

# MAHS NEWS



VOLUME 33, NO. 1

SPRING 2022

## Shipwreck in a Melon Patch, An Archaeological Mystery from Gloucester County, New Jersey

By Richard Veit

In August 1948, farmer Alfred Leone’s melon patch yielded a most unusual crop, a treasure trove of colonial artifacts. The Army Corp of Engineers, in dredging the Delaware ship channel to Philadelphia, had opened the hull of a sunken ship and dredge spoil full of artifacts spewed across Leone’s fields.

Antiquarians and amateur archaeologists descended on the site where they burrowed ferociously into the dredge spoil. Media attention did not improve the situation and soon excavations extending five to six feet into the soil were being dug on the farm. Reporters also flocked to the site and numerous newspaper articles documenting the curious discovery of shipwreck artifacts in a farm field survive. Leone, frustrated by the intruders and the loss of some choice melons, contemplated monetizing the situation and charging the treasure hunters admission.

Several hundred artifacts were recovered. Eventually, some of the finds were donated to local cultural and historical institutions, including the New Jersey State Museum and the Gloucester County



*Philadelphia, a center of maritime trade in the 18<sup>th</sup> century as seen in “An East Prospective View of the City of Philadelphia, in the Province of Pennsylvania, In North America, 1774.” George Heap. Public domain. Copy at the Yale University Art Gallery.*

Historical Society. This brief article introduces surviving collections and attempts to identify the age and nature of the wreck. Was the vessel a ship lost during the British campaign to take Philadelphia during the American Revolution or was it simply a colonial merchantman? While some questions have been resolved, others remain.

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## Notes from the Prez – Steven Anthony

In the previous issue of MAHSnews (Fall 2021) I noted that the Coronavirus “Stay At Home” orders were beginning to be set aside and folks seemed to be accepting the new normal as the country began to open up again. Mask wearing and social distancing had become a routine in our daily lives. However, despite all of the precautions, the virus variants refuse to go away. The case numbers seem to be rising again.

There are plenty of SCUBA shops promoting new dive trips, but the MAHS Board of Directors continues the suspension of MAHS activities to protect our students and members from the ongoing spread of this deadly plague until the CDC advises that it is safe to travel and congregate again without all of the extraordinary required procedures.

The Introductory Course in Underwater Archaeology commenced on January 28, 2022 for our 34<sup>th</sup> consecutive year. Surprisingly, we experienced another banner year with a large increase in our class numbers again this year. Students from a dozen or so states across the US joined the Zoom version of the course, along with folks as far away as Canada and Tokyo. Last March, MAHS completed the conversion of our live course to virtual mode using Zoom technology so we were all ready to go in 2022. The scheduling of the MAHS 2022 Field School, however, is still unsettled. We will continue to re-evaluate the situation later this year to determine when we can safely resume diving activities again.

Throughout all of this, MAHS continues to develop the online version of the Introductory Course which will eventually replace our DVD course for distance learning students. We expect this asynchronous version of the Introductory Course to be up and running by the end of 2022.

In January, Jim Smailes and I attended the annual conference of the Society for Historical Archaeology and conducted a presentation on behalf of MAHS in Della Scott-Ireton's session titled "What's in a name? Discussions of Terminology, Theory, and Infrastructure of Citizen Science in Maritime Archaeology." We jointly discussed the history of MAHS, our mission of stewardship and our shipwreck protection activities. We described the MAHS approach to public education and outreach to the recreational diver community through our Introductory Course and our Field School in Underwater Archaeology. At the conclusion of the presentation, Della invited MAHS to join in the publication of a textbook devoted to this subject. MAHS agreed to co-author a chapter with Dr. John Seidel on the important role of MAHS volunteers and the successful elements of the MAHS programs over the years.

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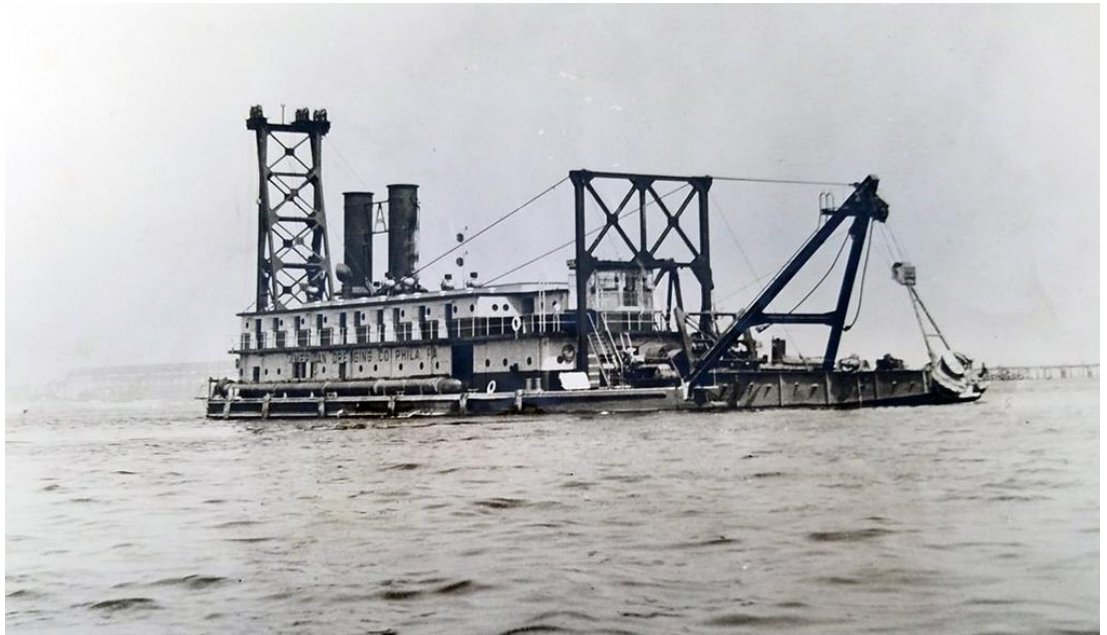
*MAHSNEWS will consider articles and notices for publication which enhance public awareness and appreciation of maritime history, archaeology, and heritage preservation.*

Reports placed the wreck site in the Delaware River but differed on its exact location. Some noted that it was in the vicinity of Mantua Creek. Others describe it as being near Fort Mifflin, or within a mile of the Hunter Lawrence house, which serves as headquarters of the Gloucester County Historical Society, or near Woodbury Creek and about 30 feet from the Pennsylvania shore. One article placed the wreck under thirty feet of water. Another added that it was under 18 feet of silt. Most reporters noted a single wreck, though some state that there were two wrecks. Perhaps the best description is provided by divers who were dispatched to the vessel and noted that it was “exposed about a foot above the riverbed” and was “almost directly west of the mouth of Woodbury Creek in mid-stream,” as quoted in the *Woodbury Daily Times*, August 4, 1948.

Writing in his 1974 book, *All the Best Rubbish*, Ivor Noël Hume provides a fairly detailed description of what appears to be this very discovery. It begins by noting the potential richness of underwater sites, stating that this:

was dramatically demonstrated in the Delaware River in 1948. There, off Woodbury Creek below Philadelphia, a commercial dredger cut into the hull of a wooden merchant ship sunk in the 1770s, perhaps early in the Revolutionary War. As the dredge and the tides continued to pull at the damaged hull, numerous wine bottles and other artifacts were washed ashore. Many more were sucked into the pipe, carried two miles downstream and spewed out onto a riverside marsh where local antiquaries waded about in a sea of mud salvaging an amazing collection of artifacts. A diver went down to examine the wreck and reported “From what I can see it appears to be about two hundred feet long and completely made of wood. I can see into part of what must have been the ship’s hold. In it there are what appear to be scores of kegs and nails.

While the artifacts from the Woodbury shipwreck were quickly dispersed among the finders, an exhibition was mounted at the Gimbels Department Store in



*The dredge employed in opening the Delaware Ship Channel in 1948. Courtesy of the New Jersey State Museum.*

Philadelphia, as reported in the *Woodbury Daily Times*, August 25, 1948. Other exhibits were mounted at the offices of the Army Corp of Engineers in Philadelphia and the Newark Museum. Today, some artifacts remain on display at the Gloucester County Historical Society.

