Developing Partnerships for the Decade of Ocean Science

By Marco Meniketti

T he oceans are a vast open-air museum. Open 24/7 and free of charge, the oceans are a repository containing the history of human development as viewed through the lens of maritime ventures. Coastal zones are major hubs of tourism and sites of deeply rooted maritime cultural heritage. Ocean transport and communication have always been vital components of world heritage. Most of our blue planet is covered by oceans, which make up 71 percent of its surface area—yet, 95 percent of that total remains unexplored. As much as 10 percent of the world's population draws their living from fisheries.

Tragically, the oceans are seriously degraded from unsustainable development, waste, and global warming. As our population increases, so too has our impact on the planet's oceans. Globally, waste is dumped into the oceans at a staggering rate of 14 billion tons annually or just under four million tons a day. The oceans currently contain 5.2 trillion pieces of plastic and counting. It has been projected that by 2025 more than 75 percent of the world's populations will live near the coast, adding pressure on nations to increase development and intrude on coastal environments at an ever-quickening pace. Gradual sea-level rise will also take a toll on coastlines and ironically, will likely make coastal development more problematic.

Climate change also portends increasing storm intensity, as has recently been experienced in many coastal regions of the world. It is in this zone that maritime cultural resources are most affected and

Source: https://en.unesco.org/ocean-decade

archaeological sites greatly endangered by storm surge.

Threats do not end here. Recent proposals to redefine the meanings of wetlands and intermittent waterways by the current American administration, which unabashedly favors development, also impact maritime archaeological sites in shallow coastal zones.

To counter these pressures the United Nations has proclaimed the next ten years as The Decade of Ocean Science for Sustainable Development (2021-2030), with the intent of bringing together ocean stakeholders worldwide within a common framework. The Intergovernmental Oceanographic Commission (IOC) of UNESCO has been given the mandate to coordinate the preparatory process for The Decade and has invited the global ocean community to plan for the next ten years in ocean science and technology. The Secretariat of the

2001 Convention on the Protection of Underwater Cultural Heritage has been called on by member States and accredited NGOs to ensure that the IOC understands that maritime archaeology is one of the key ocean sciences and that the UN include this aspect of interaction into the Ocean Decade agenda.

Ocean science means many things, including the social sciences. Human impact on the oceans is a cultural impact, whether it is exploitation for minerals, harvesting of seafood, waste disposal, development, recreation, travel, or energy procurement. Sunken cities, lost harbor-works, shipwrecks, and submerged prehistoric sites all have significant value in the historical trajectories of nations everywhere and are a shared heritage to be cherished. These elements are threatened by various forces degrading the ocean. Of equal significance, and of immediate concern, is the increasing activity of sophisticated treasure hunting consortiums encroaching on cultural resources, compounded by the pressure felt by governments to diminish protections for submerged sites of scientific and archaeological importance as they shortsightedly give way to the demands of economic development.

Maritime archaeological sites are particularly vulnerable to disturbance owing to their unique character in the public mind. Shipwrecks or submerged terrestrial zones are not necessarily conceived of as archaeological sites by the public or by legislative authorities. Shipwrecks especially suffer from a "finders-keepers" mentality and all too often are imagined as treasure laden. Add to this the misconception that there is nothing to be learned from shipwrecks because they are "wrecked," and it becomes evident that maritime sites will earn little protection unless a given vessel is shown to be associated with a particularly important event in local or national histories. Moreover, maritime sites are often located in areas attractive for development, are frequently overlooked by cultural resource inventories, and are generally inaccessible to the public, thereby rendering them invisible. Nonetheless, maritime archaeological sites are likely to be located in areas identified as ecologically sensitive and therefore share significance in scientific research.

The Global Ocean Science (GOS) Report, a landmark study produced by UNESCO in 2017, included among its key findings that ocean science is interdisciplinary, that science-policy interactions can occur through many avenues, and that national inventories of ocean science capacities exist for only a few countries. Importantly, what is true for marine eco-science is true for marine archaeology: that is, we cannot manage what we do not measure. It is vital that marine cultural resources be accounted for and documented, particularly in coastal ranges. Measuring marine resources involves creating accurate resource

inventories, including maritime sites in significance assessments, and creating databases for agency and CRM professionals to access when conducting surveys. Maritime sites are tangible components of historical narratives, and we need to advocate for their inclusion in ocean-based scientific research in interdisciplinary scope. There is a desperate need for social science metrics and for researchers of maritime heritage to justify their activities in order for them to have an effect on emerging ocean policies.

The GOS report not only details where ocean science is conducted, but by whom. Norway by far leads the world with 364 full-time equivalent (FTE) ocean science researchers per million citizens, with the United States a distant 11th, with 15 FTE ocean researchers per million. The report also describes the nature and purpose of ocean research among nations. While some have focused their energy and expenditures on investigating biodiversity, others are primarily engaged in energy exploration and production.

In this article, the case is being made that maritime archaeology is being adversely affected by the unsustainable practices of ocean exploitation, pollution, and negligence. Furthermore, maritime archaeology is an important ocean science deserving a seat at the table during the Decade of Ocean Science. The Advisory Council on Underwater Archaeology (ACUA) sees opportunities during The Ocean Science Decade to proactively engage with the public in order to increase awareness of what could be lost without immediate action to reduce or reverse the damage occurring to the oceans. By marshaling expertise in maritime archaeology among independent maritime history organizations, such as Maritime Archaeological and Historical Society (MAHS), and various agencies in different nations, the archaeological NGOs can capitalize on the anticipated media attention this UN action will generate. Only 58 nations are signatories to the Convention, and many NGOs are the only voice at UNESCO for some of the unsigned States. This increases the organizations' significance. The United States is not a signatory for reasons having nothing to do with science, so the ACUA feels added responsibility.

Source: https://en.unesco.org/gosr

Nautical archaeology is a marine science of long standing with a stake in the ocean environment and an understanding that strengthened public awareness of our shared maritime heritage will pay dividends as the continual struggle to protect cultural resources ensues. Linking underwater archaeology to efforts to preserve ocean environments is a natural step. Protection of submerged cultural resources such as shipwrecks, which frequently are found in reef zones or near-shore environments, represents part of reef and fishery protection. Many successful unions of marine archaeology and marine biology have been carried out at educational institutions, which serve as viable models. It is also time for marine biological studies to include archaeological assessments in their work as well.

Another approach is to seek World Heritage site designations as a means of establishing protection for important archaeological sites around the world. There are currently 49 marine sites with World Heritage status. Most of these sites are natural, and many sites of rich cultural significance should be added to the World Heritage List.

The oceans have linked civilizations for millennia. Submerged cultural sites along coasts and waterways, hold shipwrecks spanning the centuries and fisheries that historically have sustained thriving communities that are now in peril. A recent joint request by Tunisia and Italy for protections to be extended to the Sherki Banks serves as an exemplary point. These shoals, which lie just below the surface in an ancient sea lane squeezed between Tunisia, Corsica, and Sicily, have been sinking beneath the Mediterranean Sea for centuries as waters have risen. Described as an island in medieval times where none exists today, the banks have been the cause of shipwrecks over the ages and are a repository of maritime history now threatened by treasure hunting as well as intensive fishing and sport diving. An estimated 1,000 shipwrecks have been lost in the 700^2-km zone. Exploratory work in the late 1990s revealed Roman, Carthaginian, and medieval wrecks. The shallow banks are also an important ecological zone. International cooperation in seeking protections, as in the case of the Sherki Banks, are limited, however.

UNESCO States Party Meeting on the Convention for Underwater Cultural Heritage, Brest. Photo by the author.

Site assessment of a wreck from the 3th century A.D. discovered in the Baia Salinedda, Sardinia, Italy. Photo by E. Trainito. http://www.unesco.org/ culture/en/underwater/pdf/UCH-Manual.pdf

The research vessel Andre Malraux*, from DRASSM (the French Department of Underwater and Underwater Archaeological Research). NGOs representing underwater archaeology organizations from more than a dozen countries held meetings aboard the ship during the UNESCO conference June 2019. Photo by the author.*

Threats to sites are further exacerbated by political action or inaction that fails to recognize the value of maritime cultural resources or their economic value, or that create artificial animosity between groups that might otherwise be partners, as for instance, pitting those with interests in costal economic zones against preservationists, when both could benefit from joint planning.

The ACUA is already in a notable position as one of the senior organizations in maritime archaeological guidance, with a track record of engagement. Other groups, such as MAHS, along with the Nautical Archaeology Society (NAS) in the UK, and others, are also in the frontlines and positioned to make a difference through unified action. Together we must integrate underwater cultural heritage research in marine conservation and marine spatial planning; we must build a paleo-environmental knowledge base for the benefit of protection or recovery of ancient maritime sites; promote awareness of underwater cultural heritage literacy; and include archaeological sites in ocean mapping with information shared across disciplines.

