

Supplementary Information for

#### Coastal Heritage, Global Climate Change, Public Engagement, and Citizen Science

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This PDF file includes: Supplementary text (S1 to S3)

- S1: Florida Heritage at Risk exhibition panels
- S2: Florida Heritage Monitoring Scouts Site Monitoring Form

S3: Midden Minders methodology

#### New Exhibit Opening FLORIDA HERITAGE AT RISK

FRIDAY MARCH 3RD 5:30-7:00pm

DESTINATION ARCHAEOLOGY RESOURCE CENTER 207 E Main St, Pensacola, FL



850.595.0050 WWW.DESTINATIONARCHAEOLOGY.ORG

A R C H A E O L O G Y RESOURCE CENTER

## HERITAGE AT RISK

FLORIDA'S 8,436 MILES OF COASTLINE ARE ALREADY EXPERIENCING AN INCREASE OF SEA LEVEL RISE AND STORM SURGE EVENTS.

A CALL TO ACTION!

Today many people live on or near the coast, just as people have for thousands of years. Places where people lived in the past are now recorded as archaeological sites. As these sites disappear due to development for Florida's growing population, as well as through processes like erosion, it is important to preserve information about them through observation and documentation. There is still time for us to learn from and enjoy these important resources before they are lost to rising seas.

O 1 METER (3 FEET) OF SEA LEVEL RISE IN FLORIDA WILL AFFECT...

**16,015 TOTAL CULTURAL RESOURCES** (ARCHAEOLOGICAL SITES, BUILDINGS, BRIDGES, CEMETERIES)

2,908 ARCHAEOLOGICAL SITES

**214** NATIONAL REGISTER OF HISTORIC PLACES SITES

2 METERS (6 FEET) OF SEA LEVEL RISE IN FLORIDA WILL AFFECT...

- **34,786** TOTAL CULTURAL RESOURCES (ARCHAEOLOGICAL SITES, BUILDINGS, BRIDGES, CEMETERIES)
- 3,985 ARCHAEOLOGICAL SITES
- 496 NATIONAL REGISTER OF HISTORIC PLACES SITES

"Coasts have played a vital role in making us human, and we, in turn, have made coasts what they are today... We must learn to live with our shores, not just on them. Our survival and theirs depends on it."

~DR. JOHN R. GILLIS, HISTORIAN

# LEGACY OF CHANGE

THIS IS NOT THE FIRST TIME THE SEAS HAVE RISEN. IN FACT, MANY ARCHAEOLOGICAL SITES ARE ALREADY UNDERWATER.

Since people first set foot in Florida more than 14,000 years ago sea levels have risen over 100 meters (328 feet), engulfing roughly half of the state's coastline and many human habitation sites.



LEFT: Early Native American stone tools like these are sometimes found offshore at sites that used to be dry land.

### THE PAST IS PROLOGUE

Investigating coastal sites today can help archaeologists understand how humans engaged

with climate change in the past. Information about how food resources altered and how

humans adapted are directly related to concerns we will face as sea levels encroach

on our agricultural land.

Other archaeological

investigations seek to

understand how humans react to

losing the places they have lived in for a

long time. Millions of Floridians who live along the

coastline will soon have to deal with these issues.

ABOVE: Food remains like these shells and animal bones left behind in a Native American trash pile or midden are some of the best clues to understand how people dealt with climate change in the past.

### WHAT CAN WE DO?

Coastal archaeological sites are changing rapidly. Sites need to be watched and changes in condition tracked over time. This activity is called **MONITORING** and is one way the public and professionals can get active today to make a difference.

RIGHT: Archaeologists and volunteers visit archaeological sites after Hurricanes Hermine and Matthew.



![](_page_3_Picture_21.jpeg)

"As sea continues to rise from global warming, the archaeological record of these ancient experiences is erased, and with it any chance that we can learn from those whose changing relationship to the land and its waters is a testament to innovation and resilience."

