mexican side of the Laguna Madre. In 1976 only twelve scow sloops were left in the Brownsville area while a hundred were in Mexican waters.

While the reign of the Laguna Madre Scow Sloop only lasted about a century, its usage along the South Texas Coast demonstrates the ways in which the people of the region adapted watercraft to their needs and utilized locally available natural resources.

Acknowledgements: None of this work would have been possible without the Texas Maritime Museum’s Justin Parlkoff and Chris Dukeminier.
The Sociocultural Existence of Roman Merchant Sailors

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On board merchant vessels during the Roman Imperial and Late Imperial periods, the variety of often unnamed crew, generally termed *nautae*, performed the majority of the work. However, while many of the other roles on board Roman merchantmen have a distinct presence in the literary, archaeological, and iconographic record, *nautae* are largely absent from legal and historical narratives. While Roman jurists dedicated several edicts outlin-

Figure 1: Ship relief on the upper north side of the Tomb of Naevoleia Tyche in Pompeii. Note that the *nautae* are background characters in a relief intended to eulogize a different person. Engraving by Frederock Warne, 1880, in *Pictorial Chronicles of the Mighty Deep* by Francis Watt.
ing legal and financial responsibilities of other roles, such as the navicularii (ship owners), negotiatores (merchants), magistri naves (captains and sometimes also the shipowners), and gubernatores (helmsmen), and while archaeological evidence in the form of mosaics and tomb reliefs attest to the presence and success of individuals and other maritime organizations in these roles, nautae are predominantly overlooked by these sources. When they do appear, they are only written about or depicted as secondary characters in someone else’s story or scene (Fig. 1) and are portrayed as denizens and antagonists, members of the ochlos nautikos (strata of lower-class laborers and renegades in port cities). These vilipending descriptions might not have always been false, as several Late Imperial laws addressed violence caused by sailors, but some of the modern-day academic discussions surrounding Roman nautae continue to use the adjectives and opprobrious language of the Roman aristocracy. The continued use of these characterizations perpetuates the marginalized identities of Roman nautae and disregards the realities of their existence, resulting in a significant gap in the modern understanding of the maritime world of the Roman Empire. Using a combination of archaeological and historical evidence, this research aims to wrest these conversations from narratives of exclusion to focus on the perspective, agency, habitus, and lived realities of Roman nautae.

Roman nautae went to sea from April to October and while they might have been away from their home for a considerable period of time, they were rarely out of sight of land, traveling from port to port, or safe harbor to safe harbor (Fig. 2). While
working aboard the merchantmen, they probably were barefoot only wearing a short tunic or *subligaculum* (loincloth) which they removed if they had to go in the water, perhaps to go spearfishing (Fig. 3). In the vein of the time-honored sailor mentality of “make it work”, they used what they had on hand to make the things that they needed. For example, extra lead sheathing, normally used to protect the hull, was fashioned into fishnet weights and possibly globular and truncated pots, which have been recovered from at least 10 different Roman Imperial shipwrecks, and *foci*, or braziers, such as those found on the Cap Lardi- er 4, Barthelemy B, and Cabrera IV shipwrecks. In addition to human helpers, the crew might have also had a dog, such as the one mentioned by Plutarch (*De Soll.* 10) guarding the ship while the sailors were away in port. In the harbor of Pisa, the remains of a sailor clutching a dog were found underneath hull remains; presumably, while trying to escape with his dog, they became trapped by the overturning ship, the weight of the cargo and hull imprisoning them together on the seafloor. *Nautae* also had some economic capital and were active participants in the Roman economy as evidenced by the coin hoard recovered from underneath the ceiling planking of the Punta Ala shipwreck, probably having been hidden there by a sailor.

The vessels were an extension of the same social and authoritarian structures found within Roman society in general rather then a replication, as seen during the Age of Sail. Many of the same deities they worshipped were also incorporated into life in port. Roman sailors relied upon Priapus to protect and guide them through rough seas and his iconic phallic symbol became associated with sailors. Apotropaic Priapic objects have been recovered from the Pisa E and Planier A shipwrecks and, though a controversial interpretation, phallic reliefs point the way to the Maison du Lac, a tavern with a wide array of services in the Roman Delian harbor. Sailors moving from the harbor into town could follow these symbols to find a place eat, relax, and find entertainment. The sailors were an integral part of the maritime community both at sea and on land. In the Late Imperial and Early Byzantine periods, church historians even detail the involvement of sailors in political and religious disputes and riots, filling the role of hired muscle.

Though this research is on-going, utilizing a broad range of archaeological data supplemented with textual, epigraphic, and iconographic information, the invisible, those who have no direct voice in the historical record, can become more visible. *Nautae* in the Roman world might have been men and women, citizens, freedmen, and slaves but their function and presence in the Roman maritime world was just as significant as the more prominent actors and their sociocultural existence and general realities are just as worthy of study.

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**Figure 3:** Roman mosaic of a ferryboat on the Nile (2nd c. A.D.). Note the various garments of the crew on board, including loincloths and hats, and the nude sailor in the water, pushing the boat. Image courtesy of the National Museum Wales