The ACUA will be proactive by preparing media information packets for ready distribution; by increasing its media profile; by increasing its visibility as an advisory body; and by developing outreach programs that extend beyond the confines of academia.

Treasure hunters and consortiums ignore academia and appeal to the public imagination of "pirate loot" and, sadly, have significant media support in television, the internet, and magazines. It will be increasingly necessary for NGOs including the ACUA to reach out to the public with messages that are less academic or technical in scope and more attuned to emotional and social interests.

We may never successfully counter the lure of "pirate treasure," but we don't have to. We need only offer a different narrative that is just as powerful, demonstrating how the protection of cultural resources can benefit us all and preserve heritage for future generations.

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"Banking Out": 18th and 19th-Century Land Making in Alexandria, Virginia

by Tatiana Niculescu

Like many port cities of the time, Alexandria, Virginia's waterfront changed drastically over the 18th and 19th centuries. Engineering in the 18th century was not the formal, standardized undertaking it became over the course of the 19th century, especially for mundane things like wharves or other land-making structures. Individuals employed whatever means necessary to build these structures. Construction strategies, methods, and materials varied depending on local environmental, economic, and corporate conditions, and on the technical knowledge of the builders.

Due to Alexandria's unique, nearly 30-year-old archaeological protection code and an increase in waterfront redevelopment, city archaeologists and scholars are studying land-making strategies across the city's shoreline. Recent excavations at the Robinson Terminal South Site (44AX235), in addition to previous work along the waterfront, provide valuable data on how early Alexandrians created land to meet their needs. Archaeological evidence is critical for understanding these types of massive and largely undocumented undertakings. This article details the "banking out" process in Alexandria and briefly contextualizes it with respect to land-making strategies employed elsewhere.

Detail of a bulkhead wharf at the Robinson Terminal South Site. Unless noted, all images courtesy of Alexandria Archaeology.

How do you make land?

Though the specific methods and materials used to create land have varied, even within the Anglo-American world, there are two primary ways of making land—building structures perpendicular to shore (piers and jettys) or structures running parallel to shore (wharves or quays). Historically, people used whatever was readily available and expedient to build up new land, including wood, stone, soil, trash, and even derelict ships. The materials used depended largely on local availability. For example, in areas like Boston with ready access to stone, wharves and piers were more likely to be made of lithic material, while in Alexandria these structures were often made of wood.

Land making in the 18th century commonly involved wooden structures. Cribbing, cobbing, and linear walls held new soil in place, preventing erosion. Cribbing consisted of tightly stacked, notched and alternating courses of timber, forming a box. The timbers were held together with iron spikes or wooden dowels and filled with cobbles, gravel, or soil. Cobbing also created a box structure made of perpendicular, stacked timbers. The timbers were often more roughly hewn and not as tightly packed as cribbing structures, requiring larger fill material. Finally, new land could be held in place using solid filled, linear retaining walls. These structures consisted of vertical piles with horizontally stacked planking and infilled on the shore side of the structure.

These broad categories are useful for quickly identifying land-making structures, but they do not adequately place them within a broader historic context. Molly McDonald posits an approach to wooden land-making structures that relates them to a wider context expressed in existing literature on early American vernacular architecture. This approach is more sensitive to the varying styles and techniques used. Specifics about construction include: the materials used, joinery methods employed, overall form, and structure type. A vernacular architecture approach allows for a nuanced study of land making since it is these specifics that hint at broader cultural, social, and economic contexts shaping people's construction strategies.

"Banking Out" in Alexandria

It is unclear when or from where the term "banking out" originates. One of the first recorded uses appears in a pamphlet celebrating Alexandria's centennial in 1880 describing how early Alexandrians filled in the cove that

formed the harbor by cutting earth from the hills or banks surrounding it. When surveyors first mapped what would become Alexandria, the settlement was situated on a crescent-shaped bay between two headlands: Point Lumley to the south and West's Point further north. The original shoreline consisted of 15 to 20-foot cliffs rising high above the mud flats on the Potomac River's edge. In 1748, George Washington noted that the Potomac was only "about seven feet at High Water" and too shallow to accommodate larger vessels. Further out the river became much deeper, nearly forty-eight feet deep, providing better docking conditions for ships bringing goods and people from around the world to the city. In the 18th and 19th centuries, Alexandrians "banked out" near Point Lumley to reach this deeper water. This process began the creation of the city's modern shoreline. The wooden, filled-in land-making structures provided the foundation on which early Alexandrians built their homes and commercial ventures. Banking out was fundamental to the development of the port, and the wharves and piers reaching out from the new land served as Alexandria's lifeline to the world. Notably, the term banking out is still commonly used colloquially and by some scholars to describe the land-making process.

Individual lot owners drove the land-making process, with very little coordination among adjacent property owners and minimal government oversight. Beyond instructing John Carlyle to build a public warehouse on Point Lumley to certain specifications in 1755, the Town Trustees exerted little influence over the physical shape of the town's waterfront except to encourage banking out. In 1760, the Trustees specified that waterfront lot owners "have the benefit of extending the said Lotts into the River as far as they shall think proper" and to "build on or improve under his Bank as he should think proper." Lot owners kept any land they created. The municipal government provided no guidelines on the process, leaving it up to the individual commercial motivations of waterfront lot owners who built land to suit their particular needs.

This means that fully understanding how Alexandria's modern shoreline came to be has been difficult at a micro-historical level. In other places along the East Coast, municipal governments provided more oversight over the land-making process, which has often resulted in more associated written records. In both New York and Boston, local governments encouraged individual owners to build new land, but the municipalities also took on public land-making projects and attempted to enforce certain specifications for the construction of wharves. In New York, a lingering Dutch influence may have also shaped land-making strategies, as evidenced by the presence of slips at the ends of streets and infilling between these slips.

News article about the death of a laborer during a banking out excavation. Alexandria Gazette 1785.

Our basic understanding of when Alexandria's waterfront was filled in has largely been based on a handful of maps: George Washington's 1748/1749 series; George Gilpin's 1798 map of the town; Maskell Ewing's 1845 map; and a series of maps from the Civil War. These were all created for different purposes and thus have different scales, omissions, and biases. For example, what is considered the "shoreline" is fluid and could refer to either the bluff tops, the high-water mark, or some other arbitrary definition potentially lost to history.

Additional historic documents like leases, deeds, insurance documents, and legal cases may provide a more detailed history of land making in some areas. Several news articles from the *Alexandria Gazette* of 1875 document the human toll of the land-making process and the efforts and sacrifices of both free laborers and enslaved individuals in shaping the city's shoreline.

Piecing together documentary evidence into a coherent narrative of the town's expanding shoreline is a slow and painstaking process. It is also at times frustrating, since many early property descriptions are vague and often simply note that the property "ran to the river," without specifying how far that might have been. Such a description may have had real meaning in the 18th century, but it does not help modern historians or archaeologists. Additionally, these records often do not capture exactly when construction may have happened along the waterfront. They can potentially provide bookends for a broader date range, but not a specific date. Historic documents thus tend to paint a picture of who built out and generally when but provide little or no specific information on *how* early Alexandrians made land.

Archaeology

Due to Alexandria's more recent experience with redevelopment, and enabled by the Archaeological Protection Code, city archaeologists and other scholars

have been able to study 18th-century land making across the waterfront. Tangible physical evidence is critical for understanding the varied strategies people used to make land. The City's code requires developers to consider a project's impact on archaeological resources and, if necessary, hire a contract archaeology firm to mitigate any adverse effects to those resources from their development project. Recent archaeological evidence resulting from several projects has painted a new picture of "banking out" and life along the waterfront. This version of historic events is not simply focused on the merchants who commissioned these structures, but on these behemoth engineering feats themselves, as well as the laborers, both free and enslaved, who constructed them. Archaeologists have found examples of all types of land-making structures, including derelict ships, along Alexandria's shore. Combined with analytical tools like dendrochronology, these new finds are both exciting and critical for a more nuanced understanding of the town's development.

Over the past several decades, archaeologists working along the waterfront have uncovered the remains of several different types of land-making structures. These have largely only been categorized as cribbing, cobbing, or linear walls and have not been systematically assessed using a vernacular architecture framework. Recent excavations at the Robinson Terminal South Site (44AX235) and the Hotel Indigo Site (44AX229) uncovered cribbing structures. Earlier excavations along Alexandria's waterfront also revealed the remains of a variety of land-making structures (Keith's Wharf 44AX119, Roberdeau's Wharf 44AX114, Lee Street Site 44AX180). Future research awaits the completion of final reports for the more recent work which will allow for a comparative systematic analysis of land making in Alexandria and beyond.

