

# MAHSN News



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## **The Monterrey Wrecks: Characterization of Three Early-19<sup>th</sup> Century Shipwrecks in the Gulf of Mexico**

*By Jack Irion, Frank Cantelas, James Delgado, Amy Borgens, Frederick Hanselmann, Christopher Horrell, William Kiene, Steve Gittings, Michael Brennan and Alicia Caparaso*

In April 2012, the National Oceanic and Atmospheric Administration (NOAA) ship *Okeanos Explorer* conducted the initial reconnaissance of a shipwreck site in over 1,330 meters (4,364 feet) of water 170 miles from the Texas-Louisiana coast as part of an interdisciplinary exploration mission focusing on deep water hard-bottom habitat, naturally occurring gas seeps, and potential shipwrecks in the Gulf of Mexico.

First identified as a side-scan sonar target in 2011, a brief remotely operated vehicle (ROV) dive made a truly exciting discovery that will contribute significantly to our understanding of a turbulent period of American history. The shipwreck is an undisturbed, early-19<sup>th</sup> century, wooden-hulled, copper-sheathed sailing vessel containing artillery, firearms, navigation instruments, cooking and food storage items, medicines, and personal artifacts.

The sonar target first came to light when Shell Oil notified the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSEE) agencies of the U.S. Department of Interior, tasked with overseeing oil and gas exploration and development on the Gulf of Mexico Outer Continental Shelf, that a side-scan sonar target resembling a shipwreck had been

found in their lease area 90 miles from Flower Garden Banks National Marine Sanctuary, southeast of Galveston, Texas. The depth and lack of nearby oil and gas industry infrastructure suggested that the vessel might be well preserved. The target imaged in the sonar data collected by Fugro Geosciences revealed a tightly contained site with a sharp, hull-formed outline measuring approximately 25 meters (84 feet) long by 7.9 meters (26 feet) wide, with indications off one beam of what were thought to be the remains of two masts.



*Stern post and after part of the lower hull of Target 15577, also known as the Monterrey Shipwreck. The wooden hull has deteriorated, leaving only the copper sheathing that retains the form of the ship. Image courtesy of NOAA Okeanos Explorer Program.*

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## Notes from the Prez – Steven Anthony

MAHS offered its 26<sup>th</sup> Annual Introductory Course in Underwater Archaeology in January 2014 kicking the New Year off with another small but highly motivated and talented class of students. Everyone was eager to complete the course and get involved in our field school and ongoing shipwreck project on Pickles Reef in the Florida Keys. Charlie Reid, a new Director on the MAHS Board, managed the Introductory Course for MAHS for the first time this year. His management skills really came through, and the Board expressed their appreciation and gratitude to Charlie for a job well done.

Also in January, MAHS Board Director Jim Smailes attended the Society for Historical Archaeology Conference in Quebec City, Canada. Jim also represented MAHS at the Annual Board meeting of the Advisory Council on Underwater Archaeology (ACUA), which is held during the conference. MAHS serves as an Institutional Associate Member to ACUA, and in his report to MAHS Jim included news that the Society for Historical Archaeology will conduct its 2015 conference in Seattle, Washington. If anyone is interested in attending next year's conference please be sure to contact me. At the meeting, Jim was also nominated as a candidate for individual Board membership to the ACUA.

On March 22, MAHS participated in the Maryland Historical Trust Workshop in Archeology conference. James Delgado, Director of the NOAA Maritime Heritage Program, was the keynote speaker. His presentation discussed the initial investigation by the *OKEANOS Explorer* research vessel of a wreck lying more than 4,000 feet below the surface of the Gulf of Mexico. The wreck may be that of an American-built ship related to privateering out of Baltimore. See the lead article in this issue. In the bookroom, MAHS members Tom Berkey, Jim Smailes and Dave Shaw manned a table and answered conferees' questions about MAHS and our various projects.

March was also the deadline for public comment on the proposed regulations for the Submerged Military Craft Act. The proposed regulations seek to amend the permitting process that authorizes the research and study of sunken and terrestrial military craft. The permitting procedures immediately came to mind when Odyssey Marine, Inc., announced their recent success in recovering gold from the *SS Central America* for the court appointed receiver. The question of the jurisdiction of the Navy permitting process and its application to Odyssey's salvage of the *SS Central America* raises

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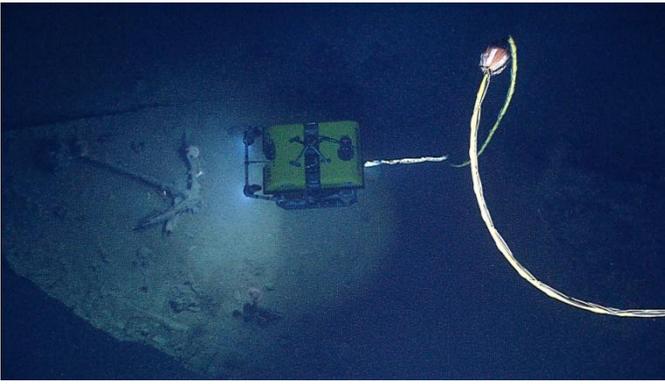
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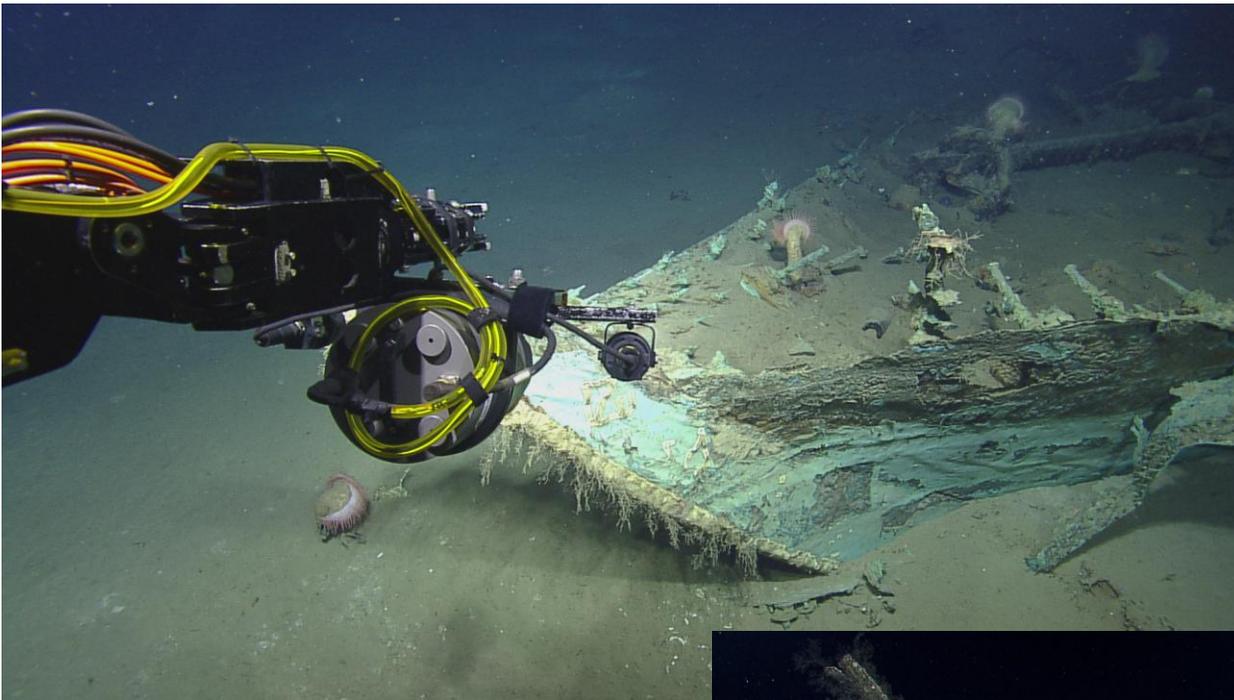


*The Little Hercules ROV collecting video of an anchor inside the bow of the shipwreck which is outlined by remnant copper sheathing. The photo was taken by NOAA's Seirios Camera Platform. Image courtesy of NOAA Okeanos Explorer Program.*

This tantalizing discovery is one of the more significant shipwreck sites discovered in the Gulf of Mexico to date because of its amazing degree of preservation from a critical period in history in which new nations were forming at the end of Colonial era and the Gulf was opening to global trade. As it has not yet been identified, the wreck, initially identified as Target 15577, is referred to as the "Monterrey Shipwreck," after Shell's name for their proposed development.