An article in the *Woodbury Daily Times*, August 30, 1948, noted that when initially disturbed:

[the wreck] was thought to have been the hulk of a Swedish ship, but was later believed to be British. However, examination by W.K. Boyer of The Pennsylvania Historical and Museum Commission suggested that the ship was Dutch... The possibility was also proffered that the sailing vessel, which sank off Fort Mifflin was a supply ship for the British forces in the Revolution, during the occupation of Philadelphia and the fighting to control the Delaware River.

After this flurry of attention in 1948, the trail goes cold. What was this mystery ship in the Delaware? The shipwreck was briefly noted by John Cotter and colleagues in their book *The Buried Past* (Cotter, Parrington, and Roberts 1992). However, it was characterized as likely Dutch, and the artifacts were described as lost. More recently, in 2013, Jon Blaydes, a student at Monmouth University, wrote his Master’s thesis on portions of the collection. He argued, based on correspondence with maritime historian Donald Shomette, and analysis of many of the surviving artifacts, that the ship was likely a fireship lost during the siege of Fort Mifflin. While that is certainly possible, here we reach a somewhat different conclusion.

## THE COLLECTIONS TODAY

Currently, portions of the collection survive in three repositories. The largest collection, 220 items, is at the New Jersey State Museum, while a smaller collection is at the Gloucester County Historical Society, and a very modest collection is at the Christian Sanderson Museum in southeastern Pennsylvania. Other artifacts have been reported from the Newark Museum, Philadelphia Maritime Museum, and the Ann Whitall House/Red Bank Battlefield. However, inquiries at these three locations failed to relocate the finds. Additional inquiries to the Pennsylvania State Museum and the American Swedish Historical Society proved unsuccessful, as no additional artifacts were identified.

## THE NEW JERSEY STATE MUSEUM COLLECTION

The New Jersey State Museum Collection was donated in 1983 by Ross Miller, an antique dealer, and his wife. The accession files note 75 individual artifacts, detailed in the table below, but do not enumerate the numerous nails and spikes present.

- 
- |  |   |   |
|--|---|---|
| • one saw blade fragment               | • one shoe buckle                           | • one pewter plate  |
| • two iron hardware fragments          | • one gun part                              | • two iron locks  |
| • one iron hoe                         | • four iron rings                           | • eight iron forks  |
| • iron nails and spikes                | • three belt buckles                        | • one horse bit   |
| • iron blade fragments                 | • five knife fragments                      | • one harness hardware piece                                |
| • one wood fragment with spikes intact | • two metal hinges                          | • two pairs of scissors                                     |
| • one iron axe head                    | • one sickle blade                          | • one belt buckle with part of leather intact               |
| • two iron tool fragments              | • one shot ball                             | • one spoon handle fragment                                 |
| • two pairs of cufflinks               | • one iron hardware piece with a brass knob | • twenty-seven wine bottle fragments including cork remains |
- 

### *Summary of Artifacts in the New Jersey State Museum Collection*

The large pewter plate in the collection is dented and scratched, the damage unfortunately partially erasing a maker's mark. What remains is a banner design with the letters "NY POULT" and the other a scroll symbol with the letters "REOP." There is also a small crown mark, a design common on pewter pieces from Great Britain. The plate also displays a pair of capital cursive "G's" on the outside rim of the top surface.

## GLOUCESTER COUNTY HISTORICAL SOCIETY

The Gloucester County Historical Society's artifacts came from at least three different donations: those of Frank H. Stewart, Charles F. Kier Jr., and Edward L. Trowbridge. Stewart, a local historian, donated a large hoe blade, one large spade, one large cannon ball, one grape shot, one spiked ring, one horse's bit, one plain blade, and brass pins, a large lock, and a large wine bottle partially filled with wine.

The Trowbridge collection includes four pewter platters. At least one bears a "London" stamp and a crowned X, while most exhibit a crowned rose with the initials I.F. The Kier collection includes a large padlock and key, two spiked rings, one half of a horse's bit, two bolted rings, and a substantial number of clothing-related items including buttons, and pins.

Overall, the materials at the two repositories visited for this paper form an intriguing and coherent collection, heavy on commercial goods: locks, pins, cutlery, and bottles, with some cannonballs and grape shot present at the Gloucester County Historical Society.

## IDENTIFYING THE VESSEL

Based on even a cursory examination, the artifacts appear to date from the late 18<sup>th</sup> century. A coin dated 1769 is noted in one of the newspaper articles, though it is no longer in the collections. Moreover, no cut nails are present, only hand-wrought, allowing us to narrow the date range to c. 1769-1790.

During the 18<sup>th</sup> century, Philadelphia was one of the busiest ports in North America. Numerous ships were

lost in the Delaware River in the vicinity of Philadelphia. The Revolution exacerbated this trend, as there was a significant naval component to the Crown forces in the Philadelphia campaign in 1778. HMS *Augusta*, a 64-gun ship of the line, was lost to artillery fire from Fort Mifflin and sank very close to the site of the mystery wreck. However, our vessel is unlikely to be the HMS *Augusta* as that ship was salvaged in 1869 and her hulk was dragged ashore near Gloucester City, New Jersey, where it remained visible into the early 20<sup>th</sup> century.

Also lost in the fighting around Fort Mifflin was HMS *Merlin*, an 18-gun sloop, near Mantua Creek. This is just over two miles south of the purported location of the mystery wreck. Four American fire ships, dispatched in an effort to sink the *Augusta*, are also believed to have been lost near the site. They were the *Hecla*, *Hellcat*, *Volcano*, and *Comet*. Indeed, none of the vessels lost would have been 200 feet long.



Artifacts from the wreck at the New Jersey State Museum. Top: the hardware, horse bit, sickle blades, flint lock, pewter plate, and shoe buckles. Bottom: various tools, including a saw blade, sickle blade, broad axe, and grub hoe.



Artifacts from the Gloucester County Historical Society, including shoe buckles, files, and nails.

## CONCLUSIONS AND FUTURE RESEARCH

In 2013, Jon Blaydes argued that the mystery wreck was likely one of the Continental fire ships. He may be correct; however, the cargo seems more consistent with a merchant vessel of the late 18<sup>th</sup> century. Indeed, in its emphasis on hardware and tools it is quite similar to the cargos of two packet ships lost in transit from Great Britain to the United States in the early 19<sup>th</sup> century, the *Amity* (1824) and the *Aurora* (1827).

Writing in 1974, Ivor Noël Hume called the Woodbury Creek mystery shipwreck, an “unparalleled American time capsule which, had it been saved, would have provided Philadelphia with a historical attraction that might rival Stockholm’s *Vasa*.” While Noël Hume’s statement was a bit hyperbolic, the surviving cargo from this shipwreck does provide a tantalizing glimpse of colonial trade in the Delaware Valley.

Individuals with more information about the wreck or the associated artifact assemblage are encouraged to contact the author of this article.

*For further reading the author suggests:*

*Blaydes, Jonathan C., The Woodbury Creek Shipwreck: Archaeological Analysis of an Anonymous Colonial Shipwreck in the Collections of the New Jersey State Museum. MA thesis in Anthropology, Monmouth University, 2013.*

*Cotter, John L., Daniel G. Roberts, and Michael Parrington. The Buried Past: An Archaeological History of Philadelphia. University of Pennsylvania Press, Philadelphia., 1992.*

*Noël Hume, Ivor, All the Best Rubbish: Being an Antiquary’s Account of the Pleasures and Perils of Studying and Collecting Everyday Objects from the Past. Harper, New York, 1974.*

*Woodbury Daily Times, Wreck of 200-Foot Ship Found on Bed of Delaware by Diver; Is Source of Relics. August 4, 1948, NP.*

*Woodbury Daily Times, Relics Recovered from Sunken Ship on Display. August 25, 1948, NP.*

*Richard Veit is is Professor of Anthropology and Interim Dean of the School Of Humanities And Social Sciences at Monmouth University. ⚓*

# A Brief Report on U.S. Legislation Pertaining to Ocean Management

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compiled by Anne Giesecke

Each year, as an advocate for environmental and cultural resource matters related to the world's oceans, I study the work of the U.S. Congress, including legislation passed and newly introduced bills, for potential impacts on ocean management. The United States Congress meets in two-year sessions, the terms coinciding with the terms of the elected members of the House of Representatives.

