

MAHSN News



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Lighthouses of the Florida Keys National Marine Sanctuary: Navigation through Time

By Brenda Altmeier

The Florida Keys consist of a chain of islands that extend approximately 220 miles southwest from the southern tip of the Florida peninsula to the Dry Tortugas. Located adjacent to the islands is an extensive system of living coral reefs. The reefs exist on a narrow shelf that drops off into the Straits of Florida. The shelf slopes seaward at a 0.06° angle into Hawk Channel, which is several kilometers wide and averages 15 meters deep. From Hawk Channel the shelf slopes upward supporting numerous patch reefs while the outer edge is marked by a series of bank reefs. There are over 80 miles of bank reefs stretching from Fowey Rocks to the Marquesas and over 6,000 patch reefs along the Florida Keys. Built over thousands of years, the reefs have been sculpted by waves and time and over the past 500 years have been transformed by the impacts of mankind.

The marine environments of the Florida Keys, including coral reefs, seagrass meadows and mangrove islands, are nationally significant and renowned for

their ecological productivity. As early as 1960 protection for these special resources was recognized with the establishment of the John Pennekamp Coral Reef State Park. Continued pressure emphasized the need for

additional protection, and in 1975 a 103-square-nautical-mile area known as the Key Largo National Marine Sanctuary (KLNMS) was established to offer protection for the resources adjacent to the state park boundary ending at 3 nautical miles. The KLNMS was established under the Marine Protection, Research and Sanctuaries Act of 1972. The Act was one of several key environmental laws passed by the United States Congress. KLNMS was the second in the program to be established following the Monitor National Marine Sanctuary.

The KLNMS offered shelter to only a small subset of a larger ecosystem that includes 1,800 miles of shoreline and 1,600 Keys. Many reefs and resources went unprotected against growing stresses of landward development and seaward attack. The final assault came in 1989 after a series of three large ships grounded in the Keys decimating hundreds of



Cape Florida Lighthouse, built in 1825 and rebuilt in 1846. Photo by Key-Biscayne.com.

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Notes from the Prez – Steven Anthony

We were back in the sunny tropical waters of the Florida Keys National Marine Sanctuary again this year to conduct our annual summer field school from June 26 to June 29 on Pickles Reef. The weather was perfect this season, the diving was spectacular and there had to be at least 80 feet of viz. In fact, the visibility was so good that our resident videographer, Will Blodgett, captured some of his best ever HD footage of the barrel wreck, as the site has come to be known.

MAHS was introduced to this wreck site by Roger Smith, Florida State's Underwater Archaeologist. The site has become the focus of a multiyear project involving the investigation and documentation of a metal wreck with an adjacent assemblage of cement cylinders. Investigation of the cylinders reveals that they appear to be the remains of cement barrels where the wood has long since disappeared. Working under the guidance of Brenda Altmeier, NOAA Maritime Heritage Program Coordinator, and Matt Lawrence, NOAA Maritime archaeologist, the MAHS team expanded the site map this year to include detailed drawings of more hull sections and confirmation of the nature and extent of the barrel spill area and other selected features that will hopefully help us identify the wreck. During the winter months MAHS team members will be assembling a database of ships that appear to share the characteristics of the barrel wreck to facilitate our ongoing study of this wreck.

In August we enjoyed our annual MAHS picnic which has become a tradition at Seneca Creek State Park in Maryland. It was a sunny, warm day and MAHS Directors Dennis Knepper and Dave Shaw worked the grill. There were plenty of side dishes, desserts and watermelon to go around. Everyone seemed to enjoy a lazy summer afternoon and a welcomed midsummer break. My eight year old son and future MAHS member Christopher debuted his first underwater video taken during our summer beach vacation. It featured a hermit crab scurrying across the muddy bottom of Barnegat Bay, NJ, to the delight of everyone present and a nice round of applause.

In July, MAHS joined Dr. Susan Langley and the Maryland maritime community to petition NOAA to nominate Mallows Bay as the next National Marine Sanctuary. For those who may not be familiar with the location, Mallows Bay is an area on the Potomac River just south of Washington, D.C., which was the focus of Don Shomette's popular book *Ghost Fleet of Mallows Bay and Other Tales of the Lost Chesapeake*. This area hosts the remains of 200 World War I wooden steam-

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acres of coral reefs, and impacting non-renewable cultural resources. On November 16, 1990, President George Bush, Sr., signed into law the Florida Keys National Marine Sanctuary and Protection Act which offered immediate safeguard for 2,800 square nautical miles of Florida's precious coasts, and sensitive and unique submerged resources.

Early History

During the period from the 16th through 18th centuries, the desire for power and conquest inspired the period of discovery and colonization of the New World. Routes of travel between Europe, Africa, South and Central America would bring voyagers along the shores of the Florida Keys and the treacherous coral reefs. The New Bahama Channel or Straits of Florida became the most important sea lane in the world. Travelers would sometimes meet their demise there, being unfamiliar with this new territory, laden heavily with cargo, propelled only by wind, unsuspecting of fierce tropical weather patterns, and lacking navigational aids and equipment. The perilous nature of travel here has been immortalized in reefs such as Fowey, Carysfort, Dixie, and Looe named after vessels that were lost or grounded on them.

Before There Were Lighthouses There Were Wreckers

Wrecking—the salvaging of valuables from wrecked or stranded ships—has long been an important economic activity in Florida. Florida's indigenous Indians were used by the Spanish for their ability to free dive to retrieve lost artifacts from the seafloor. Among the vessels they aided in salvaging were the now famous *Nuestra Senora de Atocha* and *Santa Margarita* lost in a hurricane in 1622. The cargo from the two ships was partially recovered over an eight-year period.

As more vessels were lost in the Keys, the industry blossomed. Reward or payment to the wreckers was expected, and it became the function of wrecking courts to adjudicate claims. As noted South Florida historian Jerry Wilkinson has observed, when Florida became a territory in 1821, there were no U.S. statutes governing the practice, only the common law of the sea and legal oversight from a Bahamian Admiralty court. The legislative council of the Territory of Florida passed the Wrecking Act on July 4, 1823. Later, the first rule of wrecking was passed by an Act of Congress in 1847, by which salvors were required to obtain an occupational license from the judge of the District Court of Florida. The Wrecking License Bureau of the Court continued in operation until 1921. The last known licensed wrecker, Captain Chet Alexander, passed away in 1984.

At one time Key West was the richest city, per capita, in the United States, due primarily to the practice

of wrecking. F.G. Gerdes, Assistant Superintendent in the U.S. Coast Survey, reported that between 1844 and 1848 at least 174 vessels, with a total value including vessel and cargo estimated at almost \$6 million, wrecked on the Florida reefs. The Key West Customs Collector wrote a letter to the Superintendent of the Coast Survey summarizing the situation. In 1848, the amount of salvage decreed to wreckers was \$199,140. The value of the wrecked vessels and cargo amounted to \$1,282,000.