In a partnership between the Meadows Center for Water and the Environment at Texas State University and the Ocean Exploration Trust at the University of Rhode Island, a team of archaeologists and other scientists from NOAA's Office of Ocean Exploration and Office of National Marine Sanctuaries, BOEM, BSEE, and the Texas Historical Commission (THC) returned to the site in July 2013 for detailed documentation and the recovery of a small number of artifacts in order to determine the historical and socio-cultural context within which the ship operated and, hopefully, to also identify the vessel. All work was done under a Federal Antiquities Act permit and conformed to the standards in the Annexed Rules of the UNESCO Convention on the Underwater Cultural Heritage. Discoveries and findings were shared with the general public through a variety of media including telepresence and video streams to a global audience of millions.

The goal of the project was to systematically study the shipwreck through in-depth documentation, including mapping the site using ROV technology. The maps were created by Ian Vaughn from Chris Roman's laboratory at the University of Rhode Island. Utilizing telepresence, an on-shore team from the University of Rhode Island, Texas State University, Texas A&M



*ROV capturing video of the bow of the ship. Portions of the draft marks are visible on the oxidized remnants of the copper sheathing in the inset on the left. The grey strip covering the stem is lead. Image courtesy NOAA Okeanos Explorer Program.*



University (Galveston), the Maryland Historical Trust, and NOAA's Office of National Marine Sanctuaries participated in the archaeological, oceanographic and biological analysis.

Video data collected during the 2012-2013 archaeological reconnaissance showed the presence of a living tube worm within the confines of the hull of the wreck, a phenomenon never before witnessed in the Gulf of Mexico. The site is not near hydrothermal seeps, where these animals are typically found living in symbiosis with chemosynthetic bacteria. Information from water samples, sediment samples, and wood samples may help archaeologists and biologists determine how this site has become a benthic habitat.



*A tube worm (upper left) living among artifacts within the wreck. Image courtesy of NOAA Okeanos Explorer Program.*

In addition, the expedition recovered approximately 60 diagnostic artifacts for conservation, analysis, exhibition, future study, and public outreach. All artifacts are undergoing conservation at Texas A&M University's Conservation Research Laboratory in College Station, Texas. They will then be placed in a public museum for curation and display.

As the archaeological assemblage is out of the physical reach of traditional underwater collection and excavation techniques through the use of SCUBA, remotely operated technology was the tool by which data were collected during field work. The documentation and sampled artifacts will be used to address research questions including, but not limited to, the age, function and cultural affiliation of this vessel.

At the same time, a team of scientists and oceanographers worked to complete a detailed biological assessment of the shipwreck and recovered samples of the organisms that live on or near the site. To accom-

lish this incredibly complex operation, the team worked on board the research vessel E/V *Nautilus* stationed at the surface of the water, 4,300 feet over the site. After the mapping and documentation of the Monterrey wreck was completed and the artifacts were recovered, *Nautilus* navigated to two other potential wreck sites also identified by the Shell survey.

These additional targets were determined to not only be other shipwrecks, but also to be vessels likely associated with the first wreck. Now known as Monterrey A, B and C, these three vessels appear to be a privateer or pirate vessel (Vessel A) with two ships, probably prizes that it had captured. Documentation of Wrecks B and C included mapping by Ian Vaughn (URI) and video and still photography. All work was non-intrusive—no samples or artifacts were recovered. All three vessels, sharing common characteristics in the form of the artifacts seen on board, appear to have been sunk together, most likely in a violent storm. Wreck B

is a small, un-coppered wooden vessel that sank with a cargo of bound rolls of cattle hides, horn and blocks of tallow (beef fat), which were found preserved on the wreck. The third vessel, Wreck C, seemingly without a cargo, was larger and copper-clad, with a huge anchor and stone ballast. If it did have a cargo, the cargo may have been something perishable that was not preserved. The preliminary indications have suggested to the team that if Wreck A is a privateer and Wrecks B and C are its prizes, that this may be the first time ever archaeologists have discovered a privateer/pirate ship with its captures.

Wreck A may be an American-built ship associated with the activities of the "Baltimore patriots," who were active after the War of 1812 as American ships and crews



*Various artifacts found in the interior of the wreck include ceramic plates, platters, and bowls, as well as glass liquor, wine, medicine, and food storage bottles of many shapes and colors (some with the contents still sealed inside). Image courtesy of NOAA Okeanos Explorer Program.*



*Project archaeologists monitoring a dive on E/V Nautilus. Left to right: Frederick Hanselmann, Jack Irion and Chris Horrell. (Ocean Exploration Trust/Meadows Center for Water and the Environment).*

waged an economic war against Spanish shipping in the Caribbean and Gulf of Mexico in support of South and Central American independence from Spain. The three ships may have been heading for Galveston, a port held by independent Mexican rebels aligned with French privateers Louis Aury and Jean Laffite, with cargoes of hides, tallow and possibly slaves or tobacco, all common prizes taken and sold at Galveston during this period. What is now clear is that a return mission is necessary to more completely study Wrecks B and C, and to recover diagnostic artifacts from them. Only then may some of these questions be answered—and in a return mission, an even larger audience can be reached in what could be a unique “you are there” virtual project in which the world can watch and participate as science and discovery unfold in real time.

In conclusion, the goals of this project are to bring the best available technology and a highly competent team to solve the mystery of the Monterrey wrecks. Whose ships were they? Why were they out on these waters? How were they lost? We believe the remains on the sea bed offer the best chance to answer these questions.

These are the deepest shipwrecks to be systematically investigated in the Gulf of Mexico and the United States. This project is a bold step into a new and emerging frontier for science and in particular for archaeology. It will be an opportunity to rewrite history or add clarity to forgotten events in the early history of the Gulf. It will also provide hard data on the deep ocean environment, and how that environment helped preserve this amazing time capsule from some two hundred years ago. The systematic mapping, the video and photographs, as well as other data will be available for study by other archaeologists and ocean scientists. Many reports, scientific papers and publications will result from this project, which is at the forefront of creating standardized methodology for doing deep water excavation/collection with ROV technology. The project will not only benefit science, archaeology, and history, however. The images and data, and the detailed maps, as well as the recovered artifacts, will provide an excellent means by which exhibits, popular publications, and educational and public programs will be developed. They will focus on this cutting edge application of technology to underwater research and archaeology. Further, the project will highlight Texas’ history and the interconnectedness and role of the former Republic with the United States as it expanded in those times, and other states and countries at the cusp of globalization when the world we now live in was coming into being.



*Several pieces of the ship’s compass, including the compass card inside the copper, gimbaled mount. Image courtesy NOAA Okeanos Explorer Program.*



*Two clusters of muskets in an arrangement suggesting they were stowed together. An anemone lives on top of a musket in one of the clusters. Image courtesy NOAA Okeanos Explorer Program.*

## Update

The *Okeanos Explorer* expedition returned to the Gulf of Mexico in mid-April of 2014 to focus on Wreck B.

Briefly surveyed in 2013 during a two-hour ROV dive, the site appeared to be a well-defined early 19<sup>th</sup>-century shipwreck with surviving cargo and a unique community of colonizing benthic animals. As the ROV approached the shipwreck, the first artifacts to clearly appear were bright white ceramics and the large blocks of yellow-white tallow, or rendered beef fat, seen in the previous reconnaissance. Tallow was a product commonly used in the 19<sup>th</sup> century in the production of soap and inexpensive candles. During the eight-hour dive, the team examined evidence of vessel construction and individual artifacts for diagnostic features that might help date and identify the site.

