

Friends of the Randell Research Center

June 2012 • Vol. 11, No. 2

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

Part 1 in a series: *The Geology of Pine Island Sound and Wilson Cut*

by Denége Patterson

Wilson Cut is the only boat channel connecting the shallow waters of Pineland with the deeper waters of Pine Island Sound. In 1925, Graham and Mary Wilson bought property at Pineland, built up the shoreline with material from midden mounds at Pineland plus off-shore sediment, and constructed their home. Today it is known as the Tarpon Lodge.

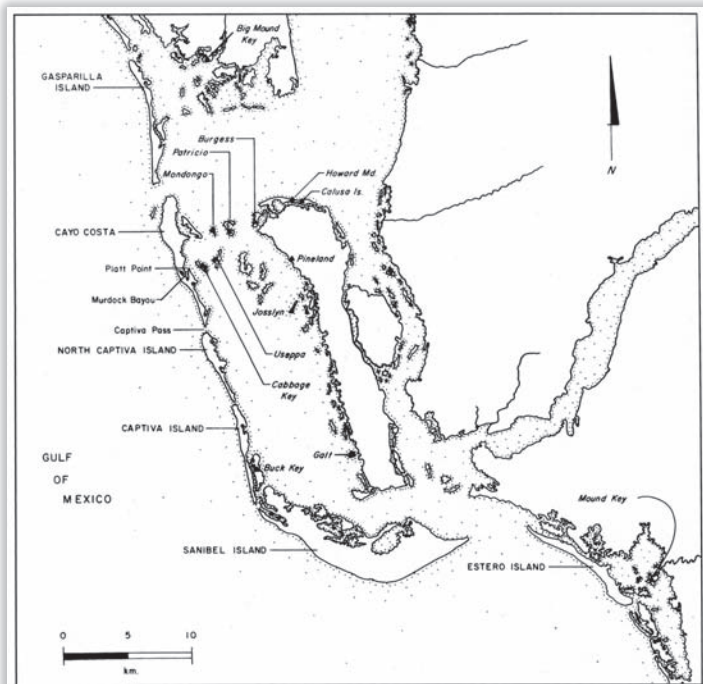
At about the same time, Graham Wilson hired local men to dig a boat channel. A resident of Pineland, Ted Smith, worked on that channel as a young man. He said, "We dug nine feet of solid rock out of that channel, to make the channel thirty feet wide. Under that nine-foot layer of rock we dug up pine trees that big around [indicating about three feet] with bark on them."

Where did the trees come from and how long were they there? How much time does it take for nine feet of limestone to solidify? Perhaps we can find a clue by looking at the geology of Pine Island Sound.

THE GEOLOGY OF PINE ISLAND SOUND

Visitors to the Calusa Heritage Trail at Pineland are treated to a magnificent panorama of Pine Island Sound from the summit of the Randell Mound. Distant gray-green islands frame the view of the Gulf of Mexico through Captiva Pass, six miles away.

The Gulf of Mexico is 150 million years old. It submerges more than half of the gently sloping west side of Florida's continental shelf before it reaches Pine Island. This continental shelf was rifted from the margin of the African continent (at Senegal) during the Triassic period about 200 million years ago. Then in the early Jurassic, the Gulf of Mexico opened as North America separated from South America. The Atlantic and Pacific Oceans flowed together near the Gulf until the Isthmus of Panama closed about two million years ago. Then elephants, camels, horses and other animals spread from continent to continent, leaving interesting fossils in the Peace River valley. On rare occasions today, worked fossils are found in the archaeological sites of Pine Island Sound; for example, fossilized sharks' teeth, drilled by indigenous people, and a fossilized dugong rib with wear marks indicating use as a grinder or pounder.



Charlotte Harbor and Pine Island Sound
(Drawing by W. Marquardt).

About 14500 B.C. the water level of the Gulf of Mexico was low, and the dry land mass of Florida was twice as wide as it is today. Upland forests grew along the ancient riverbeds and tributaries of what are today the Peace and Myakka Rivers. The highest points on Useppa Island, Cabbage Key, Patricia Island, and Burgess Island were once high sand dunes along these rivers. The Gulf was at least another 100 miles to the west. Early Paleo-Indian people hunted on these ridges. A stone spear point dating to between 8000 and 6500 B.C. was found in 1987 on a high part of Useppa, deposited before it was an island.

As the Ice Age came to an end and ice sheets melted, sea levels rose throughout the world. By 4500 B.C. Florida had taken on the shape with which we are familiar today. The water table filtered up through the limestone of Florida. The present day Lake Okeechobee filled and became the largest lake in Florida. For the first time in history, the Caloosahatchee River flowed.

Long, narrow, wave-dominated islands grew as turbulence of tides lifted shoaling sediment at the river channels, creating the first sand bars and spits. Over the next five hundred years the western edge of what would become Pine Island Sound

Geology of Pine Island Sound *Continued on page 2*

Geology of Pine Island Sound *Continued from page 1*

accumulated several beach ridges. These became the islands of Sanibel, Captiva, Cayo Costa, and Gasparilla.