Florida Wreckers in the 19th century.
State Archives of Florida.

Lightships and Beacons

As the United States grew in territory, it grew in commerce. Goods from the central states were shipped in abundance from ports in the Gulf of Mexico to receiving ports along the East Coast. The boom in commerce and travel by sea promulgated the necessity for navigational aids in the treacherous stretch along the Keys coastline.

Some of the earliest lighted navigation signals were lightships. In 1825, the Florida Keys saw its first lightships, positioned to mark the dangerous shoals of the Dry Tortugas while a lighthouse was being constructed on the island. Other Keys lightships to follow included the *Florida*, which replaced the *Caesar* on Carysfort Reef in 1831; the *Key West*, marking the Northwest Passage, at the entrance to Key West harbor from 1835 to 1855; and the *Honey*, which marked Sand Key from 1846 to 1852.

These floating navigational signals were used extensively in the lower Chesapeake Bay and the northeast, beginning in 1820. The Florida Keys' first commissioned lightship, the *Caesar*, was built in 1824 for Carysfort Reef. Captain John Whalton of St. Augustine was appointed captain of the vessel by President James Monroe for a salary of \$700 per year. Built in New York, the *Caesar* was underway when she ran aground about 58 miles from Cape Florida, where the crew abandoned the ship. Wreckers salvaged the vessel, and under the wrecking courts she was re-

purchased by the government for a cost of \$10,000. She finally arrived on station and fully repaired in March 1826. The vessel was equipped with two fixed lights situated 50 feet and 60 feet above the sea that were visible for approximately 12 miles.

In 1837, a passive unlit system of markers consisting of poles or beacons was installed along the Florida Keys marking the reefs. Dr. Diane Silvia, Executive Director of the Historic Florida Keys Foundation, noted in her research that the beacon system required constant maintenance and often required replacement as diligent efforts were made to improve safety in navigating this hazardous area. The beacons were topped with black barrels used to indicate dangerous reefs and shoals.

Later, iron beacons were installed. Known as “Totten” beacons, after the U.S. Army lieutenant, James B. Totten, who designed them, these markers included a wrought iron vane on top with a letter identifying them by location. In August 2014, a five-person team consisting of archaeologists from the National Oceanic and Atmospheric Administration (NOAA) and the Mel Fisher Maritime Heritage Society performed research on the Totten beacons and collected field data under a Preserve America Grant. There were fifteen beacons in total lettered alphabetically from south to north. Of the 15 Totten beacons, only five were relocated and studied. Remaining portions of three letters associated with the markers were also discovered. See the accompanying article on page 9 of this issue.



*NOAA diver documenting beacon structure on French Reef.
Photo by M. Lawrence.*

Lighthouses

Twelve lighthouses were erected in Britain’s American colonies before they became the United States in 1776. The Lighthouse Act was passed by the first U.S. Congress in 1789 and was signed by President

George Washington on August 7 of that year to assess and establish aids to navigation in order to “regulate and encourage trade and commerce to the new world.” The Act, which created the so-called Lighthouse Establishment, extended federal control and funding to lighthouses that individual state governments had previously administered. August 7 is currently celebrated as National Lighthouse Day, commemorating this Act.



*Garden Key Lighthouse, Dry Tortugas,
in 1937, surrounded by Fort Jefferson.
National Park Service.*

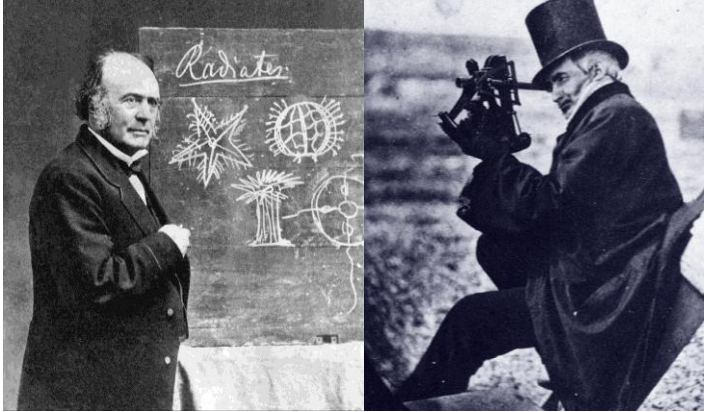
Several decades later, in 1807, the U.S. Coast Survey was established, directed to create accurate charts of the nation’s coast and its waters. The Coast Survey spent 40 years in the Florida Keys assisting the Lighthouse Service with mapping and marking the reefs. In 1822, one year after the United States assumed control of the Territory of Florida from Spain, Congress approved the establishment of customs districts in Florida that included Key West, and also appropriated funding for constructions of lighthouses at Cape Florida and the Dry Tortugas. The lighthouse at Cape Florida was built in 1825 and was burned in July 1836 during the second Seminole War. For some time afterward, the Carysfort Reef lightship was the only navigational light on the Florida coast between St. Augustine and Key West. The Cape Florida lighthouse was rebuilt in 1846 and is South Florida’s oldest structure.

The Dry Tortugas light was lit on July 4th, 1826, the 50th anniversary of the signing of the Declaration of Independence (and the same day Thomas Jefferson and

John Adams died). Twenty years later, Fort Jefferson was built around the light.

Lighthouse Construction

The type of construction for lighthouse structures depended largely on the importance of the individual light and the characteristics of its foundation. Professor Louis Agassiz of Harvard University examined the coral reefs in 1851 under the direction of the Superintendent of the U.S. Coast Survey, Alexander Dallas Bache, looking for solid foundations for the construction of lighthouses along the Keys.



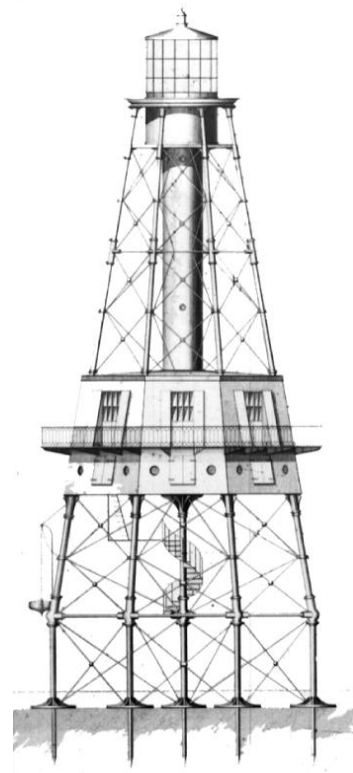
Left: Louis Agassiz, Harvard professor of zoology and geology; right: Alexander Dallas Bache, Superintendent U.S. Coast Survey - 1855. Images from the public domain.