~DR. KEN SASSAMAN, ARCHAEOLOGIST

# MAKE A DIFFERENCE

### WHAT IS HMS FLORIDA?

Heritage Monitoring Scouts (HMS Florida) is a public engagement program developed by the Florida Public Archaeology Network (FPAN) that aims to track changes to archaeological sites. Scouts visit sites to verify the locations, report what threats they see in the field, and describe the overall condition of the resources. HMS Florida is not just about saving the

past for the future; it's about encouraging Floridians to take an active role

S C O U T S

HERITAGE

MONITORING

![](_page_4_Picture_5.jpeg)

![](_page_4_Picture_6.jpeg)

## TAKE ONLY PICTURES, LEAVE ONLY FOOTPRINTS

In the field, Scouts photograph and document information about site threats using a short form and prepared maps to guide them. The Scout monitoring reports are submitted online to **www.fpan.us/hmsflorida**. Sites are flagged for follow up by a professional archaeologist if they are not found in the right location, if they are destroyed, or if overall conditions are rapidly deteriorating. Scouts collect data without ever picking up a shovel or disturbing the earth.

Sea Level Rise and Coastal Flooding Impacts

Sea Level RiseConfidenceMarshVulnerabilityFlood Frequency

![](_page_4_Picture_11.jpeg)

A Streets O Download % Share Map Zoom to: State or Territory \*

![](_page_4_Picture_13.jpeg)

Want to see how sea level rise might affect your community? Go to **https://coast.noaa.gov/slr/** for an interactive map.

![](_page_4_Picture_15.jpeg)

## "I FEEL LIKE I'M CONTRIBUTING IN A SMALL WAY TO A VERY RATIONAL ENDEAVOR."

### Gayle Sheets, Heritage Monitoring Scout

# HMS FLORIDA PROCESS

## SIGN UP TO BECOME A SCOUT

#### **HMS Florida Scout Application**

Thanks for your interest in becoming a Heritage Monitoring Scout! Please fill out this application to be added to our monitoring roster. We will send out emails when we have scouting opportunities available. Please contact us at HMSFlorida@fpan.us if you would rather submit your information via email or have any questions.

Name

Your answer

![](_page_5_Picture_5.jpeg)

#### Go to www.FPAN.us/HMSflorida to sign up to

become a scout for the HMS Florida program.

#### ATTEND AN TRAINING

FPAN Centers throughout Florida host free HMS Scout trainings and specialized workshops. Check out the events page for your FPAN region to find one near you.

![](_page_5_Picture_10.jpeg)

## UPLOAD TO THE HMS DATABASE

![](_page_5_Picture_12.jpeg)

Upload your information to the HMS database so HMS Coordinators can see if the site needs a follow up visit from an archaeologist.

![](_page_5_Picture_14.jpeg)

## GET YOUR MAP VISIT A SITE

### FILL OUT THE HMS FORM

HMS Coordinators will contact you with sites in your area you can monitor on your own, or meet us out at an organized site visit day.

![](_page_5_Picture_18.jpeg)

Answer the questions on the HMS Reporting Form online or with the paper form. Your answers and observations help determine the current Visit O Initial condition of the site. O Follow up

![](_page_5_Picture_21.jpeg)

**Overall Site Condition** 

Good = Stable (structural stability, no obvious or predicted deterioration)

O Fair = Declining (discernible decline, wholeness or physical integrity threatened by normal wear)

Poor = Unstable (palpable, accelerating decline, physical integrity is being compromised quickly)

Threats Observed (check all that apply: link to illustrative examples forthcoming)

Active erosion

Storm surge

Wind

Flooding

Wave action

![](_page_5_Picture_32.jpeg)

DOCUMENT WHAT YOU SEE

Help create a record of the site by taking measurements, drawing a map, and taking photos of the site from all angles. The HMS photo log will help you plan what pictures to take.