Artifacts and features of particular interest included an iron gudgeon and pintle used to connect the rudder to the vessel; a cast iron ship's stove; two *cántaros*, or Mexican ceramic water jars produced in the Yucatan; large glass utilitarian bottles called demijohns, used to transport liquor; and ceramic tableware including a small blue and white bowl with a castle decoration. Also seen were navigational instruments, such as two octants, the brass frame and gimbal band for a compass similar to that found on Wreck A, two depth-sounding leads, a telescope, and several sand clocks; rolls and stacks of hides; and wooden boxes or crates that are, remarkably, still intact and presumably encase their original contents.

One additional and extraordinary find was part of a chronometer, a timepiece that could keep accurate time on a rolling ship at sea. The devices were expensive and initially, few ships carried them. It was not until 1825 that British Royal Navy ships carried chronometers. While other evidence from the wreck suggests the ship predates 1825, it was unusual for merchant ships to have such an expensive instrument. Roman numerals were visible on the face of the chronometer, as well as a hand that appeared to be pointing to 6:30.



*The bow section of Monterrey B, showing glass demijohns, blocks of tallow, rolls of cattle hides, and a large iron anchor. Image courtesy of NOAA Okeanos Explorer Program, Gulf of Mexico 2014 Expedition.*

Complete results of the expedition, including archived video of the ROV dives, can be seen at: <http://oceanexplorer.noaa.gov/okeanos/explorations/ex1402/welcome.html>.



*Two depth sounding leads and a brass frame and gimbal band, likely for a compass, lying among glass and ceramic bottles and jugs. Image courtesy of NOAA Okeanos Explorer Program, Gulf of Mexico 2014 Expedition.*



*The face of the chronometer, with hand pointing to 6:30. Image courtesy of NOAA Okeanos Explorer Program, Gulf of Mexico 2014 Expedition.*

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# Investigation of Shipwreck Debris on Pickles Reef: MAHS Project Update, 2013

by Dave Shaw, Steve Anthony and Dennis Knepper

MAHS volunteers returned to the Florida Keys in June of 2013, to continue investigating shipwreck debris located on Pickles Reef, in the Florida Keys National Marine Sanctuary (FKNMS). For several years we have been following up on a request by Roger Smith, Florida State Underwater Archaeologist, to investigate portions of Pickles Reef and determine the nature of several shipwreck sites recorded there as documented in the State's files and known to local dive operators on the reef. Smith described three areas of interest: 1) metal wreckage known as the Gear Wreck or Barrel Wreck; 2) a nearby scatter of solidified cement barrels; and 3) a ballast pile lying some distance from the other two sites.



Students and trainers review site map. From left: B. Hosley, J. Smailes, D. Shaw, J. Kinsela, P. Kistler, E. Kistler. Photo by D. Knepper.

Following last year's work on the reef, MAHS asked Brenda Altmeier, Maritime Heritage Coordinator for FKNMS, to recommend an underwater archaeologist who might consult with us on the site. Through her good offices we were able to enlist the assistance of Matthew Lawrence, archaeologist with the Stellwagen Bank NMS. Lawrence visited the Pickles Reef with Altmeier in August of 2012, and as reported in the Fall 2012 issue of *MAHSNEWS*, he identified several features that were likely related to an iron-hulled vessel.

With this new information in hand, the goals of the MAHS project in 2013 were to refine the site map begun in 2010 by filling in details and tying outlying features to the main site datum; to secure real-world coordinates for datum points used in the mapping; and to investigate several specific wreck features identified by Lawrence.

MAHS worked again under a Sanctuary permit that authorized our research within the marine sanctuary and clearly defined the allowable work activities. Diving services for the project were contracted through Conch Republic Divers and accommodations through Ocean Pointe Suites, both in Tavernier.

As has been the case in past seasons at the site, the project combined survey work with the MAHS Field School in Underwater Archaeology, which is held at least once a year for graduates of the live underwater archaeology course or the video course, *Diving into History*. This year's class included students Jim Kinsella, Per Kistler and Erik Kistler, and was headed up by MAHS Board members Jim Smailes and Bart Hosley. The dry-land run through of the trilateration technique for mapping was conducted on the beach at the hotel, after which all personnel convened at the dive shop ready to head out to the site. This year we were joined by a journalist from the *Miami Herald*, Cammy Clark, who was preparing a story on the research we have been conducting at Pickles Reef.

June can be an unsettled month weatherwise in south Florida, and in past years we have had ample proof of that fact. Poor conditions each of the last three



Preparations on the dive boat. From left: G. Mace, C. Clark, P Kistler, E. Kistler. Photo by D. Knepper.



*Baseline paralleling a long beam that may be a keelson.  
Photo by D. Knepper.*

seasons, including winds, high seas, and cross currents, limited our time collecting reliable data, and two years in a row we were unable to work on site for at least one day due to weather issues. This year, however, we broke the string of bad luck and experienced excellent conditions. We were able to make the most of calm seas to gather a lot of good information at the site.

On the first set of dives, we located the newly identified ship features and laid a new baseline through them. The baseline approximated what may have been the centerline of the vessel, passing through two mast steps and following a somewhat twisted metal beam that may have been part of the keelson. Although visible in places along its length, the beam was covered in many areas by coral and other marine growth.

At Lawrence's suggestion, we verified the locations of several key features with GPS readings taken from the surface, something we had been unable to do in the past due to sea conditions. This season two divers were assigned to the task, one working on the bottom to secure a line to each feature in question, the other on the surface with a GPS unit on a float. With the line held on the bottom, the diver on the surface pulled tight to

ensure he was directly over the feature, at which point he took the GPS reading.

Meanwhile, the field school participants began trilateration mapping of key features along the new baseline, including the two mast steps, and several large hull fragments. After plotting the trilateration data at the end of the first day, the second day was spent making detailed drawings of the features. Two other large features that lay some distance from the rest of the wreckage were also drawn.

A distinctive feature of the site is a collection of hardened cement barrels. To determine how extensive the distribution of barrels might be, three divers counted visible barrels throughout the site. Because the scatter of features was widespread, the divers only had time for impressionistic counts. Nevertheless, the three divers working independently each came up with an estimate of approximately 50 barrels. Given the redundancy achieved with multiple divers, we are fairly confident of the figure as a general estimate. While it is likely that some barrels may have broken up soon after falling into the water allowing the contents to disperse or disintegrate, the relatively low barrel count overall suggests that the cement was not a primary cargo.

Recent archival research by Dave Shaw and Tom Berkey led to the discovery of a hydrological survey of the area conducted in 1935 by the U.S. Coast and Geodetic Survey, an early precursor to NOAA. The map includes portions of Molasses, Pickles, Conch and Crocker Reef, and provides detailed bathymetric data along with the locations of several beacons. One of the beacons, labeled B-4, appears to correlate with two rusted iron poles located in the shallows about 400 meters north of the wreck site. On the historical map the



*Hull wreckage and baseline. Photo by E. Kistler.*



*J. Smailes and J. Kinsella making a measured drawing of one of the mast steps. Photo by D. Knepper.*



*Baseline trilateration: P. Kistler foreground, E. Kistler, background. Photo by D. Knepper.*

beacon is marked as “BN. ‘4’ 1934” along with the note “(Destroyed Sept 2-3, 1935).” September 2 is the date of the great Labor Day hurricane of 1935 that ruined much of the Keys including Henry Flagler’s Key West Extension of the Florida East Coast Railway. Also on the map are notes in the vicinity of the archaeological site indicating “wheel shaft of wreckage bares 2 ft MHW” and “piece of wreckage awash MHW.” Whether this wreckage correlates with any of the features we have been documenting archaeologically remains to be determined.