The earliest structures were placed on wooden piles, although wooden supports were eventually improved to iron and then steel piles. Perhaps the most popular design was the screw pile, which consisted of an iron shaft with a broad helical flange on the end that was bored like an auger into the coral bottom. This design increased the bearing power of the pile as well as anchoring it firmly to the bottom. The lighthouse would rest on a central iron pile with numerous peripheral iron piles forming a strong base. The first of the screw pile lighthouses in the Florida Keys was the Carysfort Reef Lighthouse, built in 1852 by Lt. George Gordon Meade. Meade built or was partially responsible for building seven lighthouses in Florida. Meade would later become the Union General who defeated Robert E. Lee at the Battle of Gettysburg.

The screw pile design's structure consisted of one central and eight peripheral vertical iron piles spaced 50 feet wide, pile-to-pile, and inserted 10 feet into the coral and into a disc-pile. The disc-pile was a support used at the base of the structure for stability in shifting sediment. A five-story octagonal pyramid was erected with a focal plane more than one-hundred feet above mean low water. A Keeper's Quarters was constructed 24 feet above the foundation with 24 curved iron plates. The Carysfort Reef Light is the oldest of Florida's reef lights

and is the oldest functioning lighthouse of its type in the U.S.

By 1880, six offshore lighthouses had been erected from Key West to Key Biscayne. The American Shoal lighthouse, built near Looe Key, was the last of the iron screw-pile lighthouses to be built on the Florida reefs.



Carysfort Reef Lighthouse, with iron screw piles extended 10 feet into the coral reef. National Archives.

The Future of Florida's Lighthouses

Florida's lighthouses are unique historical resources, and they represent an important and irreplaceable part of the history of Florida and the United States. Many of these structures are inevitably deteriorating from neglect and lack of maintenance. In partial recognition of this situation, Congress passed the National Historic Lighthouse Preservation Act (NHLPA) in 2000. An extension of the National Historic Preservation Act of 1966, the NHLPA focuses on transferring responsibility for the structures out of government hands by providing "a mechanism for the conveyance of Federally-owned historic light stations to qualified new stewards."

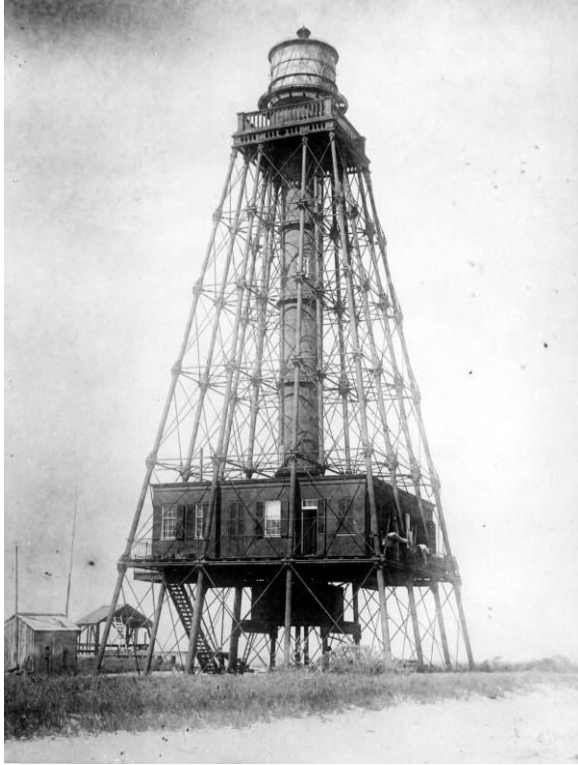
A public auction was announced by the General Services Administration (GSA) in 2012 for one of the six offshore lighthouses. According to the GSA's Acting Commissioner of Public Buildings, Linda Chero, "Historic lighthouses are unique in that they have sentimental and tangible value as historic landmarks in

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Six Historic Offshore Lighthouses in South Florida

by Brenda Altmeier

The following is a summary of the six iron screw-pile light structures found offshore of the southern tip of Florida. They are listed chronologically in order of first lighting.



Sand Key Lighthouse. Undated historical photo. Florida Archives.

Sand Key Lighthouse – Key West

First Lighted: April 15, 1827

Height: 120 ft.

Characteristic: two white flashes every 15 seconds (two red sectors cover dangerous shoals).

Day Mark: black pyramid tower with white lantern
Original brick structure lost in a hurricane, October 11, 1847. Lightship *Honey* manned the post until 1853.

New construction was an iron screw pile design by Isaiah W.P Lewis, with seventeen foundation piles around one center pile in a 4x4 grid. John F. Riley Ironworks in Charleston fabricated the body of the tower, while J.V. Merrick and Son made the lantern room.

Completed by George Gordon Meade in 1853.

Keeper's house and central cylinder burned in 1989 and were removed in 1996.



Carysfort Reef Lighthouse. Lighthouse Encyclopedia, Cape Cod Store.

Carysfort Reef Lighthouse – Key Largo

First Lighted: March 10, 1852.

Height: 112 ft.

Builder: Lt. George Gordon Meade.

Characteristic: three-group flashing white every sixty seconds, three red sectors.

Day Mark: dark red octagonal pyramid on black screw pile foundation, with octagonal 2-story keeper's house on a central platform, house and lantern top painted white.

Automated: 1960.



Sombrero Key Lighthouse. United States Coast Guard photo, 1971.

Sombrero Key Lighthouse - Marathon

First Lighted: March 17, 1858

Height: 156 ft.

Builder: Lt. George Gordon Meade; Chief engineer:
I.P. Morris & Company, Pennsylvania.

Characteristic: five-group flashing white every sixty
seconds three red sectors.

Day Mark: brown octagonal pyramid, wrought iron
straight pile tower with square, 1-story keeper's house
on a central platform.

Automated: 1960.



Alligator Reef Lighthouse. Photo by the author.

Alligator Reef Lighthouse – Islamorada

First Lighted: November 25, 1873

Height: 150 ft.

Builder: Paulding Kemble, Cold Spring, New York.

Characteristic: four-group flashing white every sixty
seconds, two red sectors.

Day Mark: white octagonal, pyramid with screw pile
foundation and square 1-story keeper's house on a
central platform; foundation, lantern and watch room
painted black.

Original Fresnel lens was destroyed in the Labor Day
Hurricane of 1935.

Automated: 1963.



Fowey Rocks Lighthouse. National Park Service.

Fowey Rocks Lighthouse – Key Biscayne

First Lighted: June 15, 1878

Height: 125 ft.

Builder: Paulding & Kemble, Cold Spring, New York (iron foundation); Pusey, Jones & Company, Wilmington, Delaware (iron tower).