![](_page_5_Picture_35.jpeg)

![](_page_5_Picture_36.jpeg)

"BEFORE AGREEING THAT NOTHING SHOULD BE DONE, THINK ABOUT YOUR LEGACY WHEN YOUR CHILDREN AND THEIRS ASK: WHY DIDN'T THEY DO ANYTHING?"

~DR. RANDY PARKINSON, COASTAL GEOLOGIST

## CASE STUDY: SHELL BLUFF LANDING

UPPORTUNITY As the first pilot program for HMS Florida in the Northeast, what can we learn about the best ways to monitor coastal sites? How can we apply them to other parts of Florida?

#### PROJECT LOCATION

Shell Bluff Landing is located within the Guana Tolomato Matanzas National Estuarine **Research Reserve (GTMNER).** This site spans 6,000 years that includes a large dense shell midden and a Minorcan well built around 1800.

GUANA TOLOMATO MATANZAS NATIONAL ESTUARINE RESERVE

ST

#### WHAT'S THE PLAN?

HERITAGE MONITORING SCOUTS FLORIDA PUBLIC ARCHAEOLOGY NETWORK

1 CM

The HMS Florida program aims to train volunteers through hands-on workshops while monitoring archaeological sites at the Reserve. Scouts learned how to photograph sites, identify basic artifacts, and submit monitoring forms before being sent out to other sites in the Northeast Region.

![](_page_6_Picture_8.jpeg)

Shell-edged pearlware

![](_page_6_Picture_10.jpeg)

English slipware

Shell-stamped St Johns pottery

#### WHAT CHANGES HAVE WE SEEN?

Shell Bluff Landing is open to the public and represents a prime example of the damaging effects of shoreline erosion to historically significant sites.

In addition to projecting future threats, monitoring ABOVE: Eroding midden at Shell Bluff Landing. forms have proved essential to describing the erosion, storm surge, and wind damage from Hurricane Matthew. Photographs taken a week before the storm illustrated at least four feet of the site destroyed in a single day.

![](_page_6_Picture_16.jpeg)

well caused by Hurrican Matthew in October of 2016.

![](_page_6_Picture_18.jpeg)

AFTER HURRICANE MATTHEW

## CASE STUDY: CALUSA ISLAND

**OPPORTUNITY** In Southwest Florida, the wet coastal areas allow for incredible preservation of 2,000 year old Calusa-made objects that are destroyed over time in drier places. How can monitoring help preserve these sites?

### WHAT'S THE PLAN?

Work with local researchers at the Randell Research **Center to implement HMS** Florida monitoring and volunteers with an established shoreline monitoring program at the Calusa Island site.

![](_page_7_Picture_4.jpeg)

![](_page_7_Picture_5.jpeg)

#### GOALS

One of the sites currently monitored is Calusa Island, a shell midden being washed into the ocean. This is the kind of site we need to document before it's gone. Data from the HMS Florida partnership will provide a baseline to track changes in the site over time and how fast the midden is disappearing into the sea.

LEFT: A view of the eroding shell midden at the Calusa Island site.

#### DOING THE WORK

At Calusa Island, volunteers maintain very detailed records using semi-permanent markers installed along the midden. The markers ensure accurate measurements of the midden's eroding edge and aid in recording location of artifacts.

![](_page_7_Picture_11.jpeg)

#### OUTCOMES BENEFITS AND

The Calusa Island Project is a great opportunity to learn from an existing research and monitoring program, and make HMS Florida monitoring more effective. Lessons learned from this project will help us better prioritize similar sites throughout the regions.

> RIGHT: Whelk shell hammer. Calusa Island is a great site to show examples of artifacts you find in Southwest Florida.

![](_page_7_Picture_15.jpeg)

ABOVE: HMS Scouts walk out to monitor a shell midden at the Randell Research Center.

> LEFT: Field notes by Dr. Karen Walker show measurements from fixed markers at the Calusa Island midden.