At high tide, the salt water in the passes met the fresh water from three rivers, the Peace, the Myakka, and the Caloosahatchee. Thus was born the estuary, where salt water mixes with fresh water. It is one of the most biologically productive environments in the world.

The calm, shallow waters of the Sound maximized the rate of sedimentation. As drowned trees fell and the logs sank in the muck, layer upon layer of sediment covered the tree trunks. Geologists say that different types of limestone can form in either decades or centuries. The limestone in Wilson Cut may have solidified either rapidly or slowly over several thousand years, depending on its rate of accretion, its molecular structure, and pressure.

Dynamic forces today continue to shape the barrier islands. The approximate dates of openings and closings of the passes and the physical status of the islands in precolumbian times are inferred from evidence provided by geologists and zooarchaeologists. Species that prefer high or low salinity and live in dense populations at particular locations at given times provide clues. For example, the evidence suggests that Boca Grande Pass and San Carlos Bay were the two most ancient passes. Captiva Pass is hypothesized to have opened between

A.D. 650 and 1350. Buck Key, east of today's Captiva, may have been a barrier island until the southern end of Captiva developed a seaward promontory between A.D. 500 and 1000. Blind Pass, separating Sanibel and Captiva, may not have existed before A.D. 1340.

In more recent times, Captiva and North Captiva were united until a hurricane opened Redfish Pass in 1921. An old inlet called Packard Pass opened midway along North Captiva and was later obscured with accreted sediment. In 2004 North Captiva split again (further south) during Hurricane Charley, creating Charley Pass, which refilled within five years.

All of the west coast barrier islands are oriented north-south with one exception, Sanibel Island, which is oriented east-west. Seismic surveys show that this orientation was influenced by bedrock formations differing from that of the other islands.

All of the beach barrier islands have sand dune cores, as well as their immediate inland neighbors such as Punta Blanca, Mondongo, Patricio, Burgess Island, Cabbage Key, and Useppa. The highest sand ridges on the latter three islands may not have been submerged at all since before the last ice age.

Some of the islands of Pine Island Sound may have begun as oyster bars that grew on mud flats or sediment over limestone. For example, Part Island, about 2.5 miles



View toward Captiva Pass, from top of Randell Complex Mound 1. (Photo by W. Marquardt.)

due west of Pineland is the northernmost of a group of islands that appear to have been colonized by mangroves over oyster bars. The group includes Josslyn Island, and extends south to Panther Key off Pine Island Center.

Each of these islands and the estuary of Pine Island Sound have a diverse geologic, archaeological, and historical past. What Ted Smith observed was just one small part. More of this story will be told in future articles in this series. 🏠

To learn more:

Brown, Robin C.

1988 *Florida's Fossils*. Pineapple Press, Sarasota.

Randazzo, Anthony F. and

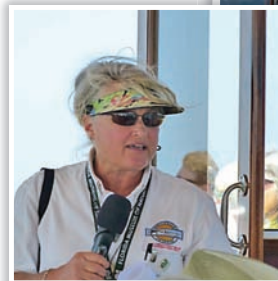
Douglas S. Jones

1997 *The Geology of Florida*. University Press of Florida, Gainesville.

Boat Tours a Popular Addition to Calusa Heritage Day *by Cindy Bear*

Nearly 850 people attended Calusa Heritage Day on March 10, 2012 and, for the first time, some of them arrived for the day of lectures, tours, artist demonstrations, and exhibits aboard the tour boat *Santiva* from Captiva Island. Expanding on our partnership with Captiva Cruises, which offers a weekly tour during season that includes lunch at the Tarpon Lodge and a tour of the Calusa Heritage Trail, the participants enjoyed the festival events without the hassle of a drive. And, while they were engaged in the many hands-on events, the *Santiva* traveled with a boat load of enthusiasts for a Harbor

History Tour. Narrated by RRC docent Dené Patterson, the tour covered the geology, archaeology, and history of the islands of Pine Island Sound. It was proclaimed so remarkable that we plan to offer this at least monthly in the 2013 season and look forward to even more folks arriving by boat for Calusa Heritage Day 2013. Be sure to watch our website at www.flmnh.ufl.edu/rrc/ for updates and information, or contact Captiva Cruises at 239-472-5300 for more information. 🏠



Dené Patterson (left) narrates Harbor History Tour (Photo by J. McConnell.).

The Santiva (above) in Wilson's Cut on Calusa Heritage Day (Photo by J. McConnell.).



Scouts Repair Trail Footbridge

by Cindy Bear



Chris Hunkins works on footbridge while Cindy Bear looks on. (Photos by C. O'Connor.)

Scout project. Chris developed plans and budgets, met with Gary Vinson and Cindy Bear for plan approval, and supervised the work of nearly a dozen other scouts and fathers on May 4 and 5. The bridge was constructed in 2004, endured Hurricane

Charley and the Florida sun, and was in need of refurbishing. Chris and his team have ensured the bridge is safe and attractive and will serve RRC visitors for many more years to come. 🏠

Congratulations and Thank You to Boy Scout Troop 20 member Chris Hunkins, who supervised the repair and reconstruction of the Calusa Heritage Trail footbridge for his Eagle



The finished product. Thank you, Chris and Troop 20!

