



Friends of the Randell Research Center

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A Tour of the Islands of Pine Island Sound: A Geological, Archaeological, and Historical Perspective

Part 16: Captiva Island Geology and Archaeology

by Denége Patterson

C*aptiva Island is a barrier island of Pine Island Sound*, connected to Sanibel Island by a bridge across Wulfert Channel. Captiva Island is approximately 4.5 miles in length but before 1921 when a hurricane blew out Redfish Pass on the northern tip of Captiva Island, it was nearly twice as long and encompassed all of today's North Captiva Island.

Captiva Island Geology

Captiva Island is a geologically dynamic barrier island. For fifteen centuries the island has been connected and divided; lengthened and shortened; thinned and widened. Its width of less than one-half mile, and its emergence as an island depended on continuous wave action as opposed to tides and currents. Today the wave action is erosional at the north end and depositional at the south end at Blind Pass.



Captiva Island, left, and Buck Key, right. The foreground is the western tip of Sanibel Island and the Sanibel-Captiva Bridge spanning Wulfert Channel as it enters Blind Pass. (Photo by Ron Mayhew.)



The surface of the island has no measurable beach-ridge sets dating before A.D. 450. However, there is evidence of deposition of geologically reworked shells from earlier time intervals going back three thousand years. A "reworked" shell is one that eroded from an existing deposit, was transported an unknown distance, and was then incorporated into a different sand and shell deposit.

The northern part of Captiva Island supports parallel beach ridges of a type with one end attached to the land and the other projecting into the sea or across an old inlet. This type of sand spit is the result of direct onshore sediment transport in addition to southward longshore sand transport. These ridges

Redfish Pass. (Photo by Ron Mayhew.)

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have elevations below five feet, were deposited before A.D. 850, and they are contemporaneous with the beach ridges on Buck Key (A.D. 450-850), which is parallel with Captiva Island's southern half. Corresponding with this time of deposition are indigenous shell middens, made by people, upon the northern third of today's Captiva Island, and upon the northern third of Buck Key.

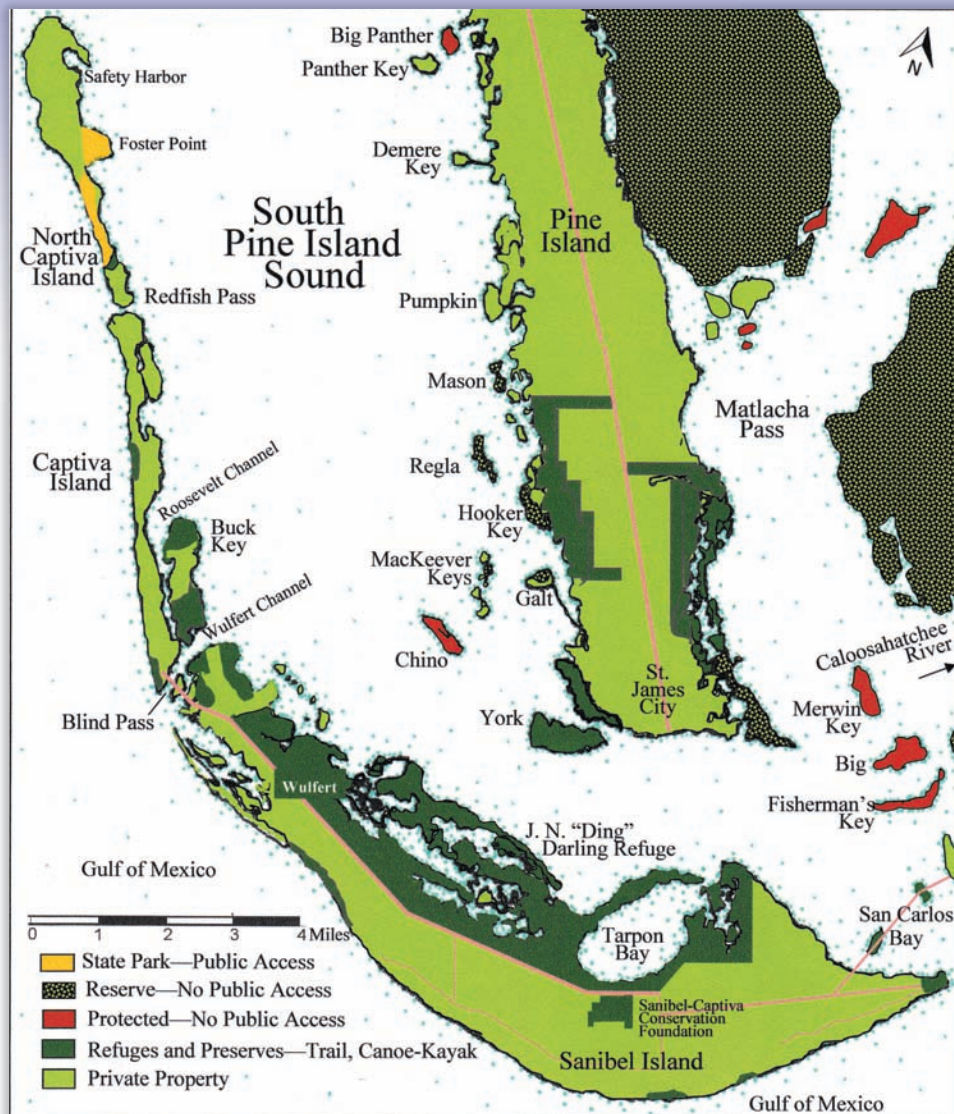
After A.D. 850, according to geologists, the southern part of today's Captiva Island did not exist. Buck Key was the barrier island open to the Gulf of Mexico. Whether Buck Key was once connected to the northern portion of Captiva Island is a mystery. Evidence of specific beach ridges before A.D. 850 on Captiva Island's middle part and on Buck Key's northern end suggest a pattern going in a northeast-to-southwest direction as if the ridges were being deposited along an old inlet. This would have placed Captiva Island on the north side and today's Buck Key on the south side. The inlet could have been located at the narrowest portion of Captiva Island where Roosevelt Channel is now widest.