Characteristic: flashing white every ten seconds two red sectors.

Day Mark: brown octagonal pyramid with white central tower, octagonal 2-story Empire-style keeper's house on a central platform, and dome-shaped lantern room.

Automated: 1974.

Ownership transferred to the National Park Service in October 2012.



American Shoal Lighthouse. Photo by the author.

American Shoal – Sugarloaf Key

First Lighted: July 15, 1880

Height: 124 ft.

Builder: Phoenix Iron Company, Trenton, New Jersey.

Characteristic: three-group flashing white every fifteen seconds, two red sectors.

Day Mark: brown octagonal pyramid, wrought iron straight pile with white central tower, octagonal 2-story keeper's house on central platform.

Automated: 1963, repainted and repaired in 2003. ⚓

Modern LED Structures Gradually Replacing Lighthouses along Barrier Reef in Florida Keys

by Cammy Clark

This article first appeared in slightly different format in the Miami Herald, 08/29/2014.

Since 1513 when Juan Ponce de León sailed south along the coast of Florida on a route that would become the most important shipping lane in the New World, mariners have had to navigate a treacherous menace: the barrier coral reef. It arcs for 200 miles, primarily along the coast of the Keys and on the edge of the powerful Gulf Stream, and in many places comes close to the surface from shallow waters several miles off shore. Over the decades, hundreds of schooners, barges, freighters, treasure fleets and military vessels have rammed into it, with some captains surprised to discover it there and others unable to prevent being blown into it by storms.

Taming the reef began with crude charts by the Spanish and evolved with the erection of six reef lighthouses and several “Totten beacons” in the 1800s. Next came GPS and sophisticated electronic navigation systems. And even with the latest and greatest technology of today, the use of visual navigation aids continues to have some importance.

A year ago the U.S. Coast Guard installed two new 40-foot-tall steel structures with LED lights that can be seen from 14 nautical miles away in all directions, at a cost of about \$100,000 each. They have replaced the lighthouses at Sand Key and Carysfort Reef, which used to show mariners the way by day and night. Three more of the modern-day beacons, which will be smaller and cost about \$30,000 each, are in the planning stages. They can’t come soon enough, at least at Alligator Reef, where the lighthouse was reported “extinguished” for the first time, on July 2. Its flashing white light will never work again because, as was also the case at Sand Key and Carysfort, the more than

100-year-old structure was deemed too dangerous and expensive to continue maintaining. “The quotes we’ve heard to repair lighthouses are in the millions,” said Lt. Timothy Martin, field operations chief for the Seventh Coast Guard District. “The savings to taxpayers with these new structures is tremendous.”

But while GPS and high-tech navigational systems have helped mariners know almost exactly where they are on the waters, most of the mariner community and

those who manage the Florida Keys National Marine Sanctuary agreed that some form of lighted navigational aid should remain in place along the reef tract. “We have such a low tolerance for shipwrecks today,” said Matthew Lawrence, a maritime archaeologist with the Stellwagen Bank National Marine Sanctuary in Massachusetts. “A single ship going down on the reef could destroy so much of the economy, as well as all the environmental damage it would do.”

Totten Beacons

Lawrence was in the Keys last week as part of a project to survey the submerged remains and tell the mostly forgotten story of the “Totten Beacons,” which were a series of unlighted structures about 30 feet tall that had different colors and letters and were erected in the mid-1800s to fill in navigational gaps between

the better-known reef lighthouses that ran from Biscayne Bay to Key West. He obtained a \$10,161 grant from the National Oceanic and Atmospheric Administration’s “Preserve America Initiative.” Another \$21,000 in man hours and in-kind contribution came from budgets of the agencies working on the project.



Totten Beacons: These navigation aids were placed on French Reef in the mid-1800s to warn mariners of the shallow structure that runs along the ocean side of the Florida Keys.

Photo by M. Lawrence.

The U.S. Coast Survey, which evolved into NOAA, spent decades providing better charts of the waters off the Keys and erecting the series of “Totten Beacons.” They were named after Lt. James Totten, who was loaned to the Coast Survey by the U.S. Army. Totten led the project to install 16 of the unlighted beacons, lettered A through P, and stretching from Fowey Rocks just south of Miami to Eastern Sambo Reef off Key West.

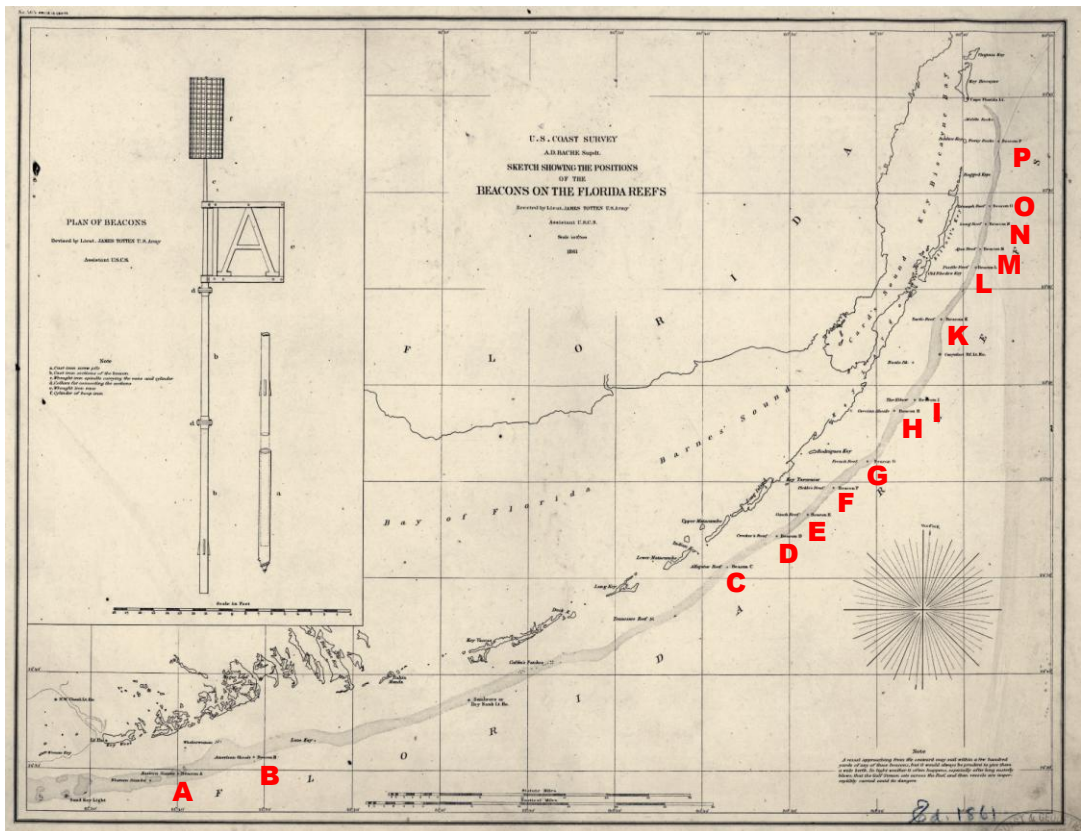
“Everyone would have loved to have lighthouses dotting the entire reef, but the cost was something they never could have borne,” Lawrence said. “The beacons were much cheaper.” Even in 1826, a lighthouse cost \$10,000.