During the first session of the 117<sup>th</sup> Congress in 2021, 385 Bills were introduced in the Congress, House of Representatives (H.R.) and the Senate (S.) that deal with ocean management. You can contact your Congressmen and Senators to comment on these subjects and Bills. The Bills addressed the following topics:

- Acidification,
- Antidumping, plastic waste, mercury
- Arctic and Oceania
- Climate impacts on regional coastal and ocean communities
- Energy production and pipeline safety
- Algal blooms
- Kelp, reefs
- Fisherman, fisheries, salmon, sharks, finfish, oysters
- Marine mammals, polar bears

Bills that passed the House or Senate are listed below. No laws have been passed at this time. This report does not include Resolutions, Authorizations or Appropriations.

## **H.R.587 Ocean Pollution Reduction Act II**

Passed House. Latest Action: Senate 06/16/2021

This bill revises requirements under the National Pollutant Discharge Elimination System (NPDES) permit program for the Point Loma Wastewater Treatment Plant in San Diego, California. Currently, the plant must meet standards established under the NPDES permit program for the primary and secondary treatment of wastewater discharged by the plant into marine waters.

The city of San Diego may apply for permit modifications, which offer alternatives to certain secondary treatment standards. This bill eliminates the need for the city to obtain a separate permit for such modifications. Instead, the city may apply to obtain the permit modifications under the main NPDES permit if the plant meets certain conditions, such as the implementation of a pretreatment program.

## **H.R.1447 COAST Research Act of 2021**

Passed House. Latest Action: Senate - 05/19/2021

This bill addresses the effects of ocean and coastal acidification on marine organisms and ecosystems. Specifically, the bill reauthorizes through FY2026 and revises the Ocean Acidification Program of the National Oceanic and Atmospheric Administration and the ocean acidification grant program of the National Science Foundation. The bill expands those programs, as well as the ocean acidification activities of the National Aeronautics and Space Administration (NASA), to include efforts to research and monitor the effects of coastal acidification.

## **H.R.2533 NEAR Act of 2021**

Passed House. Latest Action: Senate-05/19/2021

### **National Estuaries and Acidification Research Act of 2021**

This bill directs the Department of Commerce to arrange for the National Academies of Sciences, Engineering, and Medicine to conduct a study that examines the existing science of ocean acidification in estuarine environments, examines the challenges to studying ocean acidification and acidification's interactions with other environment stressors in estuarine environments, provides recommendations for improving future research with respect to ocean acidification in estuarine environments, and identifies pathways for applying science in management and mitigation decisions related to ocean acidification in those environments.

## **S.558 FLOODS Act**

Passed Senate. Latest Action: House-10/01/2021

### **Flood Level Observation, Operations, and Decision Support Act**

This bill addresses forecasting and the communication of flood, tornado, and hurricane events by the National Oceanic and Atmospheric Administration (NOAA). Among other provisions, the bill directs NOAA to establish a National Integrated Flood Information System to better inform and provide for more timely decision-making to reduce flood-related effects and costs.

## S.273 Driftnet Modernization and Bycatch Reduction Act

Passed Senate. Latest Action: House - 09/17/2021

This bill addresses certain driftnet fishing. Driftnet fishing is a method of fishing in which a gillnet composed of a panel or panels of webbing, or a series of such gillnets, is placed in the water and allowed to drift with the currents and winds for the purpose of entangling fish in the webbing.

1. Currently, the use of large-scale drift gillnets with a total length of 2.5 kilometers or more is prohibited in the United States. The bill expands the definition of large-scale driftnet fishing to prohibit the use of gillnets with a mesh size of 14 inches or greater. This expanded prohibition does not apply within the U.S. exclusive economic zone for five years.
2. The Department of Commerce must conduct a transition program to facilitate the phase out of large-scale driftnet fishing and to promote the adoption of alternative fishing practices that minimize the incidental catch of living marine resources.
3. Commerce must award grants to program participants.
4. The North Pacific Fishery Management Council may recommend, and Commerce may approve, regulations that require charter operators to pay fees on vessels that harvest Pacific halibut in specific International Pacific Halibut Commission regulatory areas.

## Other United States Federal Agency Announcements

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### National Oceanic and Atmospheric Administration (NOAA) National Marine Sanctuaries

The information in this report is taken from <https://sanctuaries.noaa.gov>. You are encouraged to become more informed and take a position on these sanctuary proposals.

### Proposed Lake Ontario National Marine Sanctuary

In April 2019, NOAA announced its intent to designate a new national marine sanctuary in eastern Lake Ontario and the Thousand Islands region of the St. Lawrence River.

NOAA is considering two possible boundaries for the proposed sanctuary. The Alternative 1 boundary encompasses a portion of eastern Lake Ontario and a segment of the Thousand Islands region of the St. Lawrence River (1,786 square-miles), while Alternative 2 only encompasses the same portion of eastern Lake Ontario (1,724 square-miles). NOAA has not selected a preferred alternative.

NOAA established a [Sanctuary Advisory Council](#) to help inform the designation process and focus stakeholder participation. The council passed a resolution on November 19 transmitting to NOAA its ideas for a draft management plan. Ray Tucker of the New York State Divers Association and Underwater Society of America has been appointed to the Advisory Council.


### Proposed Chumash Heritage National Marine Sanctuary

The Northern Chumash Tribal Council (NCTC) submitted the sanctuary nomination in July 2015. The area proposed for sanctuary designation, adjacent to San Luis Obispo and Santa Barbara counties, would recognize Chumash tribal history in the area and protect an internationally significant ecological transition zone, where temperate waters from the north meet the subtropics, providing a haven for marine mammals, invertebrates, sea birds, and fishes.

The proposed area stretches along 156 miles of coastline, encompassing approximately 7,000-square miles from Santa Rosa Creek near the town of Cambria, San Luis Obispo County, south to Gaviota Creek in Santa Barbara County, and extends offshore to include Santa Lucia Bank, Rodriguez Seamount, and Arguello Canyon. The comment period has closed but the process is not over.

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*Dr. Giesecke is an archaeologist, diver, and ocean advocate who works with sport divers and the cultural resource community to monitor and influence state and federal legislation that affects cultural resources and the oceans. She has served as an archaeologist and environmental consultant with the Department of Interior and environmental specialist with EPA. An archaeologist since the 1960s and a diver since the 1970s, she is a member of the Women Divers Hall of Fame and has served on the boards of the Advisory Council on Underwater Archaeology and the Society for Historical Archaeology. Anne is known for drafting the Abandoned Shipwreck Act of 1987 and guiding it through the legislative process.*

*Material for this article was adapted from the public web site [www.congress.gov](http://www.congress.gov) *

# The 3rd Sort-of-Annual Noble Duck Race

by Della Scott-Ireton

This year, the Advisory Council for Underwater Archaeology, or ACUA, held its not-quite-annual Noble Duck Race. The event is a fundraiser with proceeds going to ACUA's Student Support Program, which provides funds for student travel awards to help defray the costs of travel to conferences. Race contestants submit a \$10 per duck entrance fee and vie for one of three prizes.

The race is named after archaeologist Dr. Virgil Noble who won the first Duck Race. As in previous years, the race was held on a circuit around the outdoor Lazy River Pool at the Holiday Inn Resort in Pensacola, Florida. The ducks are borne around the loop on an easy current. To make the race more interesting and keep things moving along, race officials "cause havoc" with water guns, water balloons, "coronavirus" water creatures, a remote-controlled shark, and the Kraken (played by my husband John).

There were 184 entrants this year. Given the number, three preliminary heats were required to narrow the field to the 10 fastest ducks for the final.