The archival crew have also consulted the Automated Wreck and Obstruction Information System (AWOIS), a database of charted wrecks produced by NOAA’s Office of Coast Survey. The database shows five wrecks lying within a couple of hundred meters of the archaeological site. The coordinates could indicate the locations of additional wreckage on the reef that we have not yet documented, although some might actually

be redundant reports of the same wreck. So, we now have more data to check out, both in and out of the water.

Sea life on the reef is varied. Over the past few years we have seen a wide variety of fish, including typical reef fish such as grunts, jacks, trumpet fish and parrot fish, along with numerous barracuda, a few puffer fish and a couple of nurse sharks.

This year we were visited for the first time by three large spotted rays. They cruised through the site several times, and at one point circled back to watch a pair of divers measuring and drawing one of the site features. Apparently satisfied with the job the divers were doing, they departed, wafting gracefully away into the distance.

MAHS will return to Pickles Reef in June of 2014 to continue research at the site. Current plans include continued work on a photomosaic of the metal wreckage that we began in 2012. The basic imagery will be collected with high-definition video using the baseline established this year paralleling what we suspect is a keelson. We will also concentrate on collecting additional data from key features, including additional measurements of frames and other hull fragments that may be diagnostic. ⚓



*One of several large rays that cruised through the site. Photo by E. Kistler.*



# What We Learned from the Battle of Taranto

by Joseph F. Callo

This article appeared in slightly different format in the July 2013 issue of *Military History* and is reprinted with permission.

The 1940 British attack on the Italian naval base at Taranto had a significant impact on the early stages of World War II in the Mediterranean. It also had implications that went far beyond that time and place.

Among Britain's objectives was the preservation of Malta as an operational hub in the Mediterranean. For their part the Italians needed to preserve the battleships, cruisers and destroyers that supported Italian ground operations in North Africa, while also threatening British logistics in the theater.



*Fairey Swordfish biplane equipped with torpedo.*

Those conflicting military objectives collided at Taranto on November 11, 1940. The British night attack involved 21 Fairey Swordfish biplanes launched in two waves from the Royal Navy carrier HMS *Illustrious*. Some aircraft were armed with torpedoes, others carried bombs. The torpedo attacks sank one Italian battleship and heavily damaged two others, while a heavy cruiser and several destroyers also took bomb hits. It was an impressive score for a vintage aircraft the British affectionately dubbed the "Stringbag" for the variety of weapons and other gear it could carry.

Prime Minister Winston Churchill assessed the impact of the raid in the House of Commons:

The result, while it affects decisively the balance of naval power in the Mediterranean, also carries with it reactions upon the naval situation in every quarter of the globe.

In light of widespread skepticism at the time about the viability of carrier-based airpower, the comment of Admiral Sir Andrew Cunningham, British commander in chief in the Mediterranean, was perhaps more noteworthy:

Taranto and the night of November 11-12, 1940, should be remembered for ever [sic] as having shown once and for all that in the Fleet Air Arm, the Navy has its most devastating weapon.

In fact the balance of naval power in the Mediterranean was not altered as radically as Churchill claimed. Yes, Malta remained a crucial British base, but it faced continuous threat by land-based Italian and German aircraft, as did the shipping that supported it. In addition, the Italians maintained the basic integrity of their fleet and logistic support of their North African operations.

In the long view of history, however, the Battle of Taranto changed the face of naval warfare forever. It signaled the replacement of the battleship by the aircraft carrier as the centerpiece of naval forces and an accompanying shift in naval tactics and strategies. The December 7, 1941, Japanese attack on Pearl Harbor ferociously confirmed that transition. Of greatest historical significance, however, tactical airpower projected by sea quickly became a crucial component of U.S. national power, and more than seven decades later that special element of global power remains in full force.

## Lessons

- As the torpedoes and bombs exploded at Taranto, so did the traditional naval combat doctrines based on the big guns of battleships.
- New technologies and the new tactics they enable can be surprisingly effective in applying ancient military maxims, such as Sun-tzu's advice to "appear where you are least expected."
- Never underestimate the troublemaking capacity of a naval aviator at the controls of an aircraft—even one he jokes about—attached to a torpedo or bombs.
- Surprise remains an invaluable force multiplier in naval warfare, whether you're

talking about triremes or ballistic missile submarines.

- Admiral Lord Nelson's combat doctrine—"the boldest measures are the safest"—articulated before the Battle of Copenhagen in 1801, is timeless.
- Others will mimic a successful tactic: What worked at Taranto was even more effective at Pearl Harbor.

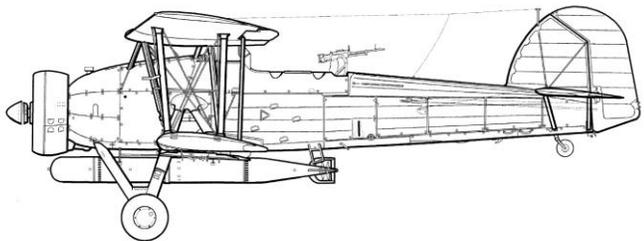
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*Joseph Callo is a retired Rear Admiral with a 30-plus year career as a reserve officer. He writes frequently on naval subjects for magazines and newspapers and has written extensively on Horatio Nelson and John Paul Jones. His latest book, The Sea Was Always There, was reviewed in the Fall 2012 issue of MAHSNEWS. ⚓*

## The Fairey Swordfish

by Dennis Knepper

The Fairey Swordfish was a biplane designed by the Fairey Aviation Company of London and Manchester, that was used by the Royal Navy during the Second World War as a torpedo bomber. Largely outdated by the start of the war, it continued in use due to its flexibility and effectiveness.



*The Fairey Swordfish biplane.*

The Swordfish was a large plane, with a length of 36 feet and wingspan of 46 feet. Powered by a Bristol Pegasus engine, it boasted a maximum speed of 139 miles per hour and a range of 546 miles. It was a three-seat aircraft with an open cockpit. The crew consisted of pilot, observer and radio operator/gunner. While similar in design to World War I craft, the Swordfish had a full metal structure and was thus considered very durable. Designed as a naval craft, the wings were hinged to fold for storage aboard aircraft carriers. As noted, the plane was nicknamed the Stringbag because of the variety of equipment it was able to carry: crews compared it to a string shopping bag that could expand to hold items of many shapes.

In addition to its successes at Taranto, the Fairey Swordfish was instrumental in ending the career of the infamous German battleship *Bismarck*. According to some accounts, the planes flew too low and slowly for the German ship's fire control systems to accurately follow. Flying from the carrier *HMS Ark Royal* in May of 1941, one of the planes scored a torpedo hit that disabled the big German ship's rudder. ⚓



*Fairey Swordfish biplanes, some with folded wings, on the deck of the carrier HMS Victorious.*



*Fairey Swordfish biplanes flying above the carrier HMS Ark Royal.*

# A Boat Mill Discovered in the Doubs, at Sermesse, France

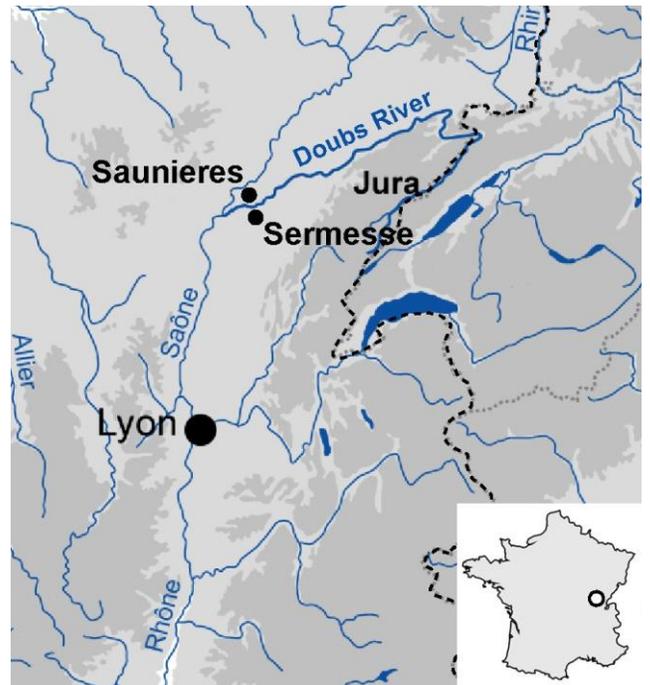
by Annie Dumont, Philippe Moyat and Agnes Stock

The Doubs River drains the massif of Jura, a sub-alpine mountain range in eastern France. A major tributary of the Saône River, the flow of the Doubs is irregular, with significant seasonal variation resulting from a combination of rainfall and snowmelt in winter and spring. High water level occurs from December to April, when stream flow averages 268 m<sup>3</sup>/sec. The flow subsides gradually until low water level is reached in early July to September.