But while the beacons worked fairly well for decades, by the 1930s they became obsolete and were left to become part of the sea, just a footnote in history. But in the mid-1990s, not long after the Florida Keys National Marine Sanctuary was established, many volunteers surveyed the waters for natural and cultural sites. One of those volunteers, J.J. Kennedy, said they were drift diving and started finding long poles in the waters. Although they had more than 100 years of encrusted marine life on them, making them partly blend into the natural setting, Kennedy said the volunteers knew by their shapes that they weren’t natural. “We were curious what they were,” he said. “Then we found a couple of the letters, which were next to those poles. That was the ‘AHA,’ and then we knew what the rest of the things were.”

Documenting Beacons

The beacons became part of a five-volume report documenting 660 sites that was issued in 1995. But little else was done with them until this project, called “Mariner’s Signposts: The U.S. Coast Survey’s Florida Reef Beacons.”

“We’ve been wanting to do this for a long time,”



U.S. Coast Survey Map of 1861 Showing the Locations of Beacons in the Florida Keys. Inset upper left shows details of a beacon as designed by James Totten, U.S. Army. Library of Congress.

said Brenda Altmeier, maritime heritage program coordinator for the Keys sanctuary. “We just had to find the time and money.” Lawrence and Altmeier are leading a group that spent a week documenting the beacons by surveying them and doing scaled drawings, as well as photographing and taking video of them. Cory Malcom, of the Mel Fisher Maritime Heritage



NOAA diver, B. Altmeier, recording the remains of the letter G from the beacon structure on French Reef. Photo by M. Lawrence.

Society, also is working on some 3D imagery of the beacons.

The plan is to produce interpretive web pages designed to attract tourists and locals to the beacons, as well as provide historical information. On French Reef, which has one of the most intact beacons (except that its letter G now looks more like a C), there are two poles sticking out of the coral, but both were bent in the same direction. “We were trying to figure out which way the [Category 5] Labor Day Hurricane of 1935 blew,” Malcom said. “Maybe the storm bent them.”

Fair Weather Aids

The beacons were about 45 feet long, depending upon the water depth, with five-foot-square letters that rotated with the wind. They also had a three-foot-wide and five-foot-high cylinder of hoop iron on the top, said Upper Keys historian Jerry Wilkinson, who found the information in an 1855 U.S. Coast Survey chart. “They could be seen for two to three miles away with a spyglass, so you knew you were getting close to the reef,” Lawrence said. “But the problem was they were not lighted. On a stormy night, you are probably not going to spot it. So it’s probably fair to say they were fair weather navigation aids.” But Lawrence said the beacons still helped southbound mariners who were trying to hug that reef line to avoid the Gulf Stream, which flows swiftly to the north.

At several of the submerged sites, there are two and even three pole structures, indicating that the original ones were damaged and new ones were put in the same location. “At Pickles Reef, we saw three piles,” Lawrence said. “We’re trying to figure out, primarily by their shapes, which came first. It’s one of the little mysteries we are working on.” They also are trying to figure out how they were installed in the hard coral.

Farther from Reef

The new beacons are being placed nowhere near the fragile reef. Bill Goodwin, a biologist with the sanctuary, has worked with the Coast Guard on locations that would be suitable to place the structures and not damage coral. And the three new ones will be only 16 feet tall, with a range of only seven miles. The Coast Guard’s Martin said they don’t need to shine as far today because of GPS and other navigational aids. “We designed them to shine out to the extremities of the



A new beacon has been erected to replace Carysfort Reef Light, shown in background.

Photo by S.LaRosa

sanctuary, just to make sure the sanctuary is protected,” he said.

The beacons are not as sexy-looking as the iconic lighthouses, but they do the same job for navigation. Now, the big question is what will happen to the lighthouses? The National Historic Lighthouse Act of 2000 created a framework on how to transfer ownership. The preference is for purchase by a government agency or nonprofit group, but a private buyer is also possible. The reef lighthouses used to have living quarters where tenders lived until they became automated in the 1960s. “You never know, people will buy anything,” said Andrew Haley, a civilian marine information specialist with the Coast Guard’s District 7 Office.

Cammy Clark is a freelance reporter with the Miami Herald covering life and events in the Florida Keys. She dove with MAHS on the Pickles Reef site in 2013. ⚓

Be sure to renew your MAHS Membership in the coming year. If you aren’t a member, become one and join us in supporting maritime historic preservation.



Reevaluation of Native American Maritime Cultural Landscape: Cape Fear, Southeastern North Carolina

by Sorna Khakzad

The following was adapted from a poster session at the 10th Maritime Heritage Conference held in Norfolk, Virginia September 17-20, 2014, summarizing the proposed research and partial results of the author's dissertation studies at East Carolina University.

The North Carolina coastal area has a fascinating Native American history that dates from about 12,000 years ago through the arrival of the first Europeans, who made a permanent settlement in the area in 1567, until the 18th century when most of the native populations were dispersed. Native Americans in this area were more water-oriented and placed more emphasis upon fishing, hunting, and gathering than did their neighbors. They lived in the coastal areas of North Carolina from the Neuse River northward to the Chesapeake Bay. However, gradual sea-level rise caused submergence of the coastline, and many moved slowly inland. At the time of the first European settlements in North America, Algonquian and mostly Siouan tribes occupied New Brunswick. After the colonial era, many tribes were forced to relocate and their sites were abandoned and in some cases forgotten.

Native American archaeological sites, be they former habitation sites, burials, sacred or ceremonial sites, or places of worship or tradition are limited resources for Indian and non-Indian people alike. They often represent significant aspects of the culture and spiritual beliefs of Native Americans. It is thus important that they be protected in a sensitive manner that involves all citizens.

Statement of the problem:

While there are many stories related the historical remains across Brunswick County, little is left from people who lived long before us in southeastern North Carolina. This lack of tangible evidence is partly due to the fact that many of these areas were located close to water. As such they are among the most dynamic and vulnerable areas due to natural forces such as erosion, wave action and sea-level rise, and anthropogenic impacts such as pollution and development.