Perhaps the most exciting recent finds are four historic ship remnants used to make land. In the 18th century, people commonly re-used ships that had reached the end of their sailing lives as part of land-making structures. This process would not have been particularly newsworthy, and thus rarely, if ever, appeared in historic accounts of the time. Individual landowners decided whether to reuse a private vessel for landfill. When available and expedient to use, old ships were ready-made additions to a shoreline engineering project. Ben Ford's survey of 31 examples of ship reuse from around the world notes that the vessels typically used in land making were mid-size vessels, had a sailing life of about 22.8 years, and were usually shallow or flat bottomed. Ship reuse is most likely to happen when there was locally rapid urban growth such that the availability of building materials could not keep up with demand.

In late 2015, archaeologists working at the Hotel Indigo site (44AX229) uncovered the remains of a ship, or better said half a ship, since it had been cut
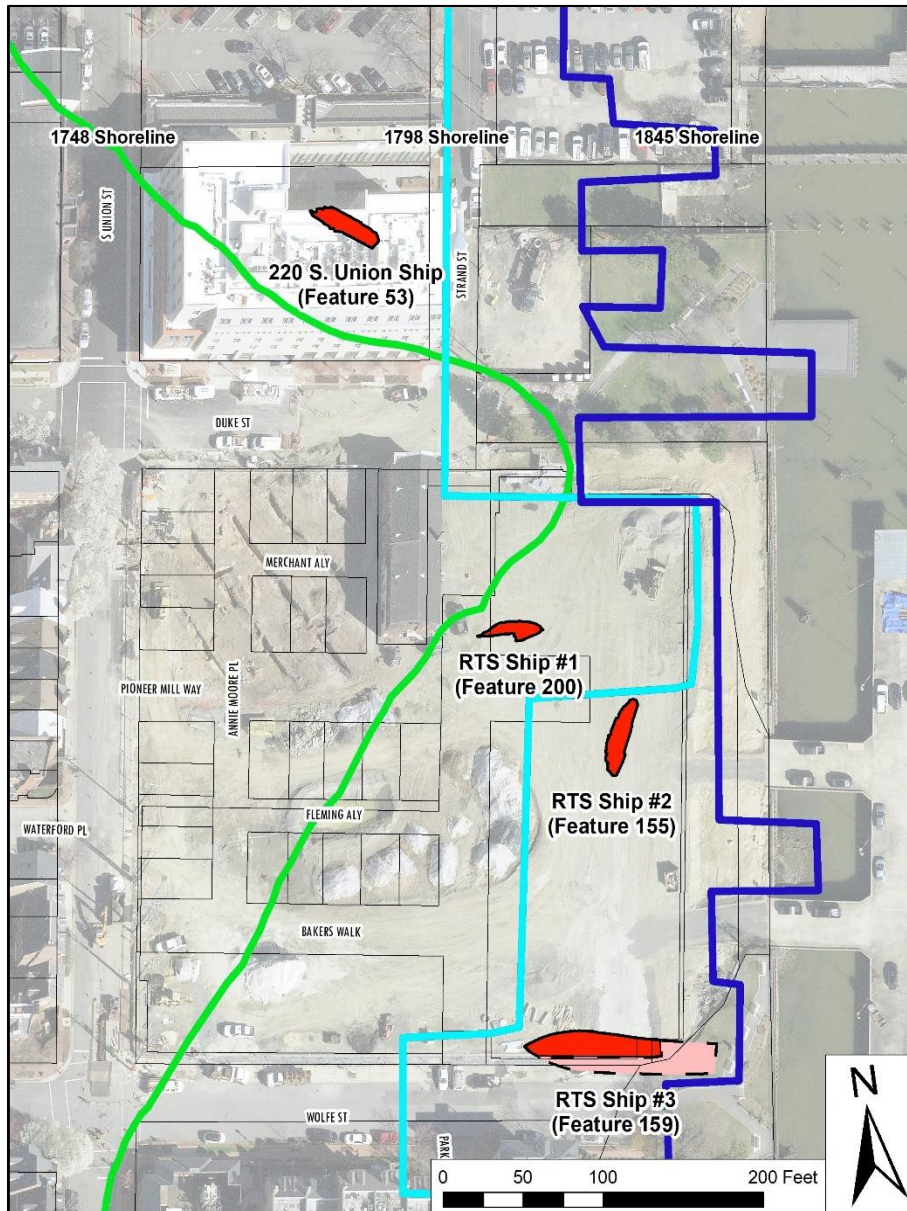
Location of ship remains found during recent development along the city's waterfront. The 220 S. Union Street Ship is the Hotel Indigo site. Historic shorelines from 1748, 1798, and 1845 show the incremental results of banking out as the waterfront approached the deeper water of the Potomac River channel.

along the keel. In January 2016, a team of contract archaeologists from Thunderbird Archeology, along with City staff from multiple departments including city archaeologists, a conservator from the Maryland Archaeological Conservation Lab, and the Naval Heritage and History Command, fully excavated this vessel. Once out of the ground, city archaeologists stored the ship in tanks of water to prevent further deterioration of the waterlogged wood prior to conservation.


3D model of the Hotel Indigo Site ship. The model will serve as the focal point of a new exhibit in the Alexandria Archaeology museum. Courtesy of Texas A&M University Conservation Research Lab.

In June 2017, a team of city archaeologists and volunteers packed the remains and shipped them to Texas A&M University's Conservation Research Lab (CRL) for documentation and conservation. The CRL made 3D laser scans of each timber, digitally reconstructed the lines of the vessel, and created a 3D printed model. The ship was likely about 70 feet long and had a maximum beam of about 18.5 feet. Its form best matches that of a brig or large sloop, fitting well with the lines of Brig #38 of Plate XXVI in F.H. Chapman's *Architectura Navalis Mercatoria 1768*. Relatively flat floors and a full hull shape suggested that it had been a merchant vessel capable of holding a large amount of cargo. The shape matches Ford's observation that ships reused for land making often had a wide, shallow hull. The ship is now undergoing conservation at the CRL and will return to Alexandria in the next few years.

Alexandria's archaeological community was again busy along the city's waterfront in March 2018. Over the course of that month, Thunderbird Archeology

archaeologists working at the Robinson Terminal South Site (44AX235), adjacent to the Hotel Indigo site, found three historic ship remnants. These appeared to be intentionally adapted to be part of larger land-making structures. One vessel, designated Ship 2 (Feature 155), measured about 46 feet long and 12.3 feet wide and was purposefully notched into cribbing on both ends. Another, Ship 1 (Feature 200), was slightly smaller and was also integrated into land-making structures and later driven through with a vertical pile from the foundations of a mid-19th century flour mill. The third, Ship 3 (Feature 159), was much larger, at more than 85 feet in length, and had braces used for land making on top of it. Archaeologists uncovered the vessel sitting at a sharp angle, bow facing into the shore as if it had been pulled up onto the mud flats and abandoned. The City is caring for the remains of these three ships and some associated wharf remains, storing them in tanks of water to prevent deterioration. Soon the City will embark on an ambitious 3D documentation project. The goal of this project is to digitally reconstruct and physically model the remains for preservation and interpretation.

Dendrochronology (tree ring dating) is filling in the gaps left by historic documents, providing a more complete picture of when Alexandria's shoreline was
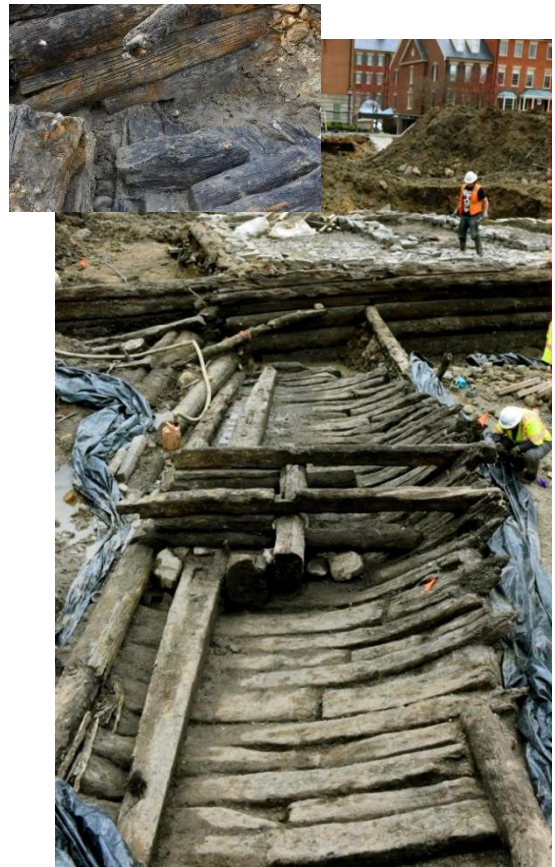
Robinson Terminal South, Ship 2 (Feature 155); inset shows end of ship notched into bulkhead wharf.

banked out. Experts from the Oxford Tree-Ring Laboratory in Baltimore took samples from the ships and land-making structures at both recently excavated sites. The results for the ship from the Hotel Indigo Site suggest that this vessel was constructed with timber felled sometime after 1741 in Massachusetts. Other

Robinson Terminal South, Ship 1 (Feature 200); inset shows end of ship notched into bulkhead wharf.