The winners of the final:

1st place #52 for Amanda Evans

2nd place #90, aka US Cruiser *Olympia*, for Hunter Whitehead

3rd place #165, aka MAHS-5, for the Maritime Archaeological and Historical Society

MAHS President, Steven Anthony, noted that the MAHS duck easily finished in one of the top three spots while doing research on one of the MAHS shipwreck sites throughout the race.

Many thanks to all the entrants for supporting the ACUA student travel awards. Watch all the races at <https://acuaonline.org/photo-contest/duck-race-2022/>

*Della Scott-Ireton is the Associate Director of the Florida Public Archaeology Network (FPAN) and organizer of the event. Special thanks to co-organizer Amy Mitchell-Cook, University of West Florida, and to Mike Thomin (FPAN) for editing the final video. Nicole Grinnan (FPAN) captured the action and provided the photos. ⚓*



*Some of the 184 entrants preparing for the race.*



*The ducks racing around the circuit in the 2<sup>nd</sup> heat.*



*The Winners. The MAHS duck is on the left.*

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





# Religious Iconography and its Portrayal Amid 16<sup>th</sup>-Century Shipwreck Artifacts

by Brandon L. Herrmann

Over the last thirty years, there have been numerous studies on the archaeological and nautical history of 16<sup>th</sup>-century shipwrecks. The analysis presented in this article, however, has chosen to specifically focus on the surviving religious artifacts of the crew and passengers on shipwrecks dating from 1554 through 1564 by way of religious iconography. Religious iconography offers a brief glimpse into the symbolic and individualistic nature of personal possessions found on these 16<sup>th</sup>-century shipwrecks. Research gathered through this study of select artifacts will help contribute to a better understanding of the material culture on board these vessels.

## Focus

This analysis establishes a 10-year baseline between 1554 and 1564 to understand religious iconography and its symbolic usage on board the vessels. The baseline was further defined by confining it to three sites from the period: the shipwreck *Santa Clara* (1564) (formerly known as the St. John's Bahamas wreck); the Padre Island shipwrecks *Espíritu Santo*, *San Esteban*, and *Santa María de Yciar* (1554); the Tristán de Luna y Arellano shipwrecks Emanuel Point I and Emanuel Point II (1559). Religious iconography was adopted as the means to create a comparative analysis amongst these select shipwreck collections. It provides a detailed way of discussing the rare subgroup of religious material culture within 16<sup>th</sup>-century shipwrecks.

## Santa Clara Shipwreck

The *Santa Clara* shipwreck collection, while containing a diverse assortment of lead shot, polearms, crossbows, horseshoes, olive jar fragments, and various

other 16<sup>th</sup>-century artifacts, does not include religious artifacts. Thus, while initially planned as part of the study sample, the *Santa Clara* collection was not relevant to the research, and in the end the comparative data set used in the study consisted of the material culture from the Padre Island and Tristán de Luna y Arellano shipwrecks.

## Padre Island Shipwrecks

The Padre Island shipwreck collection is comprised of three ships that sank in 1554 and are identified as *Santa María de Yciar*, *Espíritu Santo*, and *San Esteban*. In the 1950s, the Port Mansfield Channel Dredging Project heavily damaged the shipwreck identified as *Santa María de Yciar*, and the remaining artifacts became insignificant to this study's overall research goal. The other two shipwrecks, *Espíritu Santo* and *San Esteban*, are still intact. From these two shipwreck sites, four artifacts were recovered from the 16<sup>th</sup> century that qualify as both religious and personal possessions. These artifacts are further classified as crosses, crucifixes, and rosary beads. They offer a glimpse into 16<sup>th</sup>-century iconographic motifs. Though there are not many contrasting components, the artifacts were studied on the merit of their individual components and how each one helps to better understand the material identity of the period.

The Padre Island shipwrecks yielded a large volume of artifacts ranging from fully intact crossbows to a thimble. However, the *Espíritu Santo* shipwreck artifact assemblage yielded only one religious artifact: a gold crucifix, shown on the following page. The artifact features some rather impressive details: the head of Jesus



A Portion of the 1564 Santa Clara Shipwreck Collection.  
All photos by the author, 2018-2020.

drooping slightly to the side; a crown of thorns on top of his head; prominent nails on the hands and feet; a loincloth wrapped around his hips; and a skull below his feet at the base of the cross. The crucifix depicts a series of unique details featuring different parts of the story of Jesus' crucifixion. Thus, the wearer of the crucifix could display personal faith to others and experience subtle



Left: Wood Cross from the San Esteban Collection;  
Right: Gold Crucifix from the Espiritu Santo Collection.

reminders of the chain of events leading to this historic moment in Christianity.

Additionally, this artifact likely has the added rarity of being worn as an earring, with multiple chain links for showcasing jewels or beads. These chain links number four in total and encompass the hanging ring at the top, two small rings suspended below the arms of the cross, and one small broken ring on the bottom.

The *San Esteban* cross is shown next to the *Espiritu Santo* crucifix. This small wooden cross is composed of two slotted pieces of wood, constructed so the pieces will fit flush and appear to be one solid piece. The entire artifact is encased in a thin, narrow sheet of gold and wrapped in a gold wire at least four times over the intersecting point. The cross has what appears to be a small brass pin holding the two pieces of wood together, most likely a later addition to the artifact after it broke. This level of preservation showcases a high degree of care which, in tandem with the wood broken off from the top middle portion of the cross, suggests a pendant worn around the neck. *San Esteban* and *Espiritu Santo* crosses were the only artifacts from the wreck sites made from gold, which emphasizes their significance as not only personal possessions, but items owned by a high-status member of the crew or passenger on board.

The cross is a symbol of fervent religious ideology throughout the 16<sup>th</sup> century, but so too are beads. Beads were the final two artifacts recovered from the *San Esteban* shipwreck. They were thought initially to be aboriginal rosary beads because of their unique mineral-based appearance and their singular nature within the collection. The use of minerals for manufacturing beads

was a common occurrence in Spain long before initial contact with the New World had occurred. Additionally, their seeming uniqueness might not be an instance of rarity, but simply represents their recovery in archaeological sampling, as they are listed in abundance in 16<sup>th</sup>-century shipping records. However, through further research and closer observation, it is believed that they align more with the characteristics of 16<sup>th</sup>-century trade beads.



Views of a Quartz Trade Bead from the San Esteban Shipwreck.

The first example, shown above, is a rectangular quartz bead. The top section shows a 45° angle view of the trade bead and its end. In contrast, the bottom section shows a 45° angle view of the opposite side with a flat metal end. Both views show what appears to be a heavily corroded metal interior. Initially identified as manufactured of glass based on its translucent appearance, under further observation the surface on each side of the bead was seen to contain striations, both ends were beveled, and no bubbles were present in the material. These features clearly indicated that the bead was shaped through grinding and fashioned from a single piece of quartz, most likely citrine quartz, based on the yellow-to-brownish red hue of the material when held up to the light. The bead possibly represents a variation of a type of bead known as “Florida cut crystal,” which is generally ornate and characteristically represented by cut spiral designs or surface sculpting. In the end, however, the artifact is probably not associated with the wreck. The metal insert inside the bead indicates a date later than the wreck, making even its association with the 16<sup>th</sup> century questionable.



Left: San Esteban Iron-Pyrite Trade Bead, Right: Emanuel Point II Wooden Rosary Bead.

A circular iron-pyrite bead, shown on the left in the figure above, was found on the *San Esteban* shipwreck and provides a better comparative example. The bead has more analytical value, as its association with the *San Esteban* shipwreck has been established previously. The hand-carved nature of the bead exhibits drilling inward from both sides with a tapered instrument, resulting in an hourglass-shaped hole on both sides and a biconical appearance. Measuring the hole from side to side demonstrates that it tapers from 0.3 cm to 0.1 cm and back to 0.3 cm. There has been little to no research conducted on iron-pyrite artifacts, as they are highly susceptible to deterioration once removed from a site. Thus, an iron-pyrite bead on the *San Esteban* shipwreck is unique, and there is little more to learn outside of its measurements.

All in all, the *San Esteban* shipwreck did have a few intriguing religious artifacts to examine, but the current research expanded to include a rosary bead from the 16<sup>th</sup>-century Emanuel Point II shipwreck.