Furthermore, neglect due to lack of knowledge and interest in Native American heritage, as well as direct acts of vandalism and illegal salvage also have caused damage and obliteration of many of these remains. Several Native American archaeological sites were excavated or reported during the 1960s. However, due to the lack of concern or awareness about the importance of these remains, the condition of many of these sites is currently unknown. At the present time, many sites have been forgotten, destroyed and/or overlooked; the

links between the sites and native people have been weakened or diminished. Therefore, our understanding of the Indians' coastal history is not complete, and the future of Native American heritage is more and more in danger.

Research questions and objectives:

The overall aim of this research is to explore the Native American cultural heritage at the present time in southeastern North Carolina, its current status and role in modern society. In order to achieve this goal, two research objectives have been formulated:



Mapping of the area now called North Carolina began with early exploration in the 16th century. The first British settlement is mapped here, with Cape Fear and several Native American village shown as well.

Americae pars, Nunc Virginia, The Carte of All the Coast of Virginia.
Theodore De Bry, 1590. Courtesy of North Carolina Collection.

Objective 1: To identify the locations of Native American sites that have already been reported.

Objective 2: To identify Natives Americans who are associated with the cultural sites in the four counties in this research study.

Several follow-up research questions will then be posed to further the investigation:

Research question 1: What is the current public perception of Native American sites?

Research question 2: For whom are these sites important (local people, Native Americans, tourists, etc.)?

Research question 3: Where are the coastal sites that might extend into the water and thus be submerged?

Research question 4: What natural/environmental factors have had the most impact on these sites?

Research methods:

The research is being conducted in three main phases:

Phase 1: Archival research: A considerable amount of information exists from early colonial sources, including maps, drawings and early European narrative accounts. In addition, more recent data has been collected from archaeological excavations in the 1960s.

Research into the latter will focus on information about sites that have been observed, reported or excavated. The first step will be to collect as much information as possible about previously known sites and locate them on a map. Furthermore, a database will be developed in order to store the available information, such as historic photos and maps, materials found within the sites, and the size and quality of the sites when they were seen/excavated/reported. These data will help in performing comparative analyses to determine site conditions over time.

Phase 2: Interviews: Open-ended and structured interviews will be conducted with local citizens, agency officials and where possible Native Americans, whether local or non-local, to identify the locations of sites. The interviews will be conducted in a cumulative process referred to as snowball or chain-referral sampling, in which interviews may lead to further contacts within the same category.

Phase 3: Fieldwork: The field work will consist of site visits and evaluations, as far as site conditions allow. For sites that are partially or totally submerged, non-invasive surveys via snorkeling and/or diving will be conducted to assess the seabed and determine whether archaeological evidence might be present. The available geomorphological data (sea-level rise, erosion, sedimentation) will be compared with the present

condition of the shorelines. In addition, side scan sonar and a sub-bottom profiler may be used to help identify underwater sites.

Ongoing research and preliminary results:

Several recorded sites and potential site locations were identified from archival materials. From the paintings and depictions by early European travelers to the region, an understanding of the form and location of Native Americans sites was acquired. Historical maps proved to be good sources for determining the locations of some sites from the period immediately after Europeans arrived. However, not much information is available about settlements from earlier periods, since no written records or maps exist from these times. However, archaeological excavations have provided some materials to study.



*Shells used by Native Americans, found previously in archaeological excavation on sites in New Hanover County along the coast and riverbanks.
Photo by the author.*



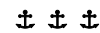
*Stone spear points and arrowheads from archaeological excavations on Native American sites in New Hanover County along the coast and riverbanks.
Photo by the author.*



A few sites were identified near bridges on the River Drive along Cape Fear River (above). Most consist of shell-mounds and, occasionally, pottery shreds, such as those on the right, from the Fort Macon site. The sites have typically been disturbed by river erosion and bridge construction. Photos by the author.



development. The locations of unconfirmed sites have been recorded digitally by the Office of State Archaeology. Some of these sites have reports, and some do not. Some sites along the shoreline and river banks have been washed away. These locations will be visited for assessment purposes in the next stage of this project. It is expected that evidence of some of these sites may still exist in rivers or in the ocean, further away from the shore.



For further reading, the author suggests:

Phelps, David

1983 Archaeology of the North Carolina Coast and Coastal Plain: Problems and Hypothesis. In *The Prehistory of North Carolina: An Archaeological Symposium*, edited by Mark A. Mathis and Jeffrey J. Crow, pp. 152. North Carolina Division of Archives and History, Raleigh.

Sprunt, James

1916 *Chronicles of the Cape Fear, 1660-1916*. Edwards & Broughton Printing Company, Raleigh. Available online at <https://archive.org/stream/chroniclescapef01sprugooog#page/n29/mode/2up>. Accessed October 2014.

Swanton, John R.

1946 *The Indians of the Southeastern United States*, Bureau of American Ethnography, Bulletin 137, Washington, D.C.

Sorna Khakzad is a National Oceanic and Atmospheric Administration (NOAA) Maritime Heritage Fellow and Ph.D. candidate at East Carolina University and University of Leuven. She has a master's degree in architecture and advanced masters in conservation of monuments and historic sites. Her research interest is to promote coastal cultural heritage for the benefit of people in the framework of sustainable development. †

Archival materials from the North Carolina Office of State Archaeology provided information about previous excavations in the region. This information can help to re-identify site locations, while environmental studies can help to understand factors that may have impacted these sites. Two major impacts have already been observed: one is modern development along the coast; and the other is shoreline erosion.

Interviews have been conducted with people who are known to be the descendants of the Siouan tribe who immigrated to the Waccamaw Lake area around 1800. From these interviews, some information about the Cape Fear tribes, their fishing methods in the rivers, and their lifestyle was gathered. However, although these people know themselves as Siouan, their knowledge of the coastal areas and lifestyles by the coast in the past is limited. Some have migrated back to the coastal areas only in the last few decades. The next step in this part of the study will be to conduct follow-up interviews.

Most of the coastal sites identified by archaeologists have been disturbed or totally destroyed by

Studying at the Tavern of the Seas: Cape Town, South Africa

by James A. Smailes

In July and August of 2014, the East Carolina University (ECU) Summer Study Abroad Program returned to South Africa. The program this year consisted of an intensive study of the maritime and urban heritage of Cape Town. Exploring the new and old city, the students experienced the various cultures and architectural styles of this European-like city and how it evolved under Dutch and then British rule.

Historically, Cape Town has long been linked to the sea, as reflected in the full title of the study program—*Tavern of the Seas: The Maritime and Urban Heritage of Pre- and Post-Apartheid Cape Town, South Africa*.