Robinson Terminal South, Ship 3 (Feature 159).

lines of evidence, including a plat map from a 1788 court case, suggest that the ship generally conforms to Ford's model and had a sailing life of at least 20 years before it was used to make land by the 1780s or 1790s. Samples from an associated bulkhead wharf at the site suggest that early Alexandrians used wood felled in the winter of 1773/1774 to construct this feature. The bulkhead wharf and the ship helped form a structure that extended the shoreline further into the Potomac River. A final dendrochronology report for ships and land-making structures recovered from the former Robinson Terminal South Site is still in preparation. The results may help us further refine our understanding of Alexandria's changing shoreline, particularly the area around Point Lumley in the southern part of the modern waterfront.

Conclusion

Studying bulkhead wharves and other associated land-making structures within their social, economic, and environmental contexts is critical for understanding how individuals and municipalities molded their shorelines to meet their needs. Land making would have necessarily been different in Alexandria than in other East Coast cities due to different conditions, and it is time to integrate this new data with previous studies.

Work in Alexandria, under the auspices of the City's Archaeological Protection Code, highlights the valuable information that archaeology contributes to our knowledge of historic land making. Tangible archaeological evidence can help demonstrate when and how land was made, conveying the sheer magnitude of the landscape modification projects undertaken by people more than 200 years ago.

Further reading the author suggests:

Ben Ford. The Reuse of Vessels as Harbor Structures: A Cross Cultural Comparison. Journal of Maritime Archaeology *8:197-219, 2003.*

Paul Huey. Old Slip and Cruger's Wharf at New York: An Archaeological Perspective of the Colonial American Waterfront. Historical Archaeology *18(1):15-37, 1984.*

Molly McDonald. Wharves and Waterfront Retaining Structures as Vernacular Architecture. Historical Archaeology *45(2):42-67, 2011.*

Steven J. Shephard. Reaching for the Channel: Some Documentary and Archaeological Evidence of Extending the Alexandria Waterfront. The Alexandria Chronicle*, Spring, 1-13, 2006.*

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Mallows Bay-Potomac River Sanctuary Celebration

Few places can compete with the diversity of the National Marine Sanctuary System, which protects America's most iconic natural and cultural marine resources. Administered by NOAA, the system works with diverse partners and stakeholders to promote responsible and sustainable uses that ensure the health of our most valued places in the oceans, lakes and rivers.

On Saturday, November 9, 2019, a public celebration was held for the newest sanctuary, the Mallows Bay-Potomac River National Marine Sanctuary. Despite the cold weather, more than 400 visitors enjoyed educational displays, kayak tours, nature walks, and oral histories about the sanctuary's maritime heritage. The Sanctuary is an 18-square mile stretch of Maryland's Potomac River and protects the remnants of its "Ghost Fleet," 118 World War I-era wooden steamships and vessels as well as other significant maritime heritage resources. Built by the U.S. Emergency Fleet Corporation in response to threats from World War I-era German U-boats, the Ghost Fleet ships of never saw action. Many vessels were eventually salvaged for scrap metal. Nature has reclaimed those ships not salvaged, with some now appearing as long skinny islands of trees and other vegetation.

The wrecks provide shelter for flora and fauna,
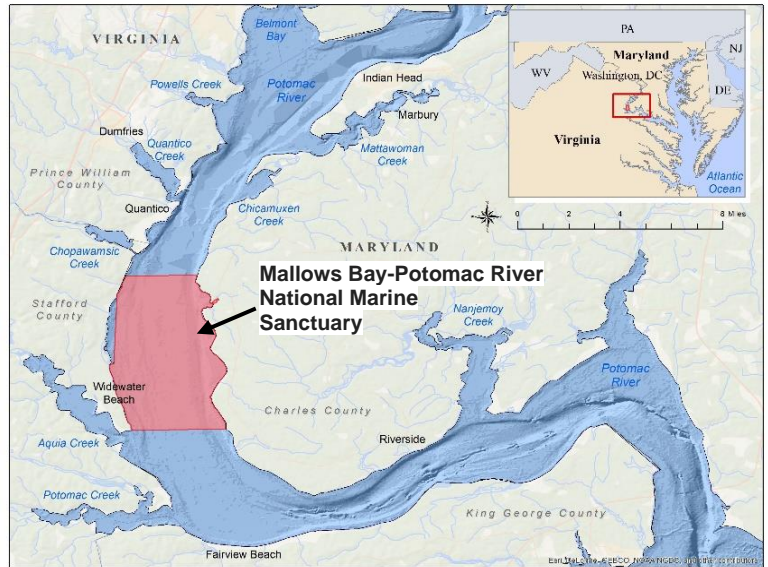
including fish, beavers and osprey, and offer many places to explore by kayak or canoe. The Sanctuary also includes Maryland Indian Tribes heritage sites, the remains of historical sturgeon and caviar fisheries, and Revolutionary and Civil War battle sites.

This article and map were adapted from the NOAA National Marine Sanctuaries website, https://sanctuaries.noaa.gov/mallows-potomac/ ⚓

Lake Champlain Maritime Museum Undertakes Digitization Initiative, Bringing Collections to the Digital Public

by Patricia Reid

Lake Champlain Maritime Museum is a unique repository of shipwreck information, charged with interpreting the underwater cultural remains of the Champlain Valley. In 2018, the Museum received a grant from the South Lake Champlain Fund to conduct a pilot project for a multi-year collections digitization initiative. Our goals are to improve research access, standardize state databases, and bring the Museum's collections online for the digital public. Project work continues in 2019 with funding from the Champlain Valley National Heritage Partnership to digitize items related to Jahaziel Sherman (1770–1844), an early steamboat captain on Lake Champlain and the general manager of the Lake Champlain Steamboat Company (1813–1835).

Lake Champlain's waters are shared between the states of Vermont and New York and the Canadian province of Quebec. Throughout history, Lake Champlain has served as a critical waterway, with its northern end connected to the Saint Lawrence Seaway

through the Richelieu River, and its southern end linked to the Hudson River and New York Harbor through either the Champlain Canal (since 1823) or a short overland journey. This waterway has been used for thousands of years, first by the region's Native American populations and later by European and Euro-American people who settled there.

The material culture of both terrestrial and maritime sites in the Champlain Valley is vast and has provided plenty of opportunity for study by researchers from Lake Champlain Maritime Museum and other institutions. In the past, the Museum digitized parts of its collections as needed for research requests or exhibit requirements. This pilot project reported here has allowed the Museum to create a multi-year plan for systemic digitization of our entire research collection, generating faster responses to research requests, making more of our collections digitally accessible, and protecting fragile items from excess handling. This exciting work helps us achieve our overall mission more efficiently and deliver
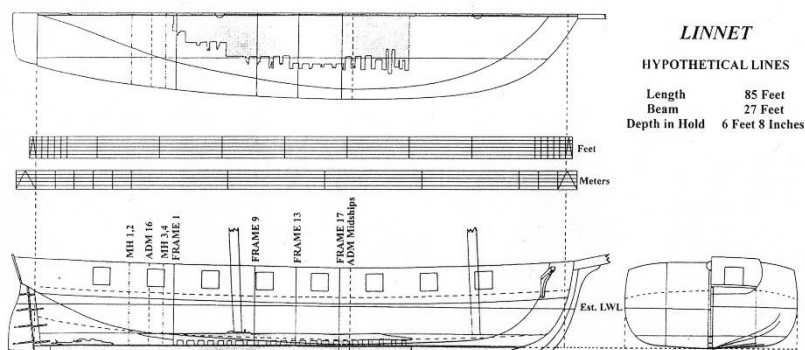
Sample of digitized file types. Above: plan and elevation of brig Linnet; *right top, remains of sloop of war* Ticonderoga; *right bottom, watercolor of War of 1812 fleet mothballed at Poultney River. All images courtesy Lake Champlain Maritime Museum.*

our resources to a wider audience.

The first goal of the digitization initiative is to create complete inventories of various groupings in our collections. For example, flat files in our archives contain mostly archaeological drawings of various shipwreck sites in Lake Champlain and associated artifact drawings. In 2018, our scope of work focused on the South Lake Champlain region, the area of the lake from Crown Point to Whitehall. Using whole lake inventories created in 2017 and earlier, our team identified those items relevant to this region and prioritized them for digitization. Hundreds of analog maps, charts, artifact drawings, notes, and other two-dimensional media were scanned, while additional artifacts from South Lake Champlain shipwreck sites were photographed and added to our digital database.