Because the river is characterized by such variable water levels and stream flows, placing fixed mills along its banks has never been practical. From the Middle Ages through the early 20<sup>th</sup> century, the boat mill was thus the structure favored to grind grain in the region.

Archival texts dated from the late 16<sup>th</sup> and late 17<sup>th</sup> centuries describe orders for the construction of mills along the river. From these documents we learn that the boats used for supporting the floating mills, even though they did not differ much from other boats navigating the river, were specifically built for this purpose. Carpenters specialized in this type of construction and established businesses on the banks of the Doubs River.

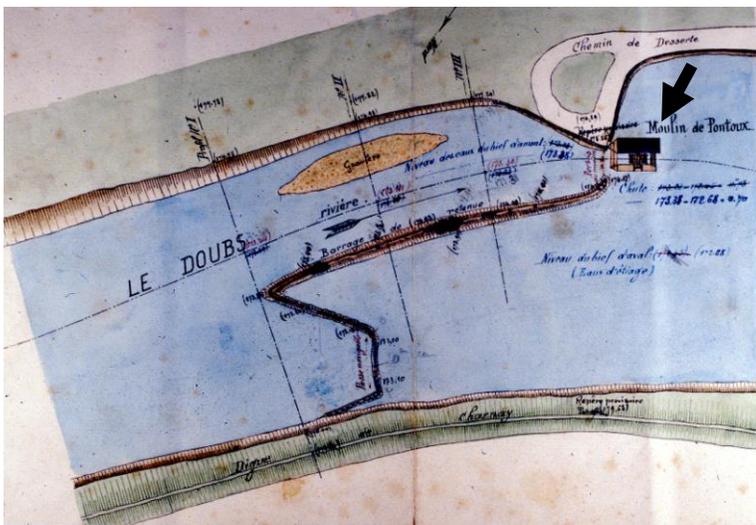
Maps sometimes show these installations in a detailed way. For example, a boat mill at the commune or township of Pontoux was dated to the early 19<sup>th</sup> century. In this case, a dike was constructed out of wooden stakes and stone stretching across the full width of the river channel to direct flow to the mill wheel during low water. Underwater excavations have shown



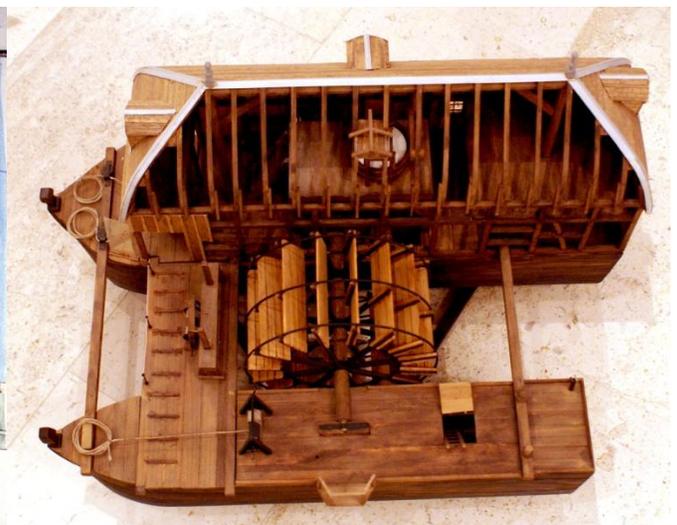
The Doubs River in eastern France where boat mills were used because of seasonal variation in stream flow.

that the dike was built on the piles of a Roman bridge.

Until recently there has been no archaeological evidence of these floating mills. However, underwater surveys conducted in 2010 and 2011 between the villages of Sermesse and Saunieres, in the department of Saône-

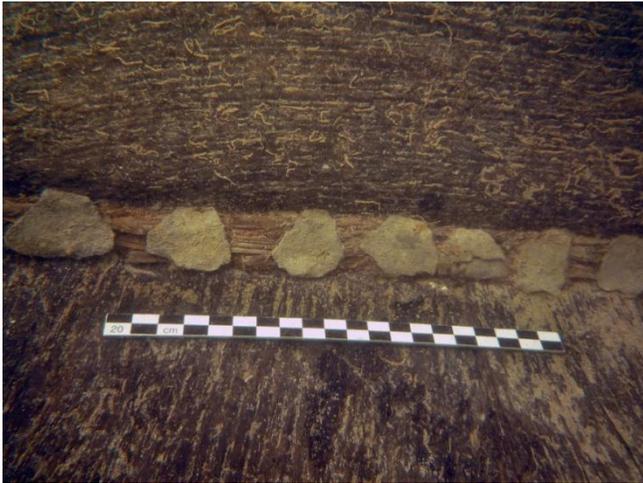


Early 19<sup>th</sup> century map of a boat mill at Pontoux showing a dike of wooden stakes and stone that directed water to the mill wheel (indicated by the arrow).



Model of a boat mill from the early 20<sup>th</sup> century. Ecomuseum of the Bresse Burgundian, Pierre-de-Bresse.

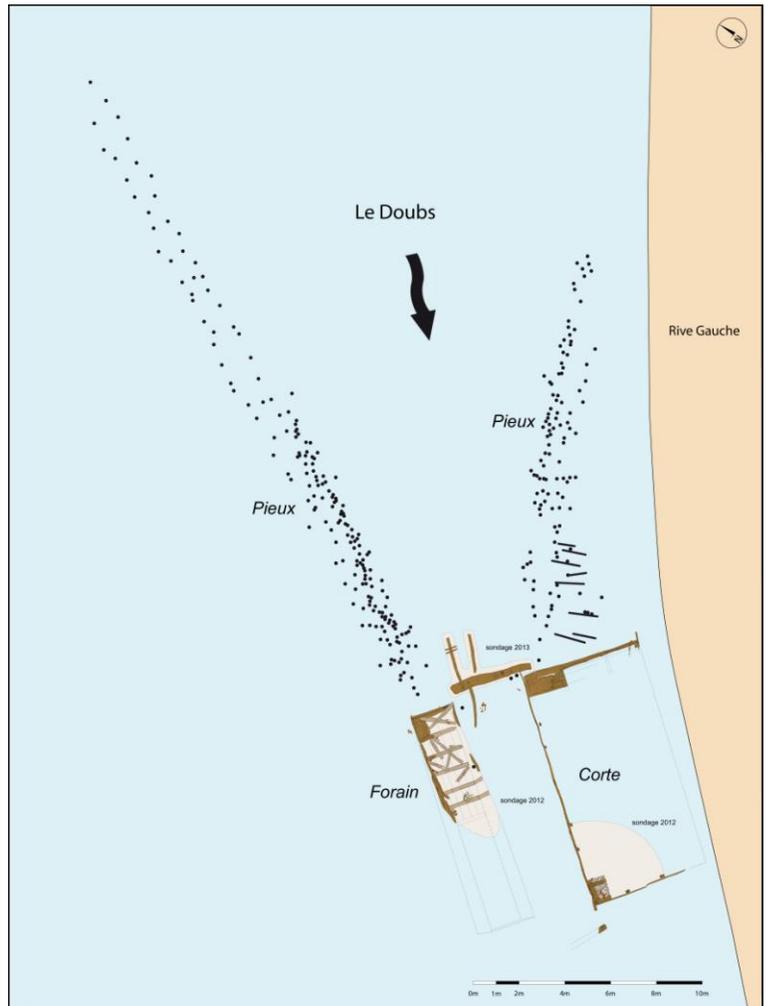
et-Loire, discovered the first well-preserved remains of a post-medieval floating mill. The Sermesse mill consists of two rows of piles (called *bouchot*, *benne* or *banne* in old French) and two boat hulls (Corte and Forain) which supported the mechanism. Seven samples from the piles were submitted for radiocarbon dating. The analysis showed the consistency of the whole set of piles, which ranged from the 15<sup>th</sup> century to the first half of the 17<sup>th</sup> century. A sample taken from one of the two boat hulls is dated to the same time interval.