Founded by the Dutch East India Company as Kaapstad in 1652, Cape Town is situated at the base of Table Mountain and is considered one of the most beautiful cities in the world. The Dutch settled this area to create farms and vineyards to supply its ships going to and from the East Indies with fresh produce, wines and meats. Hence, the settlement's nickname, the Tavern of the Seas. The cape area was discovered by Bartolomeu Diaz, the Portuguese explorer, in 1488, who christened it the Cape of Storms. The Portuguese did not settle there, but on later voyages they would continue eastwards, eventually settling in what would become Mozambique.

As the story goes, the cape was renamed the Cape of Good Hope by the King of Portugal because it represented the opening of a trade route to the east. Dutch colonial settlements thrived through the late 18th century. The British arrived in 1795 and both the Dutch and



The ECU group after a sunrise hike to the top of Table Mountain. Left to right: A. Carlson, I. Mollema, C. Deyncourt, W. Cheek, C. De Bruyne, L. Harris, J. Edwards, L. Harris, K. Wilburn, and seated in front N. King, J. Smailes and S. Wilburn.

British colonies continued to expand until the discovery of diamonds and gold from the 1870s onwards, transforming South Africa from a series of agrarian states to a unified, industrial nation.

The ECU academic program in Cape Town combined readings with on-site lectures, museums visits and travel to select places of historic importance, including Langa Township and Robben Island where Nelson Mandela was imprisoned for almost 20 years, along with field trips to three shipwrecks. The latter are described in the two short articles that follow. ⚓

The Thomas T. Tucker, An American Liberty Ship

by Nathaniel King

Situated in the Cape Point Nature Reserve, southwest of Cape Town, South Africa, are the remains of the SS *Thomas T. Tucker*, an American Liberty Ship from World War II. The wreck site is located near Olifantsbos Point, on a rocky shore subject to constant wave action. In the eighty years since the vessel ran aground, the tides have done much to degrade the site, grinding the wreckage over the rocks.

In the summer of 2014, a small group from ECU visited the site as part of a summer study abroad program. While at the site, the group recorded measurements of the remaining structure, took GPS coordinates and made scaled photographs, with the goal of producing a site report and recording data to help us

understand how rapidly the site is eroding.

Liberty Ships were an essential part of the American war effort during World War II. When the war broke out, the American merchant fleet was outdated and not suited to the task of supplying a multi-front war. The Liberty-class, and later, Victory-class merchant vessels were developed to help bolster the weakened merchant fleet. By the end of the war, 2,710 Liberty Ships would be built and all of the vessels would use a unique manufacturing method that allowed for the vessels to be built from pre-assembled sections, much like automobiles were on an assembly line.

While Liberty Ships were successful, there were issues. The vessels were constructed of low-grade steel



*SS Jeremiah O'Brien, one of the last Liberty ships afloat.
Image from public domain.*



*A view of the stern section of the wreck at low tide.
Photo by N. King.*

which, coupled with the use of welding over rivets, caused cracks to form as the vessel experienced shifts in water and air temperatures. These cracks could lead to the vessel breaking in half while in port, which a number of Liberty Ships did.

SS *Thomas T. Tucker* did not suffer that fate, however. *Tucker* ran around when its 42-ship convoy ran into dense fog in November, 1942. Thinking they were near Cape Town, the crew had relaxed. A top secret radar installation built by the South Africans had detected the *Tucker* as she approached the shore, but in order to maintain the secrecy of the radar station no radio contact was made to warn the vessel to change course. The *Tucker* ran aground near Olifantbos Point, the crew suffering no injuries or deaths.

The local population assisted with the recovery of the military cargo the *Tucker* was carrying, which included 25 Sherman tanks, 200 motor vehicles and other supplies for the North African front. There was some controversy about whether the ship had been hit by a torpedo. The temporary road built to the beach can still be seen today. After the cargo was recovered, *Tucker* broke away unexpectedly from the temporary dock and separated into three major sections, which washed ashore in their present location.

Now, what is left of SS *Thomas T. Tucker* lies in a protected nature reserve and is part of a popular hiking trail. The site also serves as a reminder of the important role South Africa played during World War II, and of South Africa's continued importance to global maritime activity.



*View of the remaining section, also at low tide.
Photo by J. Smailes.*



*Wreckage in the sand, including the remains of a boiler.
High winds and surf buffet the site. Photo by J. Smailes.*

Nathaniel King is a Master's Candidate in Maritime Studies with an undergraduate degree in history from the University of Arkansas. ⚓

Bato and Brunswick

by Ivor Mollema

During the last three days of July 2014, maritime archaeologists from ECU investigated two shipwrecks—the *Bato* and the *Brunswick*—lying off the shore of Simons Town, outside of Cape Town.

The Dutch warship *Bato* (1806) and British East Indiaman *Brunswick* (1805) wrecked within 200 meters of each other in the bay. Such close proximity presented a unique opportunity to compare and analyze the maritime shipbuilding technologies available to these two seafaring nations during the Napoleonic Era (1792-1815). Preliminary research yielded data about British and Dutch access to and utilization of specific shipbuilding timbers, iron knees, metal sheathing and a variety of fastenings. Lost within six months of each other, the ships' hull remnants provide the opportunity to juxtapose the technologies available to British and Dutch naval forces and to analyze the role that the differences played in the success of the British in building their empire and the loss of most of the Dutch colonial possessions. Little archaeological work has been



Iron knee overlying planking on the Brunswick.
Photo by J. Smailes.

research. During the mapping process, potential sampling locations were noted. A single dive was required to tag exposed timbers and planking for scantling measurements and direct comparison. In total, 60 frames and 20 planks were tagged for analysis. Each tagged timber was measured and recorded. An anchor found on *Bato* was carefully recorded and illustrated. Wood sampling and photography formed the bulk of remaining work. Small, one-inch blocks of wood were



J. Edwards measures a small anchor on the Bato.
Photo by J. Smailes.

undertaken on Dutch naval shipwrecks to date. Most archaeological work has focused on Dutch East Indiamen or coastal or fishing vessels from the Dutch golden age in the 17th century. Although much has been written about maritime technology in the latter half of the 19th century, little is known about the shipbuilding technology available during the Napoleonic Era.

At least fifteen dives were made, three dives a day with a good surface interval providing for enough information gathering to be of use to the team. Initially, each member created a basic map of the site for orientation, to assist in targeted sampling, and further



I. Mollema and J. Edwards measure iron knees on the Brunswick. Photo by J. Smailes.

sawn and removed with a chisel from key diagnostic timbers on both wrecks. Remains of the keel, keelson, planking, caulking, and frames were all sampled for further analysis. Summaries of results will be reported as they become available, with full documentation to appear in graduate theses.