Our team also mined existing digital records to aggregate a comprehensive digital file for each individual shipwreck site in the South Lake. Similar

work continued in 2019 with digitization of resources related to Captain Jahaziel Sherman.

Another goal is to create a master GIS map for research use. In the first iteration of that goal, an icon has been added to a base map for each individual site, and we added metadata so that clicking on the icon provides relevant information. Clicking on an image's link brings the user to an online database of any digitized information we have about that site. GIS offers effectively limitless applications, and we plan to expand this work to include the entirety of Lake Champlain and potentially the whole watershed.

Lake Champlain Maritime Museum is not the only institution keeping records of these sites – the State
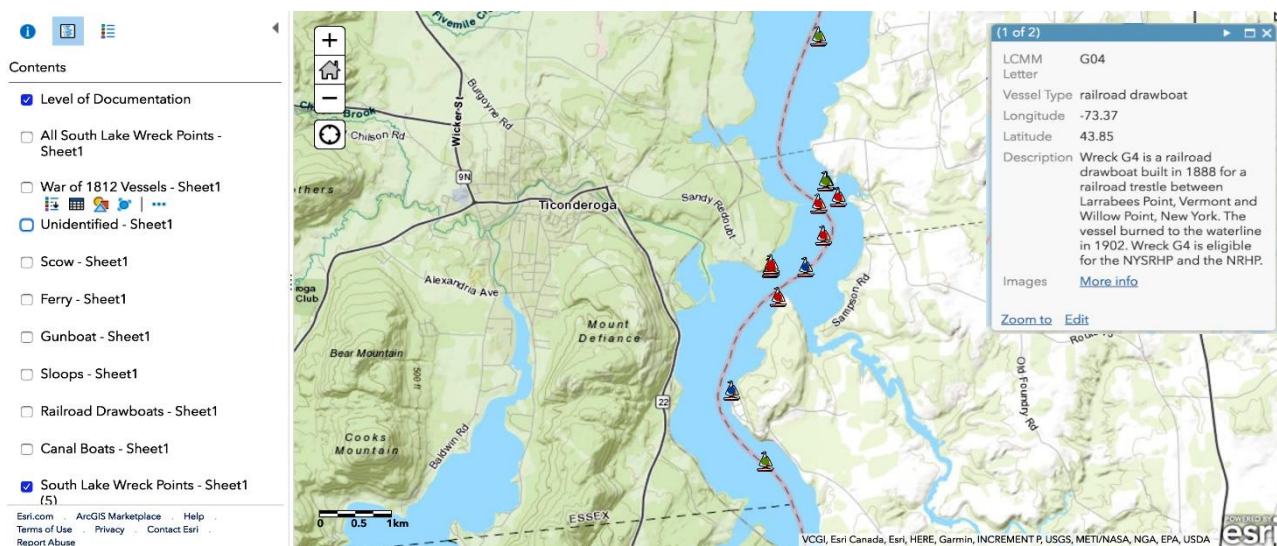
Screen capture from ArcGIS map of South Lake Champlain Digitization Project. Inset: ArcGIS metadata menu.
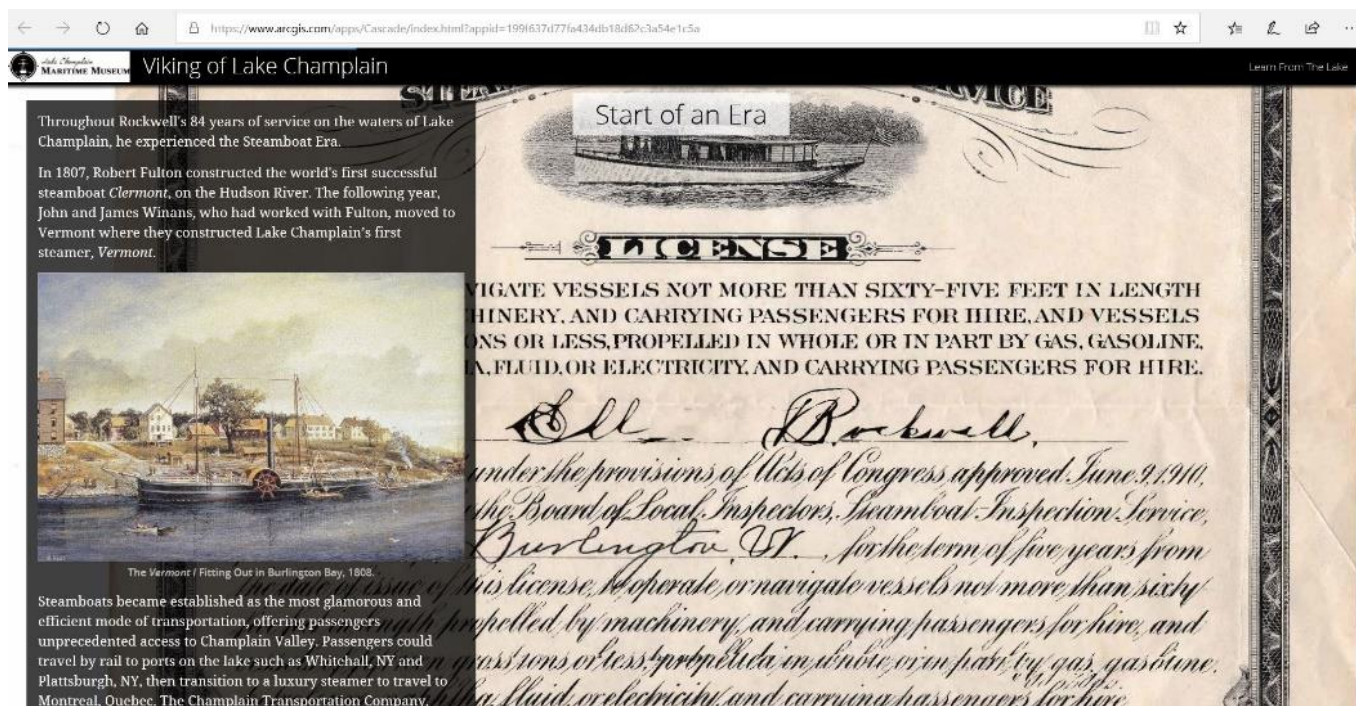
Screen capture from StoryMap: Viking of Lake Champlain, South Lake Champlain Digitization. View online at www.lcmm.org/digital-exhibits.

Historic Preservation offices of Vermont and New York have their own databases as well. Because Lake Champlain's waters are in three jurisdictions, the Museum is in a unique position to help standardize those databases. Beginning in fall 2018, our team has been collaborating with both the Vermont and New York State Historic Preservation offices to create closely aligned site forms for underwater sites, making record keeping for all of us more efficient and accessible. We are also uploading our known data about sites of significance to their respective state databases.

The third application of this digitization initiative is through narrative: digital exhibits for the public. In 2018, we used ArcGIS's beta web application StoryMaps to upload information, pictures, and videos in a variety of aesthetically pleasing formats that users can engage with on the Internet or in physical kiosk stations in our exhibits. In 2018, our team developed two StoryMaps about the life of Lake Champlain steamboat captain Ell Barnum Rockwell (1830–1928) and the War of 1812 on Lake Champlain. As noted above, our focus in 2019 has been on Captain Jahaziel Sherman, and in fall 2019 we launched a StoryMap to accompany two physical exhibits at our Vergennes, Vermont site.

We look forward to continuing this digitization initiative in the coming years. Lake Champlain Maritime Museum has an extensive array of collections and archives that are high priority candidates for digitization, and our active archaeological fieldwork and research generates new data each year. The breadth of interpretive applications for this work is exciting – from

2018 Digitization Project Team. From left: Jeremy Partyka, Hanna Reynolds, Rebecca Hunt, and Patricia Reid. The sloop of war Ticonderoga *links our digitization efforts, as Jahaziel Sherman constructed the steamboat hull, it was subsequently completed as a sloop of war, and now is a War of 1812 monument in Whitehall, New York, South Lake Champlain.*

personalized learning plans for high school students, to internship potential, to research by educators, graduate and post-graduate students, and the interested public. The 2018 South Lake Champlain Fund grant and 2019 Collections grant from the Champlain Valley National Heritage Partnership have allowed Lake Champlain Maritime Museum to create a framework that provides the practical foundation for continuing digitization efforts.

Patricia Reid is Collections Manager at the Lake Champlain Maritime Museum, located in Vergennes, Vermont. ⚓

Kamlar Nyckel, The Tall Ship of Delaware and Maritime Center

by Samuel Heed

The original *Kalmar Nyckel* was a Dutch pinnace built in Amsterdam in 1627, a full-rigged vessel of 300 tons that could operate either as a small warship or as a gun-armed merchantman. Measuring about 93 feet on deck and with a sparred length of 141 feet, the ship was built at the height of the Dutch "Golden Age," a time when Dutch shipbuilders, naval power, and seaborne world trade were the envy of the world.

