



SCDNR archaeologist Meg Gaillard measures the shoreline of Fort Frederick Heritage Preserve using an Arrow Gold® in January 2021. Fort Frederick is where the Emancipation Proclamation was read for the first time in southern states. The site, buffered by the Beaufort River, is an example of slow erosion.

Photo courtesy of SCDNR.

#### Customer

South Carolina Department of  
Natural Resources (SCDNR)

#### Industry

Archaeology, Local Government

#### Challenge

The SCDNR Heritage Trust Program needed an efficient solution to allow students to accurately map important cultural artifacts before they are lost to shoreline erosion.

#### Solution

Arrow 100® GNSS receiver,  
ArcGIS Survey123, iPhones

#### Results

The solution of the Eos Arrow 100® GNSS receiver combined with ArcGIS Survey123 allowed students to map data safely and efficiently, all with submeter accuracy.

## HERITAGE AT RISK: DOCUMENTING AND EXCAVATING CULTURAL SITES IN COASTAL SOUTH CAROLINA — BEFORE THEY ARE LOST FOREVER

Just off the southern coast of South Carolina, Edisto Island was named for an Indigenous sub-tribe of the Cusabo peoples. The Edisto people used the island for settlements and fishing. With a population estimated at 1,000 in the year 1600, the Edisto people eventually disappeared by the 1800s, due to European settlement and disease.

Today Edisto Island is home to important artifacts, including unique pottery such as Thoms Creek pottery sherds (a “sherd” is a piece of pottery, not to be confused with a “shard” which is a piece of glass) and mysterious shell rings, which are structures built of oyster shells and other shells. Shell rings still hold many archaeological mysteries about the earliest inhabitants of the southeastern United States, but these un-excavated artifacts are at risk of being lost to the ocean, due to rapid coastal erosion.

“In the past 70 years, Edisto Island has seen about  $\frac{3}{4}$  of a mile of shoreline loss,” said Meg Gaillard, a Heritage Trust Archaeologist for the South Carolina Department of Natural Resources (SCDNR).

The SCDNR’s Heritage Trust Program was founded in 1974 with a mission to “preserve and protect natural resources, for current and future generations.” Today the Heritage Trust Program archaeologists assist with cultural resource management across the state. The SCDNR is responsible for over 1.1 million acres, and over 200,000 of those acres are coastal.

Due to fast-paced erosion, there is an obvious question about carrying out such a mission along the coast.

“Our legal obligation is to protect these resources for current and future generations,” Gaillard said. “But the question we are facing today is, ‘What happens when we can’t?’”

## WHAT KIND OF ARTIFACTS COME FROM POCKOY ISLAND?

On Pockoy Island, it is not only the types of artifacts that make the site unique, but also their quantity.

Two of the earliest forms of pottery in North America are found on Pockoy Island: Thoms Creek and Stallings Island sherds. These sherds were formerly decorated with periwinkle shells and ends of reeds and canes.

“They are incredibly unique and beautiful,” Gaillard said.

Use of stone was not common along the South Carolina coast, so the Heritage Trust Program also found lots of bone and shell artifacts, such as hand-carved deer-bone pens and shell tools. Indigenous people would have punched a hole in a whelk (a sea shell similar to a conch), for instance, and stuff a stick inside to create an ax-like tool known as an adze. Adzes were probably used to cut down trees and build canoes.

“So many different people on our team study each of these items,” Gaillard said.

## HOW ARE ARTIFACTS LOCATED?

In May 2019, the SCDNR Heritage Trust Program supervised university students who surveyed Pockoy Island to identify additional sites. They walked along transects of a grid and dug “shovel tests” at regular intervals 10 meters apart. The shovel test provides a window into the ground. It lets the students see, and record, if there are any artifacts or features. They capture the data — such as type and quantity of artifacts, soil color and consistency, and photos — in an ArcGIS Survey123 form, created by SCDNR, on their SCDNR-issued iPhones. The accuracy of the shovel test locations is provided by an Arrow 100® GNSS receiver, which connects via Bluetooth® to the iPhones and provides submeter-level accuracy. The grid was laid out and the location of every shovel test was flagged prior to the students arriving on site.

Gaillard likes the mobile setup because it allows real-time artifact data collection.

“On a site like Pockoy Island, which is being lost so rapidly, that is absolutely essential during a month-long field season,” Gaillard said. “We can quantify artifacts rapidly, knowing we might experience a king tide event mid-season that impacts our work. So we can say, for instance, if we are seeing a higher density of artifacts in particular places on this site we have only shovel tested, we might have an opportunity to refocus our efforts quickly to put in some larger excavation units before we lose that part of the site.”

The real-time data collection also adds a layer of safety for the students.

“Not only does this let us work rapidly, but it also lets us work more safely, because some students have never worked in a marine forest setting before,” Gaillard said. “We can track their locations, and that brings us an element of safety.”

Each season, K-12 students also visit Pockoy Island to help archaeologists sift soil for artifacts. Later on, students can visit the SCDNR archaeologists in their lab in Columbia, S.C. where they can help wash the artifacts they helped uncover in the field.

“This is really full circle for me, when the little kids can come to help us,” Gaillard said. “Their efforts really do matter, because where they stood at those sifting screens only a year and a half ago is now underwater. But what they helped save might one day be on display in a nice museum case, and stored in the SCDNR curation to be researched for generations.”



*SCDNR archaeologist Meg Gaillard measures the shoreline of Pockoy Island using an Arrow Gold® in September 2021. Photo by Kiersten Weber, SCDNR.*