& WATER LINE

## CASE STUDY: HOG ISLAND

**OPPORTUNITY** How can collaboration with environmental land managers lead to mutually beneficial results? What can they learn from documentation of impacts to archaeological sites? What can we learn from the monitoring of natural resources?

#### PROJECT LOCATION

![](_page_8_Figure_3.jpeg)

Hog Island, just northwest of Cedar Key, is home to many shoreline archaeological sites, including several shell middens dating back at least 4,000 years and a 2,000 year old burial mound.

#### WHAT'S THE PLAN?

**Assist Florida Coastal Office** (FCO) land managers with translating monitoring strategies they use every day for natural resources to the archaeological sites within their areas.

![](_page_8_Picture_8.jpeg)

![](_page_8_Picture_9.jpeg)

**ABOVE and RIGHT: Monitoring photos** from before and after Hurricane Hermine came through the area show what can happen to coastal sites from storm events and heavy waves. The midden on the southern tip of Hog Island, shown here, sustained heavy damage.

#### A BENEFICIAL PARTNERSHIP

Environmental monitors have long been concerned with issues related to erosion and sea level rise, so partnering with them has helped us learn how to better observe these and other threats. FCO staff has also learned how to identify archaeological sites within their preserves, helping them to monitor and report on the cultural resources they are also meant to protect.

LEFT: FPAN and FCO staff kayak to sites around Hog Island for HMS Florida monitoring.

![](_page_8_Picture_18.jpeg)

## CASE STUDY: BRICK WRECK

**OPPORTUNITY** The Florida Keys are home to thousands of underwater archaeological sites. How do climate change and storm events impact a site that is already submerged?

![](_page_9_Picture_2.jpeg)

#### PROJECT LOCATION

Uncovered in the 1990s, and fully documented in 2004, Brick Wreck is what remains of a small nineteenth-century schooner located in 13 feet of water just south of Vaca Key in the Florida Keys.

![](_page_9_Picture_5.jpeg)

ABOVE: Mystery object off the starboard stern of Brick Wreck.

#### WHAT'S THE PLAN?

As part of the Heritage Awareness Diver Seminar (HADS), FPAN staff and local dive leaders visit Brick Wreck each year to learn how to document shipwrecks, but also to see how human and natural forces impact submerged sites. The photos and observations recorded create a baseline that we can compare to and see changes over time.

#### WHAT CHANGES HAVE WE SEEN?

Scouring from heavy seas and storm events continuously uncover previously preserved parts of a shipwreck and leave them open to damage, just like erosion can cause damage to coastal sites.

![](_page_9_Picture_12.jpeg)

ABOVE: Site plan of Brick Wreck with diver observations of damage and threats to the site.

Over the years divers observed and documented how much of the wreck is uncovered as well as the damage caused people and by marine creatures. State archaeologists in charge of managing the site use this information to make informed decisions on the best way to preserve and stabilize the site.

RIGHT: Once they are uncovered, wooden timbers on Brick Wreck are in danger from natural and human impacts.

![](_page_9_Picture_16.jpeg)

SCOUVING

![](_page_10_Picture_0.jpeg)

#### **Site Monitoring Form**

Master Scout ID:

Site Name:

Site Number (if known, i.e. 8SJ405):

Time:

Date:

Site Location

Mission location verified

Site found but in different location (note corrected location in comment field below)

Site could not be found

Visit

Initial Follow up

**Overall Site Condition** 

Good = Stable (structural stability, no obvious or predicted deterioration) Fair = Declining (discernible decline, wholeness or physical integrity threatened by normal wear)

Poor = Unstable (palpable, accelerating decline, physical integrity is being compromised quickly)

Threats Observed (check all that apply: link to illustrative examples forthcoming)

Active erosion Storm surge Wind Flooding Wave action Vegetation growth Animal disturbance Visitor traffic Vehicle damage Development Other: Priority - include justification in comments section below High - threats pose immediate risk, recommend urgent follow up Medium - threats pose a moderate risk, continue to monitor after storm events or on annual basis Low - site at minimal risk, monitor after storm events or every 5 years

Comments on site impacts:

Artifacts visible (photograph in place, do not move) Prehistoric pottery Lithics Shell tool Historic ceramics Glass Architectural (nails, wire, bricks) Other:

Recommendation (repeat visit, defense, FMSF update, other comments):

#### Supplementary reporting

Please enter the information on this form into the online reporting system found at FPAN.us/HMSFlorida and then send select/representative pictures of site conditions and any other documentation or questions to HMSflorida@fpan.us.