While the original Dutch name of the vessel is not known, the Swedes purchased the ship in 1629 with tax revenues from the cities of Kalmar and Jönköping and rechristened her *Kalmar Nyckel*. The name means "Key of Kalmar" and was derived from the Renaissance castle and border fortress that guarded Kalmar harbor.

Kalmar Nyckel would serve the Swedish navy as an auxiliary warship and escort vessel for twenty-two years. She was part of Gustav II Adolf's famous invasion fleet that landed at Peenemünde on the German coast of Pomerania in 1630, which marked Sweden's entry into the Thirty Years War (1618-1648). Swedish Admiralty records from 1634 list her as carrying a crew of 55 men and 12 six-pounder cannon – probably typical of her wartime strength. She saw bloody action during Torstenson's War against the Danes in 1645, in which half her crew were lost in boarding and seizing the Danish *St. Peer* off Copenhagen. As an escort vessel in 1647-48, *Kalmar Nyckel* carried Swedish ambassadors on diplomatic trips across the Baltic that led to the landmark Peace of Westphalia.

Kalmar Nyckel is best remembered today as a colonial ship for the New Sweden Company. On loan from the navy, she was Peter Minuit's flagship for the 1638 expedition that launched the colony of New Sweden, bringing the colonists who established the first permanent European settlement in the Delaware Valley – little Fort Christina, named for the 12-year-old Swedish Queen Christina, which would grow to become the city of Wilmington, Delaware.

An exceptional ship with an extraordinary record of endurance, *Kalmar Nyckel* would make eight crossings of the Atlantic between 1637 and 1644 (four roundtrips between Sweden to New Sweden), more than any documented colonial ship of the era.

In a fitting postscript to a remarkable career, *Kalmar Nyckel* would end her days with the Dutch navy in the First Anglo-Dutch War (1652-54). Decommissioned by Queen Christina herself in June of 1651, *Kalmar Nyckel* would be sold to a Dutch

Kalmar Nyckel. *From a painting Jacob Hägg 1922. Sjöfartsmuseet, Sweden. Public Domain.*

merchant, Cornelius Rolofsson. Rolofsson, an international businessman living in Stockholm, had her refitted, up-gunned to 26 cannon, and moved to Amsterdam by April of 1652, just in time for the Dutch Admiralty of Maze to acquire her for a war that was looming against the English.

Now renamed *Kalmar Sleutel* ("Sleutel" means key in Dutch), she would end her career as an escort defending the Dutch herring fleet against 66 ships of an English fleet in the Battle of Buchan Ness, off the east coast of Scotland. Once again flying Dutch colors and with Captain Dirck Vijgh and 90 crew aboard, *Kalmar Nyckel* (now *Sleutel*) would be sunk on July 22, 1652, in the first major engagement of what would be called the First Anglo-Dutch War.

Today's *Kalmar Nyckel* is a full-scale and faithful replica of the original 17th-century ship. Built in Wilmington, Delaware, and launched into the Christina River in 1997 – two hundred yards downstream from "the Rocks" location where the original ship first landed in 1638 – the modern-day *Kalmar Nyckel* serves as a floating classroom and inspirational platform for the Kalmar Nyckel Foundation's award-winning educational programs. She voyages over 2,500 nautical miles each year, sailing daily from April through November, and reaches tens of thousands of people of all ages with sea- and land-based learning and recreational activities.

Full-scale replica of Kalmar Nyckel.
Photo by Jon Caspar.

Copeland Maritime Center at the Kalmar Nyckel Foundation Shipyard. Photo courtesy of Kalmar Nyckel Foundation

The ship is served by a special community of 250 active volunteers, a diverse and multi-generational crew who give more than 45,000 hours of service to the Foundation each year. People come from all points of the compass, near and far, to sail the ship, maintain her in ship-shape condition, and deliver the educational programs that bring her to life and give her meaning. In 2013, Their Majesties King Carl XVI Gustaf and Queen Silvia of Sweden were aboard for the ceremonial sail in Wilmington which honored the 375th Anniversary of the *Kalmar Nyckel's* first voyage to the New World and the launching of the New Sweden colony.

The Kalmar Nyckel Foundation's new 18,000 square-foot Copeland Maritime Center and four-acre shipyard campus are located on Wilmington's historic 7th Street Peninsula. State-of-the-art maintenance shops are housed on the first floor, and an education center on the second floor allows the Foundation to offer programming year-round. School field trips, classroom programs in schools, summer camp programs, and community festivals and events reach over 30,000 people a year.

New permanent exhibits include *Science of Sailing; Kalmar, Sweden – Key to the Kingdom; Wilmington Industrial Powerhouse – The City that Built 10,000 Ships and 30,000 Railcars; Destination Delaware! Fort Christina & First Log Cabins,* and *Tall Ship Time Machine,* which features a 3D animation of the ship that provides an "inside look" at both the modern replica and the original *Kalmar Nyckel* as she might have been configured for the colonial voyage of 1638.

As the Tall Ship of Delaware, *Kalmar Nyckel* proudly carries 17th-century maritime culture, traditions, and heritage into the 21st century.

Samuel Heed is Senior Historian & Director of Education, Kamar Nickel Foundation. This article is based on Kalmar Nyckel – A Guide to the Ship, *by Heed, Captain Lauren Morgens, and Alistair Gillanders. Used with permission.* ⚓

Future sailors experience life on-board firsthand. Photos courtesy of Kalmar Nyckel Foundation.

War at Sea: A Shipwrecked History from Antiquity to the Twentieth Century
## by James P. Delgado (Oxford University Press 2019)

reviewed by Dennis Knepper

Shipwrecks are the result of many factors: unexpected or violent weather conditions, impact with a shoal or uncharted reef, or a collision between two vessels. A large number of shipwrecks have also resulted from deliberate destruction in naval conflicts. In his latest book, *War at Sea: A Shipwrecked History from Antiquity to the Twentieth Century*, James P. Delgado takes a comprehensive look at our use of the sea as a battlefield, examining evidence from archival sources, oral histories and, most importantly, from archaeological sites in the oceans themselves.

The book is described as a tour of a remote museum or, as Delgado puts it, an imaginary museum. The work grew initially out of four years Delgado spent in the late 1980s as a maritime historian with the National Park Service, exploring the United States and its territories, studying "ships, sites, and wrecks" as potential national landmarks. He worked under the direction and inspiration of Edwin Bearss, then Chief Historian of the Park Service. "You can't understand a battlefield unless you walk it," Delgado was told. And walk them he did, participating in archaeological projects in and out of the water, as well as researching numerous archives and working in various museums. That work led in 2001 to publication of an earlier book, *Lost Warships,* for Conway Maritime Press. Another six years of on-site research became the basis for the current volume published by Oxford University Press.

James P. Delgado is a noted and highly respected underwater archaeologist, who brings his wide-ranging experience in nautical archaeology to the task of surveying the evidence of naval warfare. He holds a Ph.D. in Archaeology from Simon Fraser University, has published regularly in leading academic journals, and has written or edited more than 30 books on archaeology and history. He is an accomplished communicator, making numerous television appearances as a commentator or program host. The founding director of the National Park Service's maritime preservation program, Delgado has served as Executive Director of the Vancouver (Canada) Maritime Museum, President and CEO of the Institute of Nautical Archaeology,
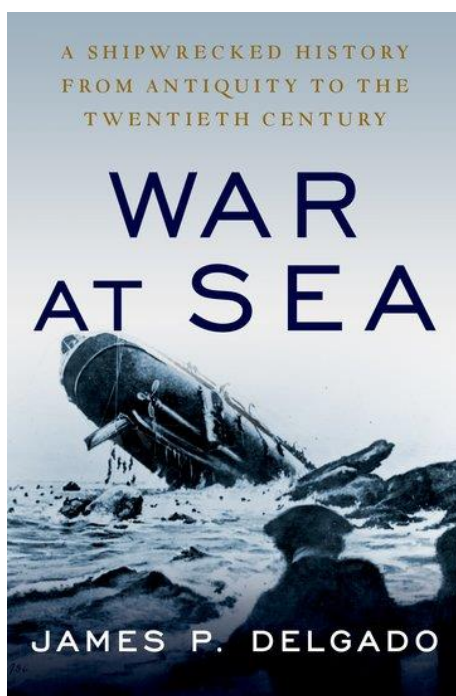
Director of Maritime Heritage in NOAA's Office of National Marine Sanctuaries, and most recently as Senior Vice President of a private cultural resource management firm. He also serves on the MAHS Board of Advisors.