Geologists state that no earlier than A.D. 1350 accumulated sand, shell, and beach ridges on the southern part of Captiva Island forced the waters of the sound to exit southward through Roosevelt Channel east of Captiva Island, west of Buck Key, and exit due south into Wulfert Channel near Blind Pass.

Archaeology of Captiva Island

In 2005, archaeologists mapped multiple shell middens exposed by Hurricane Charley on the estuarine side at the northern end of Captiva Island. The landform on which the archaeological site existed was a peninsula about 360 feet wide, extending from north to south approximately one mile into the bay.

One of the shell middens is a bifurcated mound. The bifurcation is a gently sloping valley of shells providing a pathway to each of the mounds. A third shell mound rises sixteen feet above sea level. A low, bowl-like depression in the lower part of one shell mound holds clear water. Preliminary data based on potsherd types and shell



Southern Pine Island Sound. (Map by Denége Patterson)

tool forms suggests that indigenous people lived there during the Caloosahatchee I period (500 B.C. to A.D. 500) and perhaps long after.

About one mile south of the previous location, the Chadwick Mound is represented by two separate shell midden mounds. The southern mound is teardrop shaped and is about 525 feet north to south, 330 feet east to west, and 16 feet in height. About 100 feet north is a smaller linear shell feature extending north to south about 56 feet with an average width of 33 feet, and a maximum height of only three feet. The site is the second largest on the barrier islands in terms of volume and appears to have been an ancient village site.

A burial mound on Captiva Island and a non-burial shell mound were explored in the winter of 1927-1928 by Henry B.

Collins of the Smithsonian Institution. The non-burial site consisted of gradually accreted middens with an associated trench or canal. Collins observed how the burial mound was surrounded by a wall made of large shells, and included flexed burials (knees and elbows bent), primary burials, and secondary burials. A "secondary burial" is one that has been relocated from its original place of interment.

Archaeologists believe the burial site dates to the Caloosahatchee IIB period (A.D. 800 to 1200) with continuous use over time, and that it contained no grave goods except for the placement of potsherds around the skulls. In 1996 the burial site was placed on the National Register of Historic Places. Today it is protected by Florida Statute 872.02, which prevents disturbance of unmarked graves.