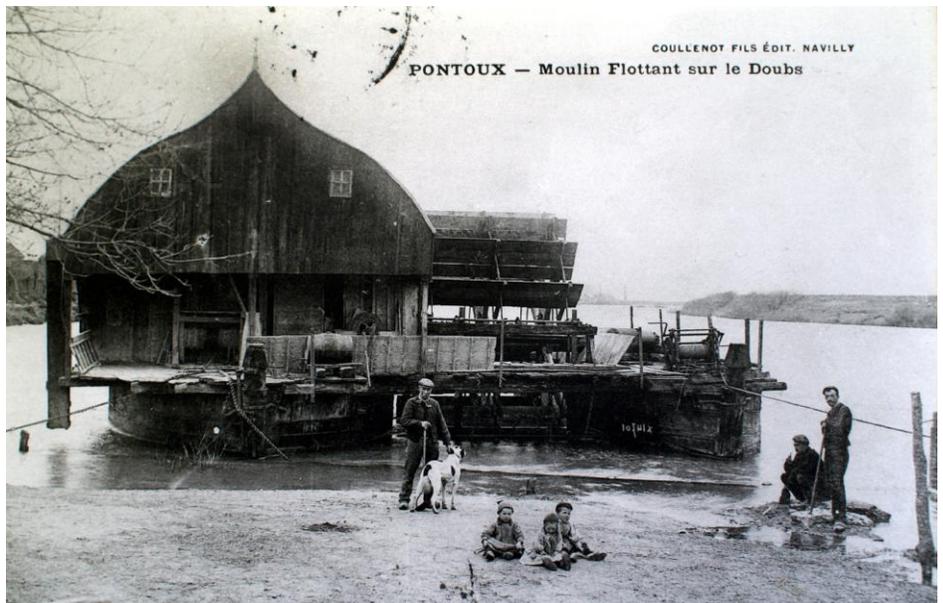
The boats were caulked with a type of moss, *Anomodon viticulosus*.

The boats are well preserved and were caulked with moss, a common technique throughout the Saône basin in the Middle Ages as well as in modern times. The species of moss has been identified as *Anomodon viticulosus*, chosen for its robustness. The moss was held in place by small metal clips called “appes.”

Two small excavations were conducted in 2012 within the two hulls. Metal wares and other objects were found which suggest an accidental sinking. The mill may have sunk during a violent flood or an ice jam when the river was frozen. Records document that such accidents were frequent. Further excavations may provide data on milling equipment and shipbuilding techniques used between the Middle Ages and the Industrial Revolution. Examples of this type of vessel and equipment are still very rare.



Mill plan of Pontoux, Document of the Departmental Archives of Saône-et-Loire.



Postcard from the early 20<sup>th</sup> century showing a boat mill on the Doubs River at Pontoux.



Artifacts from Sermesse boat mill dated from the 16<sup>th</sup> and 17<sup>th</sup> centuries.  
 Clockwise from upper left:  
 pewter bowl; pewter pitcher; artifacts in situ; balance or scale  
 probably used to weigh fish baskets.

The boat mill of Sermesse will be completely excavated beginning in 2014. Plans are also being made for additional field work in 2015. The site will accommodate diving archaeologists.

If you are interested in volunteering to help or if you have information on similar findings in Canada or the United States, please contact Annie Dumont at: [annie.dumont@u-bourgogne.fr](mailto:annie.dumont@u-bourgogne.fr)

Annie Dumont, Ministry of Culture (DRASSM)  
 Philippe Moyat, ETSMC et UMR6298 ARTeHIS  
 Agnes Stock, CNRS, Chrono-environnement Laboratory of  
 Besancon, UMR 6249 ⚓

Be sure to keep your MAHS Membership current. If you aren't a member, become one and join us in supporting maritime historic preservation.



# Whaleboat for the *Charles W. Morgan* Christened Near the U.S. Capitol

by James A. Smailes

On the morning of March 12, 2014, a whaleboat built for the *Charles W. Morgan* was christened by the Reverend Pierce Klemmt and Congressman James Moran. Under overcast skies more fitting for a whaling expedition than a christening, a small crowd of Alexandria Seaport Foundation (ASF) volunteers and others from the Smithsonian Institution, the Anacostia Community Boathouse, and MAHS gathered on the Mall in Washington, D.C., to cheer the christening and listen to speeches from Mari Lou Livingood, Executive Director of ASF, Matthew Stackpole, the *Morgan* Restoration Project Ship's Historian, and Congressman Moran. Carefully, champagne was poured over the bow; no smashing of a champagne bottle for this whaleboat. Apprentices from ASF were on hand to explain how they had learned carpentry and other skills as they constructed the vessel.



*In the shadow of the National Capitol, Congressman James Moran addresses the crowd following the dedication of the whaleboat. Photo by the author.*

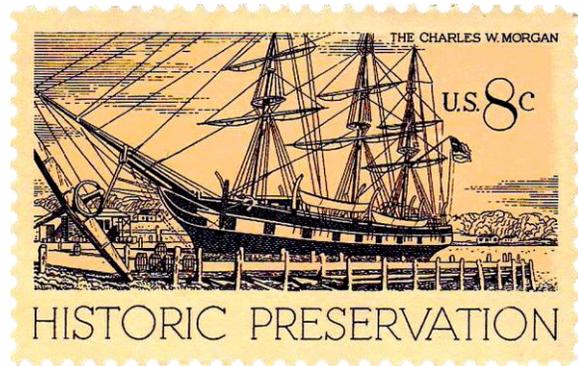
The whaleboat was built as part of the ongoing restoration of the 19<sup>th</sup>-century whaler, *Charles W. Morgan*. In support of this renovation, the Alexandria Seaport Foundation was one of seven organizations throughout the country chosen to build a traditional whaleboat, an open boat that is relatively narrow and pointed at both ends, enabling it to change direction without having to turn around. The whaleboat would be built of white oak for the keel and frames, and Maine cedar for the planking.

The *Morgan* was first launched in 1841 from the yard of Jethro and Zachariah Hillman in New Bedford, Massachusetts, America's major whaling port after 1840. She bore the name of her principal owner, Charles Wain

Morgan, who was a prominent mercantile in New Bedford

Over an 80-year whaling career, between 1841 and 1921, the *Morgan* embarked on 37 voyages, most of which lasted three years or more. Built for durability, not speed, the *Morgan* roamed every corner of the globe in pursuit of whales, typically sailing with a crew of about 35, representing sailors from around the world. The ship measures 113 feet in length, with a 27-foot-6-inch beam and a 17-foot-6-inch hold. The main masthead truck is 110 feet above the deck, and fully-rigged the ship carries approximately 13,000 square feet of sail. The huge try-pots used for converting blubber into oil are forward; below are the cramped quarters in which her officers and men lived.