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February 11, 2012 through May 15, 2012

(* indicates in-kind donations. Please let us know of any errors or omissions. Thank you for your support.)

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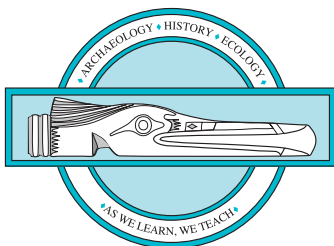
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Upcoming Events

Project Archaeology: Investigating Shelter Teacher Workshop




Time: 8:00 am - 5:00 pm on Saturday, October 13th and Saturday, October 20th

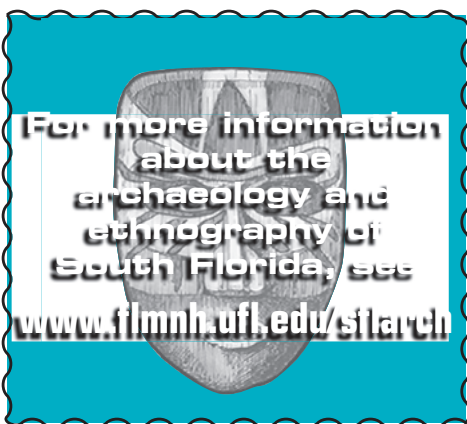
Location: The Randell Research Center, Calusa Heritage Trail Classroom, at Pineland on Pine Island in Lee County, Florida

"Project Archaeology: Investigating Shelter" is a supplementary science and social studies curriculum unit for grades 3 through 5. This two-day workshop will familiarize educators with archaeological resources for the classroom that can enhance learning opportunities in math, science, art, and social studies. The workshop is co-hosted by the Randell Research Center and the Florida Public Archaeology Network.

Workshop participants will receive archaeological education guides published by Project Archaeology that take students through an archaeological investigation, including accounts from

oral history, use of primary documents, and interpreting the archaeological record. Most of the activities will be indoors, but be prepared for outdoor walking tours.

The workshop is free, and reservations are first-come, first-serve with a cap of 25. Your workshop facilitators will be Cindy Bear, RRC Coordinator of Programs and Services; Annette Snapp, Director, Florida Public Archaeology Network (FPAN) Southwest Region; and Melissa Timo, Outreach Coordinator, FPAN Southwest Region. These three have extensive backgrounds in education, teacher training, and archaeology and know how to add fun and excitement to training events! If you are interested in attending, please contact Melissa Timo at (239) 590-1476 or mtimo@fgcu.edu. At registration, please let us know if you are interested in inservice or continuing education credits. 



RRC News

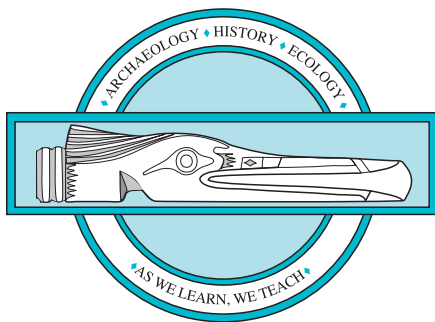
Editor: Bill Marquardt
Writers: Cindy Bear
Dené Patterson
Production: GBS Productions
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Friends of the Randell Research Center

Pineland, Florida • June 2012

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Dear Friend,

You are cordially invited to join, or renew your membership in, the RRC's support society, *Friends of the Randell Research Center*. All Friends of the RRC receive a quarterly newsletter and free admission to the Calusa Heritage Trail at Pineland. Supporters at higher levels are entitled to discounts on our books and merchandise, advance notice of programs, and special recognition. Your continuing support is vital to our mission. It means more research, more education, and continued site improvements at the Randell Research Center. Thank you.

Sincerely,

William H. Marquardt

Director

Randell Research Center



Please check the membership level you prefer, and send this form with your check payable to U. F. Foundation, to:

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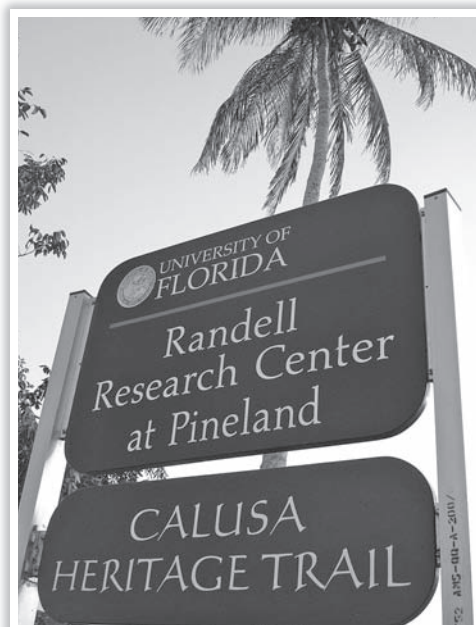


Photo by A. Bell



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