Friends of the Randell Research Center

Pineland, Florida • March 2019
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Sincerely,

Cindy Bear

Cindy Bear
Coordinator
Randell Research Center



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Photo by A. Bell.

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Thank you for your support.



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Discovering the Calusa

by Cindy Bear

Recently we were asked by Dr. Carole Crumley, Director of the Integrated History and Future of People on Earth (IHOPE) initiative housed at Uppsala University in Sweden, if we could provide an example of a curriculum for young people that supports concepts of historical ecology. Carole was hosting educators from Japan who were seeking such materials as case studies.

For over 30 years, research at the Randell Research Center at Pineland has been conducted under the framework of historical ecology. It is summarized when we state we are dedicated to archaeology, history, and ecology and that one cannot understand the Calusa without understanding the local estuary and their relation to it through time. Succinctly defined, historical ecology is a "compre-

hensive approach to the combined study of human history with that of environments." When a zooarchaeologist asks whether a thin layer of midden left by people centuries ago across a portion of a landscape could have changed how sands were deposited by water or wind events, s/he is applying the perspective of a historical ecologist. And to test her developing hypotheses, she might consult scientists with specialties in geologic processes and storm dynamics.

This framework is evident in *The Archaeology of Pineland*, the 900+ page monograph that presents chapters on geologic processes, global climatic events and the material items Pineland's people left behind. It also describes some of the cultural practices of people who altered the landscape with canals, mounds, and middens as their grip on political power tightened, their economies developed, and of those people who later filled the canals, knocked down the midden mounds, and took up farming rather than fishing.

But, how does one convey the interrelatedness of humans and environment in a place over long periods of time to grade 4 students? Indeed, our "Discovering the Calusa" teaching materials do reflect this model. Carole Crumley responded with "Fantastic!" after a review of the materials.

First, using a generalized map of where major Calusa towns were located, we guide the students to seeing the purposeful placement on estuary shorelines rather than on beachfronts or river banks. In our Fish Bones activity, they learn how a small bone left by people centuries ago can, when identified to species, reveal knowledge of the habitat where people gathered the fish and the technologies they needed to do so. Asking, "I wonder..." allows



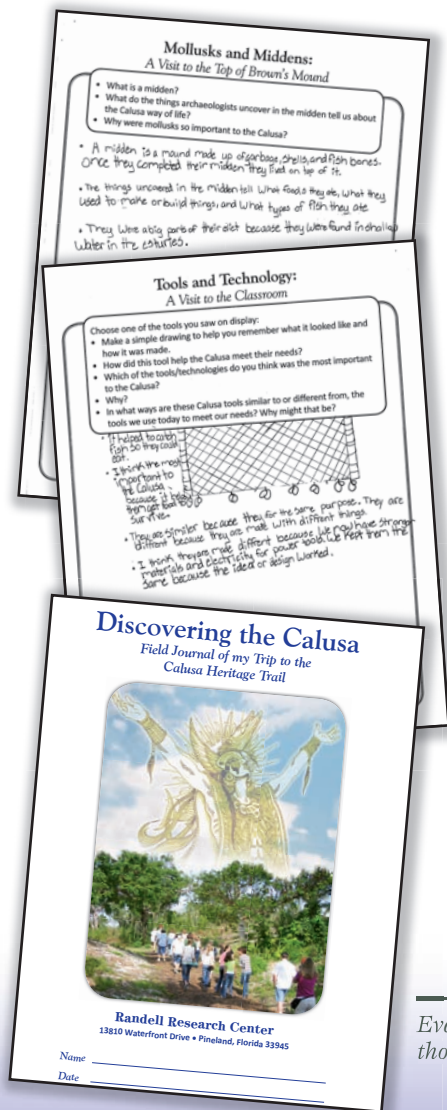
Volunteer Maddie Stewart encouraging students to think about "How" and "Why" the Calusa lived at Pineland. (Photo by Jeff Gage.)

students to ponder how and why midden mounds stand on our landscape and frees them to broach the idea of people transforming places over long periods of time. Rather than hold up a replica of a Calusa tool telling the students what it is and how it was likely used, we provide time at stations with artist's renderings of Calusa life and replicas of Calusa tools and ask them their thoughts on how and why the Calusa made such objects.