Delgado writes that our attraction to the sea is almost as old as mankind itself. We have used the oceans for transport, for trade and, as regularly, to wage war. *War at Sea* takes a chronological approach to the seas as a battleground, in a method typical of historical narratives. The story begins with some of the earliest evidence of humankind at sea. Although there is no direct evidence of naval conflict this early, more than 150,000 years ago some of our early ancestors gathered shellfish offshore. The account moves on through the western Classical era of the Greeks and Romans to the Age of Sail and on to vessels of the modern age.

While much of the text is devoted to ships from 19th and 20th-century conflicts, Delgado does spend 100+ pages – a full quarter of the text – describing early vessels, particularly Mediterranean, as well as Asian and Pacific craft. Much of our knowledge of these times and regions is based on archival data, including writings and other epigraphic evidence, as well as paintings or relief carvings. With few naval vessels surviving from these times, individual artifacts – rams, spearheads, helmets and, occasionally, models – are important sources of information.

A major thread running through the history of naval warfare is the persistent advance of technology. The ram, added to the bows of Greek triremes, was one such development and it changed the course of naval engagement in the early Mediterranean. Previously, oar-driven vessels would close on an enemy and attach grappling lines, allowing soldiers to board for hand-to-hand combat, with the boats serving mostly as a means of bringing the armies together. Around 850 B.C., the Greeks added a bronze-sheathed bow ram to their vessels giving them a new tactic, turning the boats into weapons themselves. They would be rowed directly at an enemy vessel to drive into and sink it. Historically, the ram has been considered a battlefield game changer on a par with gunpowder, the tank, or airplane.

Many of the technological advances in naval warfare following the Classical Age in the west originated in Han Dynasty China, generally between the second century B.C. and the first century A.D. Among these were watertight bulkheads, the true rudder (as opposed to the steering oar), and the compass. Gunpowder, a well-known Chinese invention, came later and led directly to the development of military armaments such as cannon and small arms. Later advances in naval technology included iron cladding, submersible vessels, radar, and sonar.

Twentieth-century metal warships dominate the latter sections of the book. This is not surprising since arguably the vessels tend to be better preserved archaeologically because of their material components and due to their more recent ages. Except for brief forays into locations in lakes in New York and the Chesapeake Bay during the War of 1812, and the Mississippi River in the American Civil War, the book is focused on sea battles.

Delgado demonstrates the value of archaeological research in correcting misconceptions based on unclear history or in some cases on downright deception. He cites *De Braak*, a British warship that sank off the coast of Delaware in 1798, is an example of the former. The ship was originally thought to have been Dutch-built and captured and re-fitted as British. However, close archaeological inspection of the surviving portions of the hull indicated British construction (based largely on hardware), in effect making the history of the vessel more complex – British-built, captured by the French, sold to the Dutch, and re-captured by the British. The author also describes in wrenching detail the mismanaged salvage work that resulted in the vessel's contents being spilled into the sea as the hull was raised. The scattered artifacts were then dredged from the bottom and run through gravel separators in an effort to find a trove of silver that was not on board.

Archaeological research confirmed that the official account of the sinking of the German light cruiser *Dresden* in 1914 had been manipulated for political ends. The British Royal Navy reportedly caught and sank the ship in the harbor of Isla San Juan, off the Chilean coast, as it attempted to escape and resume attacks on British shipping. In the official narrative, the battle lasted but five minutes, with the German crew surrendering, ignominiously abandoning ship and blowing the magazine. But this was a case, as Delgado points out, of history being written by the victors. Later accounts suggested that the ship had been out of fuel and anchored, rather than in the process of fleeing. Recent archaeological evidence indicated that this was indeed true. Anchor chains were found still in place, along with signs of systematic shelling from point blank range, apparent retribution for the ship's participation in an

earlier battle in which two British cruisers were lost. As a footnote to the tale, Delgado notes archaeological evidence indicating that at the beginning of World War II a crew of German and Chilean hard-hat divers blasted open a portion of the stern cabin to retrieve a shipment of gold coin that had been carried from German banks in China. "Sometimes, if not often," he says, "history is as colorful as a Clive Cussler novel."

War at Sea is a more extensive and substantive study than the earlier volume, *Lost Warships*, which was a larger-format coffee-table book, a less comprehensive treatment of the subject intended for a wide, popular audience. Material from that work is reused in the current volume but has been augmented considerably and to good effect. Delgado characterizes the growth of maritime archaeology since the publication of *Lost Warships* as exponential, which is reflected in the tally of warships discovered since then.

Delgado's study effectively ends with the wrecks associated with the atomic bomb tests on Bikini Atoll, which he portrays as the world's first nuclear naval battlefield, with ships arrayed to simulate a fleet. Most of the vessels now lie on the floor of the lagoon, and a number of them were surveyed by a team of National Park Service divers, he himself included. He notes that more recent wrecks around the world are often still enmeshed in Cold War and active military secrets and thus cannot be effectively studied in meaningful archaeological or historical ways.

While largely a survey and interpretation of underwater cultural studies, Delgado also examines issues of illegal salvage, environmental degradation related to oil pollution and derelict Soviet nuclear submarines, and historic preservation in general.

A smartly produced volume, *War at Sea*, runs to 420 pages of text with numerous photographs, a glossary, a lengthy bibliography and index.

This history of war at sea is told by one of our finest maritime historians, a researcher unsurpassed as an interpreter of the ever-burgeoning field of maritime archaeology. Because the vessels depicted, whether famous or nameless, were casualties of battle, they often have exciting stories that are told in gripping narratives. Delgado describes the histories of the vessels and how they came to their final resting places. And he constantly reminds us of the people who lived and died aboard the ships. Delgado never seems to lose sight of archaeology as a branch of anthropology, striving for the reader to "come away with a better understanding not only of the times and cultures that produced these ships of war, but of the people who built, lived in, fought in, and died in [them]." Delgado's hands-on experience with many of the wrecks he describes is important in the personal tone of the narration, but he credits interviews with veterans as perhaps his greatest experience. ⚓

The Boundless Sea: A Human History of the Oceans
## by David Abulafia (Oxford University Press 2019)

reviewed by Dennis Knepper

Human history is the story of mankind's relationship with the oceans, the story of the connections the seas provide between widely separated and often very different cultures. So writes David Abulafia in his new work, *The Boundless Sea: A Human History of the Oceans,* published by Oxford University Press.

David Abulafia is an English historian with a special interest in Italy, Spain and the rest of the Mediterranean during the Middle Ages and Renaissance. He is Professor Emeritus of Mediterranean History at the University of Cambridge, from which he retired in 2018. He is widely known for his masterful study of the Mediterranean, *The Great Sea*, which was published in 2011 and praised for its scholarship and keen observation of the cultures of that region. In *The Boundless Sea*, he casts a much broader net to include the three great oceans of the world—the Atlantic, Pacific, and Indian.

The Boundless Sea is largely about traders, since commerce generally drove exploration and the contacts between cultures that resulted. As such, Abulafia's work is an economic as much as a socio-cultural study. If a fabric is used as a metaphor for history, politics and culture are the warp that is bound by the weft of commerce.

Abulafia writes of the way in which seaways functioned in the growth of pan-regional economies, and he sees this approach as part of a shift among historians toward a more global view of history. Globalization is not necessarily a late-20st-century phenomenon, he observes. It is a process that developed in stages, begun relatively early in world history and made possible by maritime commerce. Following in the wake of earlier, Egyptian traders, he argues, Greco-Roman merchants in Cairo and Alexandria initially traded with the so-called Land of Punt (roughly the modern-day Horn of Africa) for ivory, ebony, resins, and gold. Soon the traders used the monsoon winds in the Indian Ocean to sail to southern India where they began the commerce in spices for which that region and the islands to the east became known. Pepper quickly developed as a common commodity among the elite in Rome.
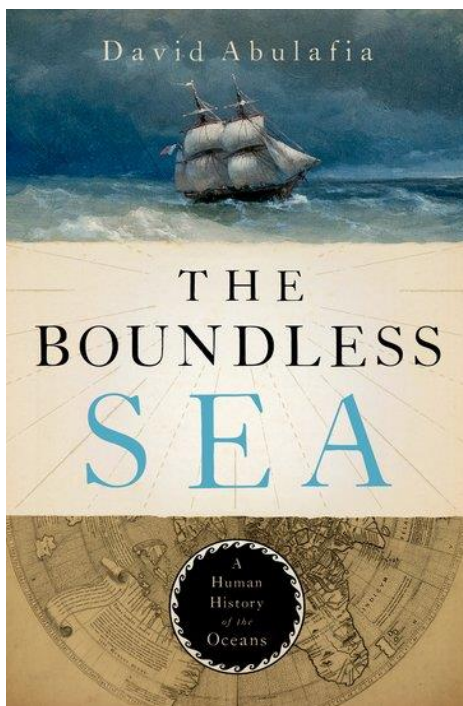
Admittedly, material and ideas flowed more slowly between distant areas than in the current age of air travel and satellite communications, while integrated, fully interdependent economies were yet to develop. But the connectedness we now recognize as the basis of globalization began early on, made possible by oceanic networks. In a talk in 2015 at the Legatum Institute, a London-based educational charity, Abulafia noted that by the first century A.D. maritime networks linking the Mediterranean and China via the Indian Ocean "funnelled goods in both directions in astonishing quantities." Ships laden with hundreds of thousands of pieces of Chinese porcelain travelled westward across the oceans. Plates and other wares made specifically for European orders represented the beginnings of interconnected economies half a world apart. One of the economic effects of this trade was the tendency for bullion from the west to be accumulated, or "treasurized," in many cases rather than recirculated. These early trade deficits were a one-way transfer of wealth that occasionally drained western coffers enough to produce significant effects on the prices of certain commodities. The trade with Asia continued to flourish, however, and by the 12th century included everything from grain and textiles to spices, porcelains, and precious metals, circulating to and from the East through Egypt and the Mediterranean via Red Sea mercantile centers such as the port of Aden.