### Emanuel Point Shipwrecks

The next collection explicitly centers on the artifacts found in the Emanuel Point I and Emanuel Point II (1559) shipwrecks. These artifacts are housed in Pensacola, Florida, at the University of West Florida. Among the artifacts is a round

wooden rosary bead, shown to the right of the iron pyrite artifact from the *San Esteban*. Examined under a microscope at 40 times magnification, this rosary bead showcases a prime example of wooden cell wall structure and an almost “crackled” appearance. Wood beads are rarely recovered on shipwreck sites and hardly ever on terrestrial sites since they deteriorate long before being discovered. This is due to not only the surrounding environmental aspects of the shipwreck, but the use of wood over more expensive materials of the time, such as amber, coral, crystal, glass, jet, silver, and quartz.

In the 16<sup>th</sup> century, a rosary bead would have been part of a more extensive set of beads strung together and called a “paternoster” or rosary. A rosary was used in its entirety to recite prayers, generally in self-reflection. This personal possession bridged the gap between the New World and the Old World and has been primarily found in Spanish colonial archaeological assemblages. This single bead is the only religious item currently recovered from the Emanuel Point II shipwreck, though it seems evident that more wood rosary beads will be recovered as the excavation and conservation process of these unique and fragile artifacts is completed.

The final artifact group examined for this study consists of two scale weights from the Emanuel Point I shipwreck. The first brass scale weight, on the far left in the figure below, has what appears to be a fleur-de-lis on the bottom and a sunburst on top. This scale weight is thought to be for a gold *ecu d’or au soleil* from the reign of Louis XII in 1498-1515, but since no other known example exists, that is merely the closest representation known at this time. The second brass scale weight, on the right in the figure, appears to be for a gold *salut d’or* coin. A discovery made through the identification of a fleur-de-lis on the left side of the Latin cross and a leopard passant on the right side in conjunction with an



Emanuel Point I Scale Weights.

Left: for an *ecu d’or au soleil*. Right: for a *salut d’or*, with Illustrative Diagram.

italicized (uncial) *h* below the cross informed the interpretation that it was currency minted under the reign of Henry VI, from 1422 to 1453. The discovery of an annulet, or small circle, in the bottom left narrowed the date range further to only five years (1422-1427), making this not only the oldest artifact researched in this study, but the oldest artifact found on the Emanuel Point shipwrecks to date.

### Conclusion

In expanding the research parameters to incorporate all religious artifacts from the Padre Island shipwrecks (*Espíritu Santo* and *San Esteban*, 1554), Tristán de Luna y Arellano shipwrecks (Emanuel Point I and Emanuel Point II, 1559), and the *Santa Clara* shipwreck (1564), the objective was not only to establish a 10-year research baseline, but to include additional examples of religious iconography. However, after thoroughly examining the collections, no religious artifacts were found on *Santa Clara*, so the study shifted its focus to comparing artifacts from the Emanuel Point I and Emanuel Point II shipwrecks with those from *Espíritu Santo* and *San*

*Esteban*. Further examination of these wrecks determined that only five artifacts (to date) fall under the subgroup of religious artifacts and their unique iconography: *Espíritu Santo*'s gold crucifix, *San Esteban*'s wood cross, Emanuel Point I's two brass scale weights, and Emanuel Point II's wood rosary bead. The two remaining *San Esteban* artifacts were identified as a rectangular quartz bead and a circular iron-pyrite bead, which proved to be trade beads, not rosary beads.

Future research into more shipwrecks from the 16<sup>th</sup> century will help to strengthen the information provided in this analysis and hopefully further illuminate their importance in understanding the religious iconography of this period. Finally, as this study expands into other areas of personal possessions found on 16<sup>th</sup>-century shipwrecks, it is hoped it will one day lead to a better understanding of the material identity of the crews and passengers aboard vessels from this period.

*Brandon Herrmann is a graduate student in Anthropology at the University of West Florida specializing in Historical Archaeology. ⚓*

## Presentation of the Berkey Service Award

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**D**avid Shaw has been presented with the MAHS Berkey Service Award. The award, named for long-time Education Director, Tom Berkey, is given by the MAHS President to an individual for dedication and outstanding service to the Society.

The Berkey Award recognizes Shaw's ongoing role in our digital information operations, including his contributions to the Introductory Course in Underwater Archaeology and its conversion to a virtual streaming mode. He has been an active photographer in many of our field projects, and he currently teaches the Photography and Videography class in the Introductory course.

Shaw joined MAHS in 1989, when he enrolled in the recently developed Introductory Course in Underwater Archaeology and attended the Field School held at Fort Jefferson. He has served on the Board of Directors in an At-Large position since 2002.

In his professional life Shaw works for the federal government, currently as an IT specialist with the Department of Homeland Security. He has been a systems manager, database administrator, and software developer for the Department of Justice and the U.S. Navy, and in private industry he has worked as a



*Tom Berkey (left), for whom the Berkey Service Award is named, presents the award plaque to David Shaw.*

construction layout engineer and a surveyor for a geophysical company in oil exploration. MAHS has been the beneficiary of Dave's wide ranging experience and skills over these many years.

# The Disappearance of Bodkin Island, An Example of Threats to Cultural Heritage from Sea Level Rise

by Dennis Knepper

In September 2008, MAHS conducted a comprehensive survey of the shoreline and near-shore portions of Bodkin Creek, a small stream that feeds into the Chesapeake Bay south of Baltimore, Maryland. The study combined terrestrial and underwater research, treating the survey area as a maritime cultural landscape, a term introduced by Christer Westerdahl in the early 1990s. Beginning with archival research and oral history interviews, MAHS volunteers conducted pedestrian surveys of shoreline and nearshore areas, followed by in-water remote sensing work employing a magnetometer and side-scan sonar, along with spot dives on targets acquired in those surveys.

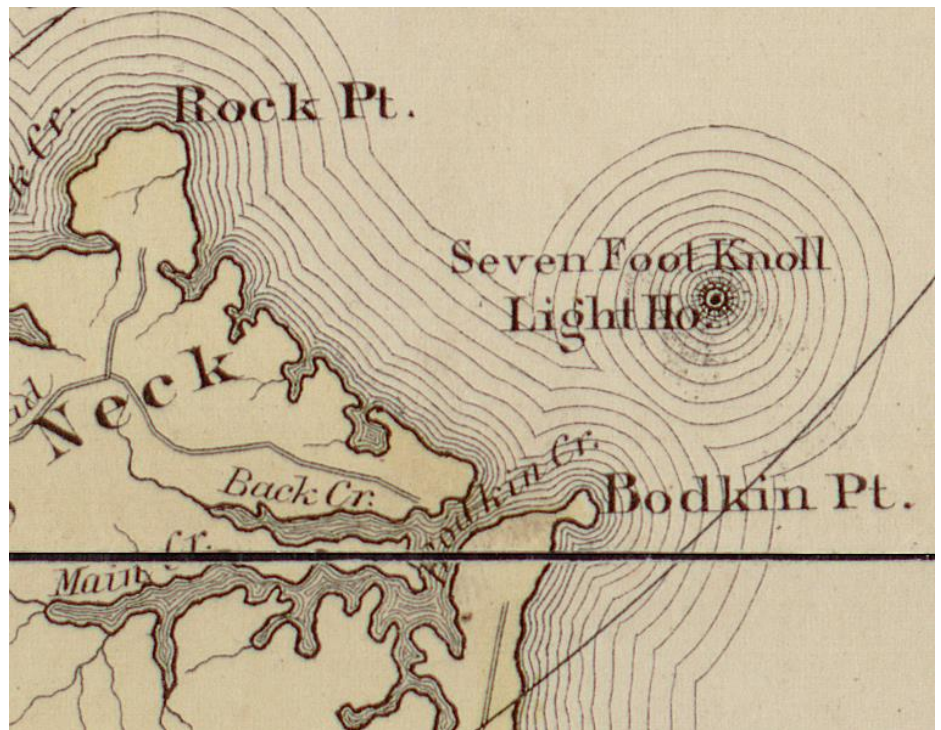
As part of the archival study, MAHS overlaid digitized shorelines from historical maps onto modern maps, in a process sometimes referred to as rubbersheeting. Working with historical maps in this way can be difficult since the degree of precision with which early maps were drawn tends to vary. Digital processing can produce a reasonably accurate alignment, however, and significant shoreline changes were documented by the process.