After her whaling days ended in 1921, the *Morgan* was preserved by Whaling Enshrined, Inc., and was exhibited at Colonel Edward H.R. Green's estate at Round Hill, in South Dartmouth, Massachusetts, until 1941. In November of that year, the *Morgan* came to Mystic Seaport where she has since dominated the waterfront at Chubb's Wharf. The whaleship was put on the National Register of Historic Places as a National Historic Landmark by the Secretary of the Interior in 1966, and she is also a recipient of the coveted World Ship Trust Award.



*U.S. postage stamp from 1971 honoring Historic Preservation, featuring the Charles W. Morgan.*

According to the National Register Nomination form, the vessel was a "rounded-bow, square-rigged whaler" typical of the period. "Launched as a full-rigged ship, with single topsails, the *Morgan* was re-rigged and outfitted in 1867 as a bark, and modernized to a topsail rig in 1881." While not carrying cannon, the ship had false gunports painted in black on her sides in hopes of deterring would-be pirates. The *Morgan* reportedly cost \$48,849.85 to construct.

As the National Register Nomination further notes:

The Morgan was launched during the peak years of the whaling industry. At that time, whale products were used for candles, whale oil lamps, cosmetics, buggy whips, canes, parasols, and corset stays. And as the nation became industrialized, whale oil also filled the need for a fine lubricant. With the development and refinement of petroleum, however, the demand for whale oil decreased and the industry declined rapidly in this country... The Morgan completed her last whaling voyage in May 1921. By that time she had [taken] more than 2,500 whales, brought to port over 50,000 barrels of oil, 150,000 pounds of whalebone, and, it is estimated, earned about \$2,000,000 for her various owners. Only two of her many voyages failed to be profitable.

A major program of restoration and preservation was begun in 1968 to repair the Morgan structurally. The Nomination form observes that:

In 1968 the Morgan was ‘rigged down,’ and the heavy yards which held her sails were removed to take strain off the hull during restoration work. A major project was the strengthening of the ‘tween deck,’ below the main deck and a major strength member. In this area the deteriorated ends of beams were replaced and braced by knees...cut from hackmatack trees...In addition, the protective copper was stripped from the hull which was caulked and cemented. The main deck was also caulked and a variety of projects were begun to restore all the details of the vessel, beginning with the basic structural elements



*ASF volunteers and program participants at work on the lofting table. Photo by ASF.*



*The boat was built using a shell-first technique, in which the hull planks are applied first followed by the frames. Here volunteers are planing hull planks on the planking bench. Photo by ASF.*

and including furnishings and fittings throughout the ship.

In 1973 the Morgan was refloated for the first time in 32 years, then was hauled out, caulked, painted and resheathed...Rerigged as a topsail bark, the Morgan was re-launched June 22, 1974 and moored at Chubb's Wharf.

She appears today as she did during most of her active career, with the rig she carried from 1867 through the end of her whaling career. Her hull proved to be in remarkably good condition, with only a new false keel, shoe and some planking being required.

In November 2008, the Morgan returned again to the Museum's shipyard for restoration. The project has renewed areas of the vessel from the waterline down to her keel and also addressed the bow and stern. As noted, the Alexandria Seaport Foundation, or ASF, was one of several groups around the country selected to build replicas of the vessel's whaleboat.



*Volunteers clamping steam-bent frames to a mold. The frames cool into the proper position. The frames were then installed after the planking was finished. Photo by ASF.*

The ASF was founded in 1982 to maintain Alexandria's maritime culture through a tall ship sailing program and boat building classes. A core focus of ASF's mission is to teach disadvantaged young people between the ages of 18 – 22 who are at risk of failure in school and life, helping them to develop the discipline, self confidence, workshop and social skills necessary to find a meaningful place in society. By building wooden boats and other projects, including radio-controlled model boats and skateboards, the ASF helps their apprentices attain a General Educational Development or GED diploma and find direction and purpose in their lives by training them for career paths. ASF also offers after school and summer apprenticeships for high school students. The hands-on educational programs use carpentry to improve math skills and include other environmental programs related to the cleanliness of the local waterway. This honor of constructing one of *Charles W. Morgan's* whaleboats, as part of Mystic Seaport's restoration program, has not only allowed ASF apprentices and volunteers the opportunity to be part of a national endeavor, but has provided lessons in history, lofting, construction, and carpentry.

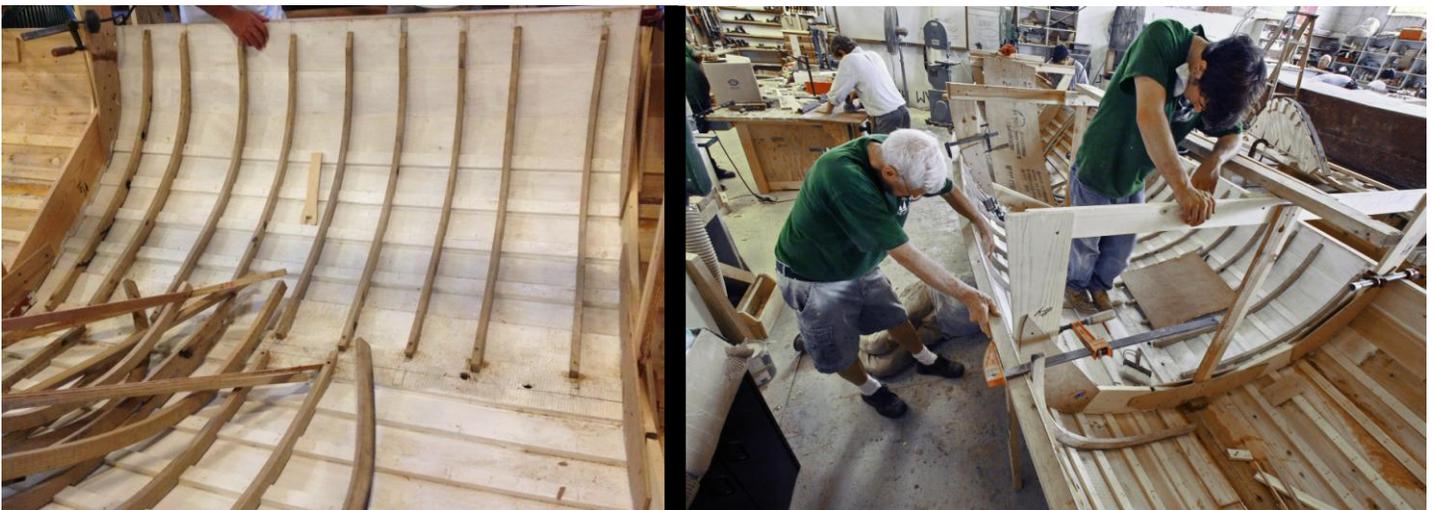
ASF volunteers built the whaleboat using a form of shell-first construction, in which the hull planks are applied first around a series of forms referred to as station molds. Copper nails are clenched in place to attach the planks to one another. The internal supports or frames are put in place after the outer hull or shell has been built up.

Shell-first construction is probably the earliest method of boat building. Originating in the Mediterranean, and somewhat later in Southeast Asia, the earliest documented examples used mortise-and-



*Planks are applied to the station molds, or forms, that bear the shape of the hull and guide construction. The planking bench, alongside the boat, is a convenient aid in shaping each plank before installation. The bench minimizes handling of materials during construction.*

*Photo by ASF.*



*The frames, previously steam bent to shape, being installed. Photo by ASF.*

tenon joinery for structural support. Frame-first construction has become the most common method of ship building in modern times.

The *Charles W. Morgan* was re-launched on July 21, 2013. In the summer of 2014, she will embark on what will be her 38<sup>th</sup> voyage, stopping at historic ports in New England to engage communities with their maritime heritage and raise awareness of changing perceptions about whales. On board will be the whaleboat built by the ASF apprentices. Where once the *Morgan's* cargo was whale oil and baleen, today her cargo is knowledge.