The narrative of *The Boundless Sea* is clear and engagingly presented. Whether describing linguistic evidence of Malay traders across the Indian Ocean (such as the Malayan-based Malagasy, now spoken in Madagascar), or summarizing the complexities of Han China politics in the first century A.D., the author uses simple and concise language. In a 2016 interview with the *Chicago Journal of History,* Abulafia noted "I do pay an enormous amount of attention to style." And this is readily apparent in *The Boundless Sea*, which is highly readable, written in an authoritative but unpretentious manner. Never stuffy or pedantic, the language is straightforward. Sentences and paragraphs are well-constructed and written in refreshingly plain, almost conversational English, as if the author were talking to you at a coffee shop. He includes details that bring the

ideas to life, holding the reader's interest. More than once while searching for specific information I found myself reading five or six other pages with interest. "To write concisely," he told the interviewer, "to write without lots of jargon, to write in a way which is saying something useful and perhaps even slightly original to fellow scholars but at the same time is going to engage and interest a wider public is the historian's task."

A review in *The Atlantic* of his earlier, Mediterranean study echoed this sentiment, calling Abulafia a "superb writer with a gift for lucid compression and an eye for the telling detail." *The Boundless Sea* is broad in scope but liberally populated with interesting and occasionally telling details. We read, for example, that the Ark mentioned in Sumerian and Babylonian clay tablets and later in the book of Genesis may have been a large, round keel-less boat of wickerwork covered by hides and sealed with bitumen. We also read of a wealthy Sumerian merchant of Ur, Ea-nasir, who traded in copper around 1800 B.C. According to other clay tablets, his business involved such seemingly modern features as loans at interest, trade contracts assigning risk and, inevitably, disputes over the quality of goods offered. "You have offered bad [copper] ingots to my messenger, saying: 'If you will take it, take it, if you will not take it, go away.'"

Shih Chong, a regional governor in southern China around 300 A.D., grew very wealthy taxing goods in transit from Vietnam through his province to northern China. His fortune was described as fabulous, which Abulafia reminds us was fabled "in the sense that accounts of his wealth grew in the telling."

Abraham ben Yiju was from a successful Jewish Mediterranean trading family in Tunisia. In 1132, he arrived in Mangalore, an early Indian trading center on the Malabar Coast. He prospered there, trading locally and establishing a factory for bronze goods, filling custom orders. He also traded in iron, mangos and coconuts for cotton from Egypt. He lost two valuable cargos, however, reinforcing for him of the need to diversify his markets. His favorite import, though, was paper, sold to merchants in India and Aden. After many years he was able to return to North Africa with enough wealth to live out his life comfortably.

The changing fortunes of commerce are apparent in the history of a family of French merchants from Dieppe who profited from piracy as much as trade. In the late 1400s, Jean Ango the Elder dealt in herring, barley, and other commodities, trading largely in northern Europe. His son expanded the business working south along the coast of West Africa, where he often lost ships to attacks by the Portuguese, who saw him as a threat to their trade in sugar from Madeira and their growing links with the Indies. In response, Ango began preying on Portuguese vessels in turn, seizing cargos of Chinese silks and jewels. His pirate ventures netted a million ducats worth of loot (around $150 million in modern terms) over the course of 20 years, along with plaudits from the French royalty.

The wandering line between lawful pursuits and piracy was apparent in the Caribbean in the story of Christopher Myngs, an English naval officer who doubled as a privateer during the Anglo-Spanish War of the late 1650s. Failing to cede the Governor of Jamaica a share of the proceeds from sacking towns on the Spanish Main, he was arrested and returned to England. He was soon released, however, and sent back as commander of the Jamaica Station with orders to resume his marauding despite the war's end, as a means of undermining Spain's influence in the region. He sacked and pillaged the heavily fortified cities of Santiago de Cuba, and Campeche, southern Mexico. Myngs eventually amassed a fleet of 14 ships and 1400 buccaneers, among whom was the soon to be notorious Henry Morgan, "who would also manage to switch back and forth between licensed and unlicensed raiding."

With these stories and many more like them, Abulafia reminds the reader that the events of history were the acts of people. And it has been the oceans that have made direct links between people and cultures possible. Travel overland, whether by road or up and down river systems, he notes, resulted in contacts mediated by the many cultures found along the way. Maritime commerce "could tie together very different worlds, as far apart as Portugal and Japan or Sweden and China."

Finally, Abulafia argues, ocean history appears to be coming to an end, at least in its original sense of an all-important communications link. Radio, satellite communications, and air travel are making ocean travel almost obsolete, while the ships that do still travel the oceans carry mostly cargo, not people, the latter only on limited coastal cruises as tourists. Automated container ports where machines do much of the work of processing bulk containers are replacing classic ports that were centers of trade traditionally populated by people of different backgrounds and cultures. "There is one vast [UNESCO] World Heritage site that … needs to be nominated: the world-encompassing ocean sea, whose history is entering an entirely new phase. By the beginning of the twenty-first century, the ocean world of the last four millennia had ceased to exist."

The Boundless Sea is a massive work, both in scope and in physical size. The text runs to 908 pages and is illustrated with 32 maps and numerous finely reproduced color figures. The extensive research the book represents is indicated by 114 pages of notes on sources. A detailed and serviceable index rounds out the volume. The publisher notes that *The Boundless Sea* is also available as an e-book. ⚓

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

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 theSociety 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.

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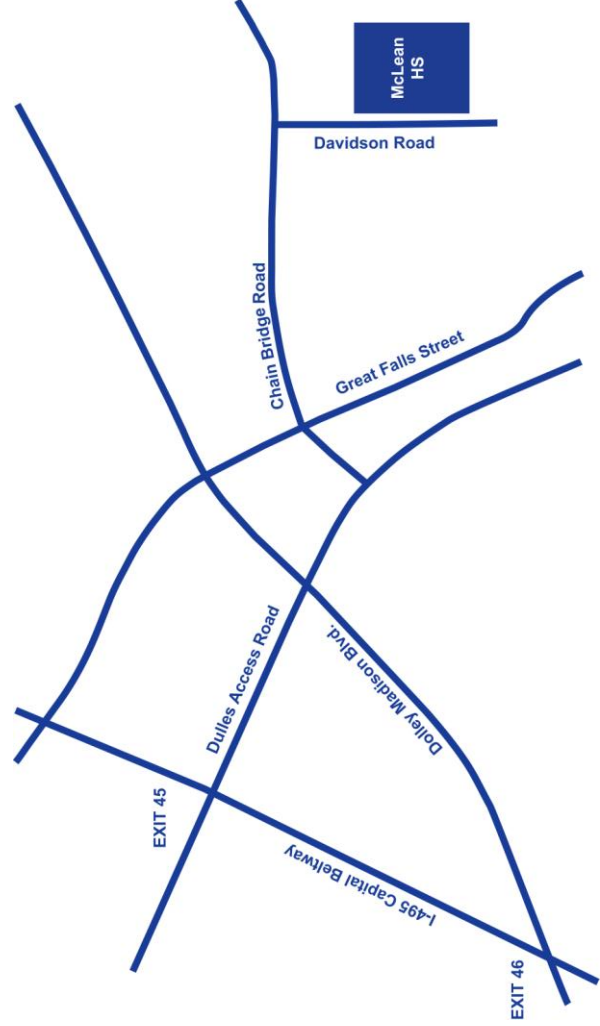
ADDRESS SERVICE REQUESTED

General membership meetings of the Maritime Archaeological and Historical Society are held on a bi-monthly basis, the second Tuesday of each 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.MAHSNet.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! Thank you!