One major variation observed was the disappearance of an island shown on early maps at the end of Bodkin Point, the peninsula on the right or southern bank of the creek at the confluence with the Bay. The island was shown on maps from the mid-19th century but had disappeared by the early 20th century.

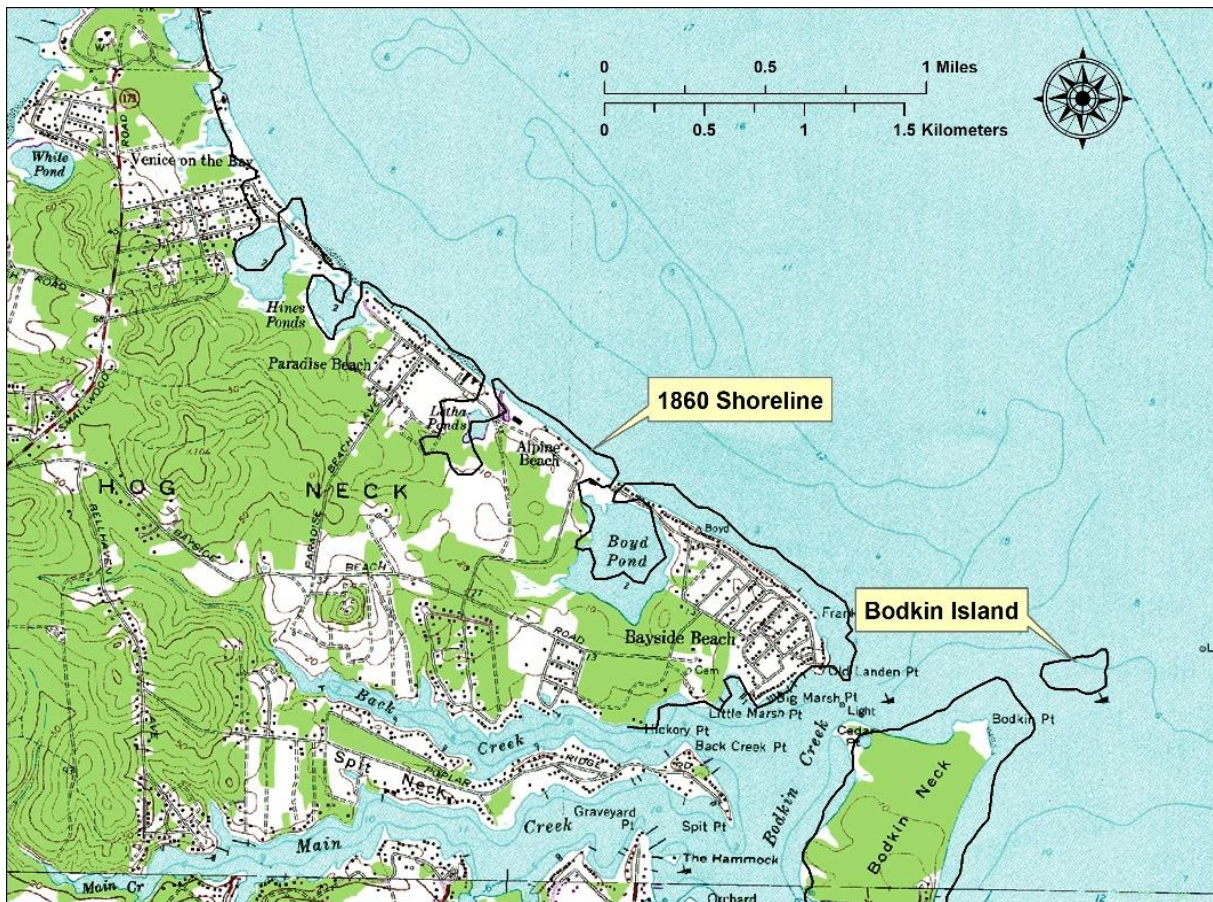
Documentary sources indicated that a lighthouse was constructed on the island in 1822. A sea wall was built the following year to protect the lighthouse from erosion that was already threatening the structure. Encroachment from the bay continued to swamp the island, however, undermining the structure and it was eventually abandoned. The tower collapsed in 1914, and the island itself disappeared in a hurricane in 1933.



Chesapeake Bay shoreline at the mouth of Bodkin Creek in 1860.  
Detail from "Martenet's Map of Anne Arundel County Maryland."  
Library of Congress, Washington, D.C.



Chesapeake Bay shoreline in 1878.  
Detail from "Atlas of Fifteen Miles around Baltimore, including Anne  
Arundel County, Maryland." G.M. Hopkins.  
Library of Congress, Washington, D.C.



*The 1860 shoreline displayed on the current USGS topographic quad sheet (Sparrows Point, MD).*

The island’s location was noted in the remote sensing survey conducted for the MAHS study, although the draft of the survey vessel in use and the depths required to deploy sensing devices did not allow direct mapping. But in the words of a local resident interviewed as part of the oral history portion of the study, “everybody that has a boat in this area has found the Bodkin Point Light, hitting the shallow remains of the island with their prop or worse.”

The disappearance of coastal land due to rising waters is an ongoing phenomenon that is not restricted to the Chesapeake Bay. Variations in global water levels are part of natural processes that have been occurring for millennia. During the last ice age, sea levels in the Northern Hemisphere were as much as 100 meters, or 300 feet, below their current levels, exposing a wide stretch of the continental shelf that is currently submerged. At that time, the Susquehanna River extended southward through the area covered today by the Chesapeake Bay, while the Delaware River ran through what is now the Delaware Bay. The formation of the bays between 18,000 and 10,000 years ago was a direct result of the retreat of the ice sheets and gradual addition of meltwater to the Atlantic Ocean. As the sea rose, the mouths of the rivers were progressively inundated, leading to the term drowned rivers.

The rate of sea level rise slowed over time as long-term temperatures began to stabilize and the massive continental ice sheets slowed their melt. Still, studies suggest an average rise in the Chesapeake Bay region of almost 11 inches (27.4 centimeters) per century over the past 300+ years. The increase is not merely the result of rising water levels, however. There are estimates that almost half of the rise has resulted from regional landscape subsidence. As the glaciers formed at the height of the ice age, the tremendous weight of the encroaching ice sheets forced the land around and under the Bay to bulge or to be pushed upward ahead of the ice front. With the retreat of the ice, the elevation of the land has been slowly reversing course or sinking.

The pace of sea level rise has again accelerated in the industrial age in a trend undeniably linked to human activity. But again, the rise is a complex phenomenon, in this case not solely associated with man-made effects. Long-term climatic variation influenced by ocean currents, solar variability, variation in the tilt of earth’s axis (known as Milankovitch cycles), and volcanic activity are among the oft cited natural sources.

Historically, shorelines have been important for commerce and communication. Waterfront development has mushroomed in industrial nations during the modern era as populations have flocked to the water for



Two images of Bodkin Light after abandonment (dates unknown).



sources including academic journals, conference proceedings, papers, and book chapters. In 2020, the General Assembly of the International Council on Monuments and Sites (ICOMOS) declared a Climate and Ecological Emergency. In conjunction with the declaration, ICOMOS issued a Triennial Scientific Plan to coordinate efforts among its members and committees to safeguard cultural and natural heritage from

recreation and dwelling. Threats to such development from sea level rise have been widely recognized as the warming of the planet has increased. Rising seas are threatening low-lying habitation around the globe, from the Maldives in the Indian Ocean to Kiribati in the Pacific, Cabo Verde in the Atlantic, and Sarichef Island in the Bering Sea.

climate change. UNESCO has similarly issued several policy statements and reviews on the impacts of climate change on world heritage properties. UNESCO's Intergovernmental Oceanographic Commission issued its Global Ocean Science Report on ocean sustainability in 2020, with maritime archaeological resources an important component.