Ivor Mollema is Master's Candidate in Maritime Studies with an undergraduate degree in history from St. Andrews University. ⚓

continued from page 5

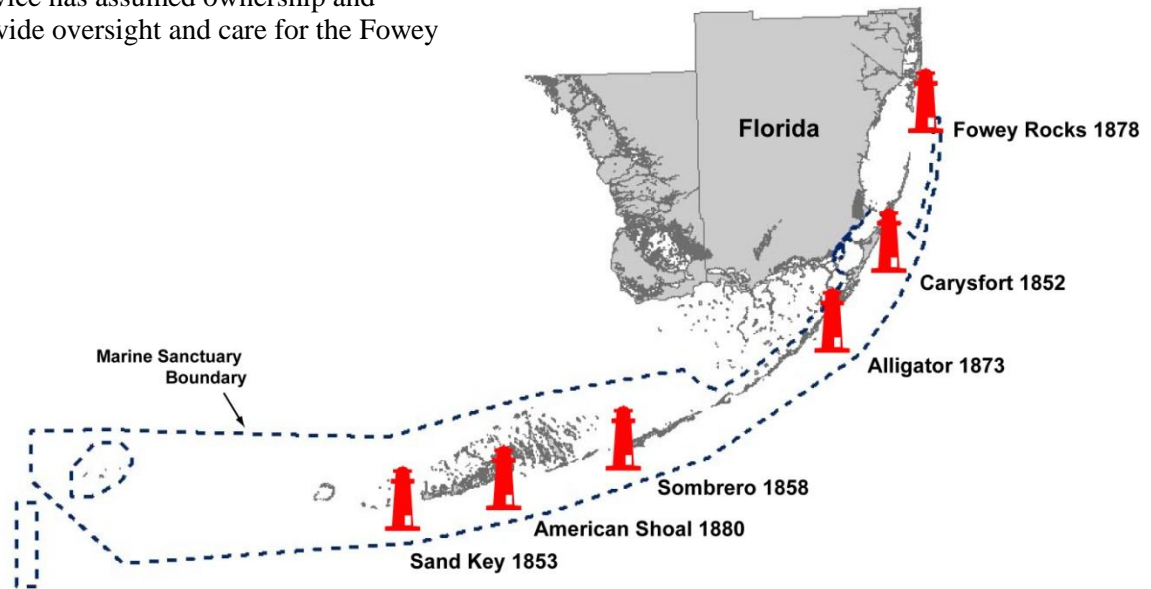
local communities. Through the preservation program, GSA helps find new stewards for excess lighthouses that are no longer considered mission critical to the United States Coast Guard.” Many lighthouses across the country have already been transferred.

All six of Florida’s iron screw-pile lighthouses have been deemed excess property and have been awarded to GSA. To date, only the Fowey Reef lighthouse, built in 1878 has been transferred to a new owner: Biscayne National Park, Under the Department of Interior’s National Park Service has assumed ownership and jurisdiction to provide oversight and care for the Fowey

light for future generations and public interest.

New beacons are being installed by the United States Coast Guard Aids to Navigation Section and will take over the function of the lighthouses for continued safe navigation along the Keys. Improved technology can be attributed the cost saving and upgrade that the new beacons provide.

Brenda Altmeier is Maritime Heritage Coordinator for the Florida Keys National Marine Sanctuary. ⚓



Florida Keys National Marine Sanctuary showing the locations of the six offshore lighthouses. Map by the author.

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ships that create a unique marine and terrestrial ecosystem and offers tremendous opportunities for public education, conservation, recreation and tourism.

Our speaker series continued this year and in October MAHS featured a conference call with Matthew Lawrence who provided additional guidance for the Pickles Reef project including helpful comments on the project’s Research Design, which was completed and submitted to the Sanctuary this year. Matt also provided guidance and direction to support our ongoing archival research efforts over the winter months. MAHS remains grateful for his support.

Our work on the Bodkin Creek Project and the Pamunkey River Project had to be placed on hold this year due to the concentration of our efforts on Pickles Reef. However, these projects are still in the pipeline and we will be returning to them soon. So, I invite all MAHS members to join us at the MAHS membership meetings to get more involved.

See you on the water,

Steven Anthony
President



MARITIME ARCHAEOLOGICAL AND HISTORICAL SOCIETY

Statement of Ethics

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

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

Signature _____ Date _____

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

Application for Membership

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

Name (print) _____

Address _____

City _____ State _____ Zip _____

Phone (H) _____ (O) _____ (FAX) _____

E-mail _____

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

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

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

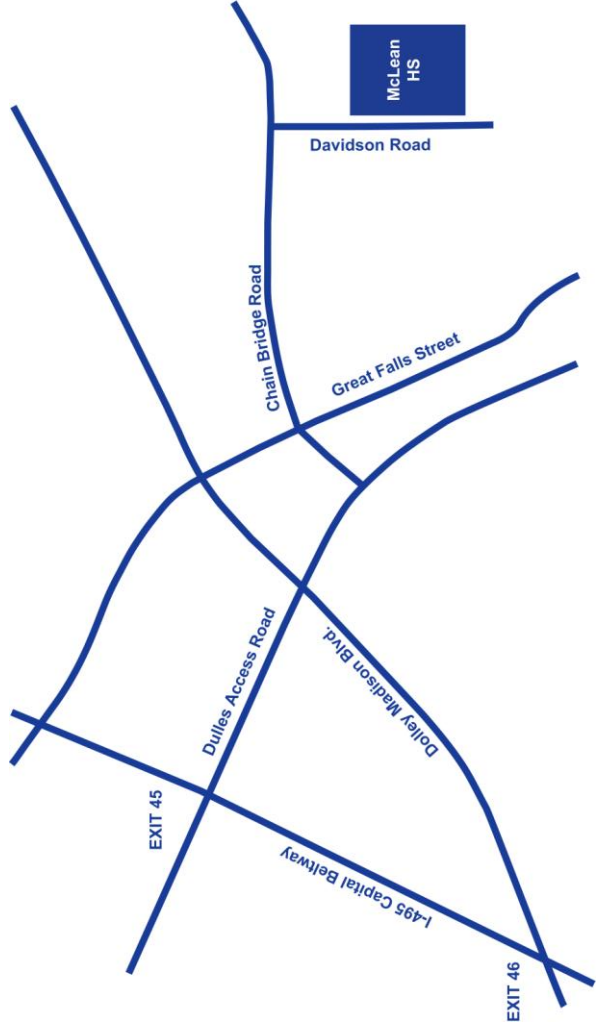
General membership meetings of the Maritime Archaeological and Historical Society are held on a bi-monthly basis, the second Tuesday of each month. Meetings are held at 7:30 p.m. at McLean High School, in McLean, Virginia, except in August and December. Meetings in August and December are held at other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



**MARITIME ARCHAEOLOGICAL AND
HISTORICAL SOCIETY**

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