This article includes material from the Alexandria Seaport Foundation website, the Mystic Seaport Museum website, and the National Register Nomination Form from the National Park Service.

The itinerary for the *Morgan's* 38<sup>th</sup> voyage can be found at <http://www.mysticseaport.org/38thvoyage/itinerary/>.

Details on the programs available at the Alexandria Seaport Foundation can be found at <http://alexandriaseaport.org>. ⚓



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*continued from page 2*

intriguing questions for treasure salvors and archaeologists alike.

In April, MAHS directed its members to NOAA's *OKEANOS Explorer* website which televised the 2014 deepwater investigations in the Gulf of Mexico including views of wrecks such as the Monterrey B and the wreck discussed by James Delgado at the MHT Workshop in March. The investigations were televised in real time so the public could participate virtually. Preliminary observations and reports were published by the Bureau of Ocean Energy Management staff including former MAHS member Alicia Caporaso.

Dr. Susan Langley, Maryland State Underwater Archaeologist, and Troy Nowak, Assistant State Underwater Archaeologist, spoke separately to MAHS at the general membership meetings in February and April. In February, Nowak gave a brief overview of current Maryland Maritime Archeology Program activities, and he shared preliminary results from a recent collaborative project undertaken with the Maryland-National Capital Park and Planning Commission involving study of the Patuxent River shoreline near Nottingham, Maryland, and Edward Griffin's lost schooner *Happy Return*. In April, Langley presented a documentary film, *The Ancient Mariners*, that was an examination of the evolution of early ship construction techniques in the Mediterranean.

Jim Smailes was invited by one of our class students, Debbie Ruttenberg, to provide a presentation to the Commodores and Delegates of the Potomac River Yacht Club Association for their Commodore's Night Delegates Meeting in April. His talk focused on Ethics in Underwater Archaeology, and he offered interesting

anecdotes about several historical sites on the Potomac River.

Later this summer MAHS plans to return to Bodkin Point to complete our survey of the "Schooner Wreck" and finalize our report to the State of Maryland on this multi-year project.

So, please check the MAHS website, [www.mahsnet.org](http://www.mahsnet.org), for upcoming events, and I hope you will join us at the bi-monthly membership meetings to get involved in the many activities of MAHS.

See you on the water,

Steven Anthony  
President



**MARITIME ARCHAEOLOGICAL AND HISTORICAL SOCIETY**

***Statement of Ethics***

The Maritime Archaeological and Historical Society is organized for the purpose of enhancing public awareness and appreciation of the significance of submerged cultural resources and the science of maritime archaeology. In pursuit of this mandate, members may come into contact with unique information and cultural material associated with terrestrial and underwater sites containing evidence of the history of humankind. To protect these sites from destruction by commercial salvors and amateur souvenir hunters, the Society seeks to encourage its members to abide by the highest ethical standards. Therefore, as a condition of membership and pursuant to Article 2, Section 1 (A) of the bylaws, the undersigned executes this statement of ethics acknowledging adherence to the standards and policies of the Society, and further agrees as follows:

- 1. To regard all archaeological sites, artifacts and related information as potentially significant resources in accordance with federal, state, and international law and the principles and standards of contemporary archaeological science.
- 2. To maintain the confidentiality of the location of archaeological sites.  
To excavate or otherwise disturb an archaeological site solely for the purpose of scientific research conducted under the supervision of a qualified archaeologist operating in accordance with the rules and regulations of federal or foreign governments. Artifacts shall not be removed until their context and provenience have been recorded
- 3. and only when the artifact and related data have been designated for research, public display or otherwise for the common good.
- 4. To conduct oneself in a manner that protects the ethical integrity of the member, the archaeological site and the Society and prevents involvement in criminal violations of applicable vandalism statutes.
- 5. To observe these standards and aid in securing observance of these standards by fellow members and non-members.
- 6. To recognize that any member who violates the standards and policies of the Society shall be subject to sanctions and possible expulsion in accordance with Article 2, Section 4 of the bylaws.

Signature \_\_\_\_\_ Date \_\_\_\_\_

**MARITIME ARCHAEOLOGICAL AND HISTORICAL SOCIETY  
PO Box 44382, L'Enfant Plaza, Washington, D.C. 20026**

**Application for Membership**

Membership in the Maritime Archaeological and Historical Society is open to all persons interested in maritime history or archaeology whether or not they are divers. Members of MAHS have first preference for enrollment in all courses and other activities and projects of the Society. To join MAHS, please sign the Standards of Ethics above and send it to MAHS along with your check and this application form.

Name (print) \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone (H) \_\_\_\_\_ (O) \_\_\_\_\_ (FAX) \_\_\_\_\_

E-mail \_\_\_\_\_

DUES ENCLOSED	
___	\$30 Individual
___	\$35 Family
___	\$50 Sponsor
___	\$100 Patron

Skills (circle): research / dive / video / communications / writing / first aid / other:  
\_\_\_\_\_

Please mail this form along with your check to: MAHS at PO Box 44382, L'Enfant Plaza, Washington, D.C., 20026

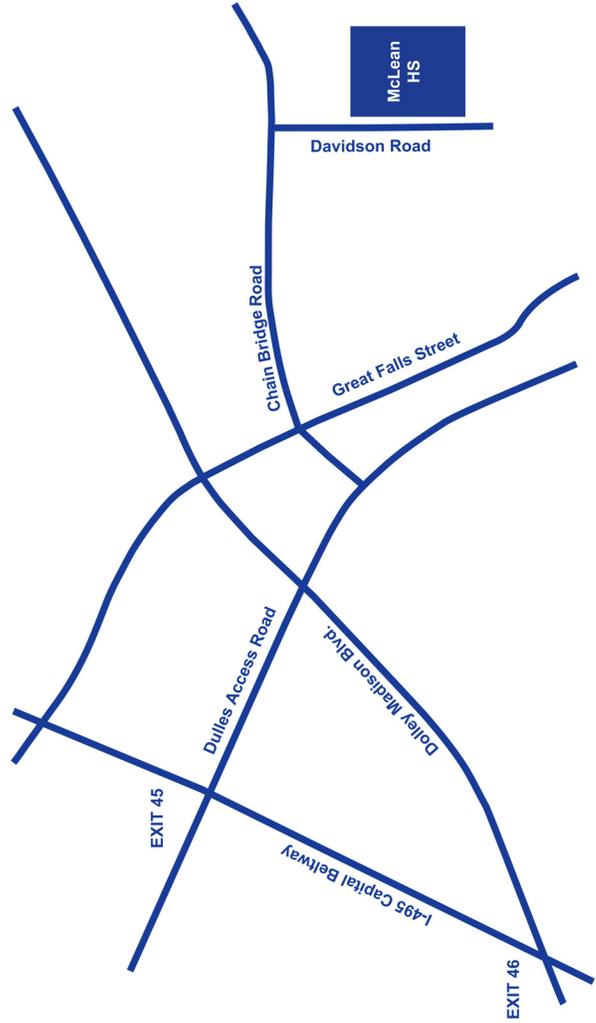
General membership meetings of the Maritime Archaeological and Historical Society are held on a bi-monthly basis, the second Tuesday of the month. Meetings are held at 7:30 p.m. at McLean High School, in McLean, Virginia, except in August and December. Meetings in August and December are held at other locations for special events and holiday parties.

Please join us and bring a friend. The school is located on Davidson Road, just inside the Capital Beltway (I-495) – use Exit 45, coming from Maryland, or Exit 46, coming from Virginia.

Check the website [www.MAHNet.org](http://www.MAHNet.org) for e-mail advisories about any schedule changes.

## Renew Now!

It's time to renew your membership in MAHS. It's easy. Just complete the application form on the inside back cover and sign the Ethics Statement, enclose a check for your dues, and mail!



## MARITIME ARCHAEOLOGICAL AND HISTORICAL SOCIETY

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