Rising water levels also have implications for historic preservation in coastal areas. Recognition of the threats to at-risk cultural heritage is growing, and many researchers and organizations in the heritage management community are meaningfully engaged in climate action on a range of fronts. Witness to the increasing awareness is reflected in a recent literature review published in *The Historic Environment: Policy & Practice*, a journal documenting the conservation and management of the historic environment. The study noted 165 articles related to cultural heritage and climate change published between 2016 and 2020. These articles appeared in more than 100 different publication

There are many instances around the world of the loss of coastal land and the historic resources associated with them. Bodkin Island is but one example of many that have been historically documented in the Chesapeake Bay alone. The disappearance of the island serves as a concrete illustration of the consequences of the processes involved and the loss of cultural heritage that is represented.



Base of Bodkin Light tower (date unknown).

*The MAHS survey of Bodkin Creek was conducted under a Non-Capital Historic Preservation Grant from the Maryland Historical Trust (MHT). Thanks to Dr. Susan B. Langley, Maryland State Underwater Archaeologist. The full project report can be accessed on MAHS website (<http://mahsnet.org/papers.php>).*


*The images of Bodkin Light are U.S. Coast Guard photographs found on [Lighthousefriends.com](http://Lighthousefriends.com).*

*Information in this article about rising sea levels and subsiding land is from:*

*Sea Level Changes in the Chesapeake Bay During Historic Times, by Norman L. Froome, Marine Geology 36: 289-305, 1980.*

*continued on page 16*

*Sea Rise and Storms on the Chesapeake Bay*, National Geographic Society, <https://www.nationalgeographic.org/article/sea-rise-and-storms-chesapeake-bay/#:~:text=Oceans%20rise%20at%20an%20average,surrounding%20the%20Chesapeake%20Bay%20upward,2022>.

*Land Subsidence and Relative Sea-Level Rise in the Southern Chesapeake Bay Region*, Jack Eggleston and Jason Pope. U.S. Geological Survey Circular 1392, 2013. 

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## In the News

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Below are news stories related to maritime archaeology that have recently appeared in various outlets. They include the discovery of a 14<sup>th</sup>- century cog in Estonia, a World War I minesweeper in Scotland, recent expeditions by NOAA to the USS *Monitor* and to the wreck of a 19<sup>th</sup> century whaler in the Gulf of Mexico, and the search for the site of a naval battle waged during the first Punic War between Rome and Carthage.

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Estonian archaeologists recently announced the discovery of a wooden shipwreck in the Port of Tallinn, on the Gulf of Finland. Believed to date to the 14<sup>th</sup> century, the vessel was possibly a cog, a flat-bottomed, single-sailed design that was in wide use from the 10<sup>th</sup> century. These vessels are often associated with the Hanseatic League, a confederation of cities and traders in the coastal regions of present-day Germany.

<https://www.maritime-executive.com/article/archaeologists-discover-14th-century-wreck-on-tallinn-s-waterfront>

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The British Royal Navy announced that researchers have discovered the wreck of HMS *Jason*, a Navy minesweeper sunk in April 1917 during World War I when it struck a German mine. The wreck was found at a depth of 300 feet along the Inner Hebrides, on the west coast of Scotland. Researchers photographed the site, and the Navy is seeking protection for the wreck under UK law as a war grave.

<https://www.royalnavy.mod.uk/news-and-latest-activity/news/2022/april/21/20220421-royal-navy-ww1-mine-victim-found-off-scotland-after-105-years-on-seabed>

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NOAA, the National Oceanic and Atmospheric Administration, has teamed with the Global Foundation for Ocean Exploration, a non-profit based in Mystic, Connecticut, to return to the waters off the coast of North Carolina to survey and document natural reefs and historical shipwrecks, including the USS *Monitor*. The team live-streamed their ROV video feed in mid-May of this year and plans to archive the data for use in school curricula.

<https://engineeringfordiscovery.org/>

Earlier this spring NOAA examined a 200-year-old whaling vessel in the Gulf of Mexico, as part of their Ocean Exploration expeditions. The work was conducted aboard the research vessel the *Okeanos Explorer* in coordination with the U.S. Bureau of Ocean Energy Management and with Search, a cultural resource management firm. The vessel has been tentatively identified as the *Industry*, that sank in a storm in 1836.

<https://oceanexplorer.noaa.gov/news/oer-updates/2022/industry.html#:~:text=Black%20and%20Native%20American%20mariners,of%20the%20Gulf%20of%20Mexico.>

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The Battle of the Aegates was a naval battle fought between the Roman Republic and the Carthaginians in 241 B.C. in waters near Trapani, on the west coast of Sicily. Italian archaeologists teamed with RPM Nautical Foundation, a non-profit devoted to maritime archaeology around the Mediterranean, to successfully survey a wide area using multi-beam sonar along with ROV-based video.

<https://www.bbc.com/future/article/20220426-battle-of-the-aegates-the-shipwrecks-rewriting-roman-history>



# Site Formation Processes of Submerged Shipwrecks

edited by Matthew E. Keith (University Press of Florida, 2016)

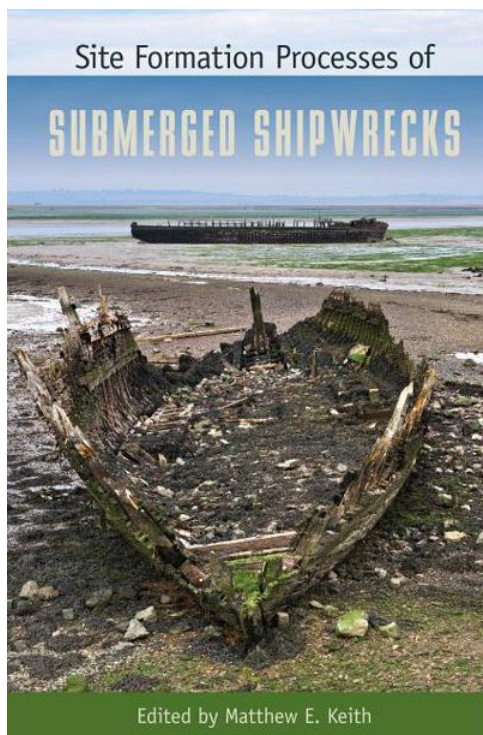
reviewed by Dennis Knepper

Most divers with experience working on shipwreck sites are aware that, unless located in deep, cold water, wrecks often not recognizable as ships. The ways in which a complex machine becomes a mass of jumbled debris fall within a field of archaeological research known as site formation analysis—the study of how a submerged archaeological site comes to look as it does. The results of the analyses can reveal information about how a vessel was lost, as well as what has happened to it since the wrecking event, where remaining features or artifacts may be located, and what ongoing processes may be operating on the wreck, all eventually enhancing archaeological interpretation and aiding in decisions about long-term site management.

*Site Formation Processes of Submerged Shipwrecks* is a volume containing a variety of articles that discuss aspects of shipwrecks as archaeological sites. Edited by Matthew E. Keith, the book was published several years ago by the University Press of Florida. It is still one of the most current and authoritative works on the subject.

The processes affecting archaeological site formation have been extensively studied in the terrestrial sphere, and underwater research has paralleled these efforts to some extent. The introductory chapter of Keith's collection provides a brief historical summary of the studies from the earliest days of modern maritime archaeology to the present. One of the most influential early works was Keith Muckelroy's *Maritime Archaeology*, in which the British archaeologist presented a flow chart depicting, in his words, the evolution of a shipwreck. He suggested the process begins with the wrecking event and continues through salvage, disintegration, environmental changes, and excavation. He described the progression as a system seeking equilibrium, with feedback loops operating to disturb a wreck as well as foster stability.

The organization of *Site Formation Processes of Submerged Shipwrecks* is structured around the physical mechanisms and cultural activities that influence site development. The text treats the subject in three sections: natural processes, cultural processes,



and the implications for heritage management.