By the end of our time together, which never is enough for any of us, we feel they are better able to see the Calusa as engineers, teachers, students, parents, architects, artists, priests, leaders, and more. They understand that the Calusa lived at Pineland and other places for long periods of time, being influenced by the environment and shaping it too. They depart knowing more about how the ecology of the Pine Island Sound estuary was intertwined with daily life in the past and how it still is today.

With thanks to volunteers Maddie Stewart and Pam Buettner, Florida Public Archaeology Network, SW Region, staff member Victoria Lincoln, instructor assistants Mike Kelliher and Diana Stockbridge, and financial support of the Sear Family Endowment, we look forward to highlighting the interrelatedness of humans and environment for many more youngsters and many more years to come.

To learn more about historical ecology and the Integrated History and Future of People on Earth (IHOPE) initiative, visit www.ihopenet.org.




Every student receives a field journal for recording thoughts and drawings.



Recent Events at the Trail

UF's Moonshot Project "Scientist in Every Florida School" Kicks off at RRC



virtual visits, targeting information appropriately, and supporting scientists in becoming effective instructors, the workshop adjourned with a new teacher network and plans underway for a summer gathering, small steps in the giant leap toward a Scientist in Every Florida School. 



Readers of a certain age remember well the first lunar landing and the audacity necessary of the scientists, engineers, and political leaders to undertake such a monumental project. Now, the University of Florida (UF) has funded eight Moonshot projects to address some of society's most urgent problems. One of these projects titled "Scientist in Every Florida School" aims to speed delivery of information about Florida's natural systems to K-12 teachers and students. This Moonshot is leveraged by the newly formed Thompson Institute for Earth Systems (UF TIES) at the University of Florida, a communication-focused center that aims to advance public understanding of the most pressing environmental challenges in Florida and beyond. On January 19, teachers representing Lee, Palm Beach, Escambia, Seminole and Alachua counties gathered at the RRC to brainstorm, synthesize ideas, and form action plans to guide the project that could reach as many as 2.6 million school-children with live or web-based scientist interactions. Lively discussions were facilitated by Florida Museum (FM) and UF staff brought to the team by co-leaders and UF TIES Director Dr. Bruce MacFadden, and Dr. Pavlo Antonenko, UF College of Education. As the educators

FM staff members Sadie Mills and Adania Flemming briefed teachers on ways the UF Thompson Institute for Earth Systems will inspire Florida citizens through science communication and outreach. (Photo by Scott Flamand)

brainstormed, one shared that her students were already excited about closer access to scientists. With additional work to come on creating engaging

Kaylin Jablonski, RRC Assistant Coordinator and Bill Marquardt, FM Curator Emeritus shared how the Discovering the Calusa field trip teaches fourth graders using a historical ecology framework. We welcomed Kaylin to our staff in November. (Photo by Charles O'Connor)



Teachers from five Florida counties participated in the inaugural Moonshot retreat. (Photo by Scott Flamand)



Upcoming Events



(Photo by Scott Flamand)

Five Osprey Pair Nest at RRC

As we go to press, five osprey pair are incubating eggs on RRC property, three on artificial nest platforms, two on dead standing trees commonly known as snags. According to the Florida Fish and Wildlife Conservation Commission, the female will lay two to four eggs and it takes about 32 days for the eggs to hatch. Although the pairs started incubating on different days, mid to late-March should be hatching time for all the chicks, if the nesting is successful. Osprey feed on fish nearly 100% of the time so chick survival is of great interest this season as an indicator of any recovery of fish populations following the severe red tide event in Pine Island Sound.



ONE WORLD LECTURE

Understanding Plant Toxicity

with Marc Frank,
Extension Botanist,
University of
Florida Herbarium

Saturday, April 20, 10 a.m.
Free, Pre-Registration Required
Call 239-283-2062
Classroom, Calusa Heritage Trail

What exactly do we mean when we say a plant is poisonous? Why do plants even produce poisonous compounds? What factors influence how our bodies react when we are exposed to poisons? And how do we avoid exposure to plant toxins? Marc Frank, Extension Botanist, will provide answers to these questions and dispel some common misconceptions about plant toxicity. Marc manages the UF Herbarium's Plant Identification and Information Service, helping professionals and novices from across the state.



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