PNAS Coastal Cultural Heritage Supplemental Material

The Midden Minders program engages volunteers in a variety of monitoring, documentation and preservation efforts designed to create a database of erosion rates, processes, and archaeological information for research and informed cultural resource decisions.

The entry point for potential Midden Minders is the project website

(https://umaine.edu/middenminders). This website contains information on:

- Maine shell midden archaeology
- Shell middens and cultural sensitivities
- Registration information
- Monitoring protocols
- Safety Information

Midden Minder Registration;

Potential Midden Minders can volunteer to work with an established conservation group by monitoring sites on organization property/easements or work at a self-identified midden site. Sites identified by individuals are verified as either a known or new site by working with the Maine Historic Preservation Commission (MHPC), a state agency.

Midden Minders complete a hands on training sponsored by a conservation organization or by referring to material presented in the website and completing an online assessment. All Midden Minders complete a registration form agreeing to a code of conduct.

Individual Midden Minders must also submit a notarized letter from the landowner granting the Midden Minder permission to access the midden and indicating the preferred conservation method in addition to photography of any eroded cultural material. This is done because any material found on or eroded from the midden in the State of Maine is the property of the landowner.

Midden Minder Activities: Midden Minders select one or more monitoring activities:

- 1. Monthly Midden Minding: A midden "wellness check" to document natural or humaninduced change through the year. This activity provides information on the daily processes that impact middens. Minders are asked to:
  - a. Describe and photograph the midden face and top surface using a standardized protocol designed to produce images that will allow comparison through time.
  - b. Photograph eroded cultural material using standard procedures.
  - c. Handle cultural material in accordance with landowners wishes.
- 2. Annual Midden Erosion Survey: Making an annual assessment of midden erosion using simple tools and photographic techniques.
  - a. The survey is based on measuring the distance from an established baseline to the midden edge and using that information to create a map to show stability or erosion through time.
  - b. Collecting monthly Midden Minding information as described above.
- 3. Assessing Storm Damage "Storm Chasing": Volunteers are asked to visit "their" midden as soon as possible after a storm, to document storm related erosion and exposed archaeological material, if present. Due to challenging conditions, recording of information is based largely on photography. These images are important to document conditions that until this point, have been only anecdotal in nature.

Database: Information collected by Midden Minders is collected in a specially designed database. After Midden Minders complete the registration process (site selection, training, assessment, registration form, and landowner permission), a background file is created containing relevant site location, condition and archaeological information. Much of this information is provided by the MHPC. The Midden Minder is given a link to the database and provided with information necessary to access their site(s) data portal. Minders can only access

and contribute to data for sites they are actively monitoring. This is done to protect site location information and landowner privacy.

Most monitoring information is entered through the use of dropdown menus with space for notes. Download links are provided for photos and scans of maps.

Information collected in surveys include: Midden Minder name and contact information Site access information Site condition information:

Weather conditions

- Time and stage of tide
- Surface and face vegetation amount and type
- Erosion process
- Substrate composition
- Beach composition

Midden Minder Erosion Surveys are conducted in association with monthly monitoring visits, but include measurements taken from an established baseline that are used to construct maps that can be used to determine erosion rates. Geo-referenced images taken from drone observations will be used to measure annual erosion rates at middens with a large (greater than 10m) lateral extent.

Outreach: Outreach efforts include a trifold brochure sent to all coastal conservation organizations, speaking at conservation group meetings, and working with local media.