Individual chapters on natural processes begin with a general treatment of the effects of fluvial and coastal currents, wave and tidal action, sedimentation, and human activity including agricultural runoff, dam construction, dredging, and chemical contamination. A separate chapter contains a more detailed analysis of sedimentation, using examples derived from offshore development projects initiated by the U.S. Bureau of Ocean Energy Management. A particular aspect of sedimentation, scour, is examined in another chapter, which analyzes the erosion resulting from directional water flow in the form of either current or tidal forces.

Shipwreck sites are described as existing in dynamic equilibrium, a slowly evolving process that eventually results in the disintegration of the wreck. Two chapters directly focus on particular aspects of disintegration—metal corrosion and wood degradation, which affect features and artifacts associated with shipwrecks.

Chapters on cultural processes are divided between unintentional disturbance from activity such as offshore development and fishing, and intentional disturbance, generally in the form of salvage. Offshore development that can be detrimental to wreck sites includes deep water activity such as oil and gas prospecting and extraction, as well as pipeline or cable work. While fishing nets and anchor drags can affect wreck sites, more destructive impacts result from bottom trawling, an activity treated in a separate chapter.

A final chapter under cultural processes focuses on salvage, characterizing the forms of salvage chronologically, beginning with the time of a vessel's sinking or wrecking. The initial stage, referred to as pre-impact salvage, occurs while the ship is still afloat but is determined to be in peril. This form of salvage may include jettisoning cargo, fittings, or other material to lighten the vessel's load. Later stages involve crisis salvage, which may be similar to initial salvage but can even include intentional grounding. Survivor salvage includes the removal of material that may be of immediate use, while systematic salvage is typically in

the form of professional activity sanctioned by the vessel's owner or agent. Less systematic salvage by individuals such as shipwreckers operating without legal rights is characterized as opportunistic. Lastly, ship breaking, the intentional dismantling of a vessel for recycling, is noted as the most destructive form of salvage. While not usually a factor in submerged wreck sites, coastal or riverine sites may contain evidence of breaking yards.

Conservation and resource management are considered in the final section of the book. Environmental conditions, including the disturbances that sites have been exposed to, may have direct implications for the state of features and artifacts that can aid in the selection of appropriate conservation techniques. The information may further assist in long-term site management. As noted throughout the articles, underwater archaeological sites are dynamic, and understanding the processes that have led to a site's formation may indicate ongoing changes and threats to the future integrity of any remains.

The subjects treated in the chapters of *Site Formation Processes of Submerged Shipwrecks* are often illustrated with relevant case studies. The analysis of the *Royal Anne* galley site, for example, shows the value of site formation studies in informing heritage resource management. The *Royal Anne* was an oared frigate that sank off Cornwall in 1721. The wreck lies inshore among large rocks and is subject to strong ocean swells. Studies at the site that have directed management approaches included hydrodynamics, sedimentation rates, and flora and fauna colonization, along with analysis of the rates of metal corrosion and wood decomposition. Data from bottom configuration, sedimentation, that the impacts of currents and waves,

in conjunction with trials using experimentally placed wood blocks and bricks, allowed researchers to estimate the rate of artifact dispersal. The results suggested that an extensive linear sorting of material had occurred and indicated that many artifacts may yet remain at the site, missed by the search radius employed in earlier survey work.

The value of corrosion analysis is cited from the wreck of *SS Xantho*, a Scottish-built paddle-wheeler that sank in Western Australia in 1872 where it was in use as a tramp steamer. The cross section of a copper wire from the steam engine contained multiple bands of a precipitate of copper sulfide chalcocite that had developed during intermittently anaerobic conditions. The layered corrosion provided documentation of repeated exposure to flowing seawater followed by burial in sandy sediment and provided insights into relevant treatment when the engine was conserved.

With few exceptions, the quality of the contributed chapters in *Site Formation Processes of Submerged Shipwrecks* is high, the level of expertise is well demonstrated, and presentations are excellent. As a multidisciplinary work, the bibliographies associated with the articles alone represent a substantial resource. The contributors include maritime archaeologists, geology and geoscience researchers, museum studies and artifact conservation experts, heritage managers, and remote sensing specialists.

As a contextual work and as a reference to some of the most important issues in the analysis and interpretation of underwater archaeological wreck sites, *Site Formation Processes of Submerged Shipwrecks* stands as a valuable contribution to maritime archaeological studies and should hold a significant place on any maritime research bookshelf. ⚓

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*continued from page 2*

Jim Smailes and Dennis Knepper continue to publish and distribute *MAHSNEWS* this year, and Tom Berkey continues to circulate MAHSmail, featuring interesting maritime archaeology news items and relevant articles for our students and members. Dave Shaw updated the MAHS Facebook page and Dennis and I continue working to complete the Pamunkey River project reports. I have also been contributing to the Recreational Diver Heritage Committee of the Advisory Council for Underwater Archaeology again this year.

The announcement of the new vaccines in November 2021 restores the hope and anticipation for a return to a healthy and thriving community. In turn this affords the opportunity for our members and students to

renew their interest in maritime archaeology and to continue the exploration and preservation of our nation's historic shipwrecks. We are all poised and ready to go diving again. Just waiting to get the OK sign!

See you on the water,  
Steven Anthony



**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:

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>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.</li> <li>2. To maintain the confidentiality of the location of archaeological sites.</li> <li>3. 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</li> </ol> | <ol style="list-style-type: none"> <li>and only when the artifact and related data have been designated for research, public display or otherwise for the common good.</li> <li>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.</li> <li>5. To observe these standards and aid in securing observance of these standards by fellow members and non-members.</li> <li>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.</li> </ol> |
|---|---|

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. You may also submit dues via our website at <http://www.mahsnet.org/membership.php>.

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

**Address** \_\_\_\_\_

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

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

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

<b>DUES ENCLOSED</b>	
___ \$30	
___ Individual	
___ \$35	Family
___ \$50	Sponsor
___ \$100	Patron

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

\_\_\_\_\_

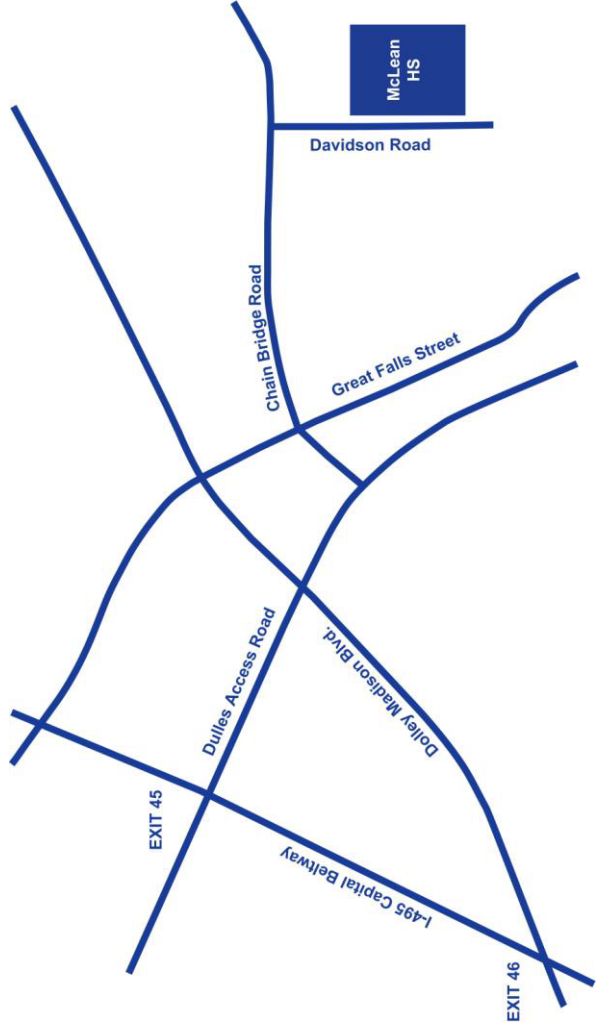
General membership meetings of the Maritime Archaeological and Historical Society are held on a bi-monthly basis, the second Tuesday of each month. Meetings are held at 7:30 p.m. at McLean High School, in McLean, Virginia, except in August and December. Meetings in those months are held at other locations 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](http://www.MAHSNet.org) for 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. Or pay on-line on MAHSNet.org. Thank you!



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