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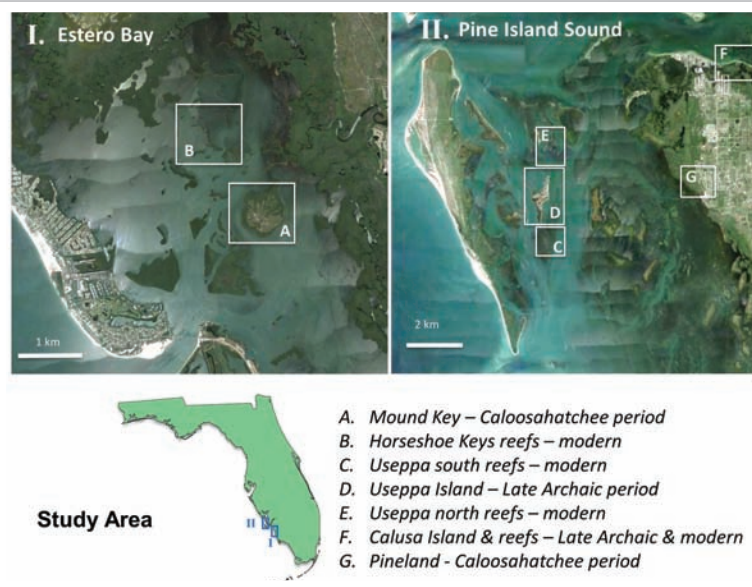
March 2016 • Vol. 15, No. 1

### Overharvesting of Seafood: Did the Indians Affect their Environment?

by Michael Savarese  
(Florida Gulf Coast University)

**The Calusa** were fisher-hunter-gatherers who relied upon the bounty of estuaries to provide adequate food for a large population and to develop a culturally and politically complex society. They collected a variety of shellfish species for food, but the American oyster (*Crassostrea virginica*), perhaps because of its widespread availability and abundance, was a staple food for many centuries, up to A.D. 1550. Many Calusa archaeological sites contain numerous oyster shells along with other mollusk shells and many fish bones. Archaeologists Karen Walker, Bill Marquardt, Victor Thompson, and I, a marine geologist, wondered whether the Calusa overharvested the oysters. Overharvesting could cause a shift to smaller sizes among individuals or, if severe enough, a permanent genetic change influencing future oyster growth or reproduction.

To investigate these questions, we sampled oyster-rich layers from middens from (1) the Late Archaic (around 2000–500 B.C.) of Useppa and Calusa Islands (in Pine Island Sound), and (2) the more recent (500 B.C.–A.D. 1500) Caloosahatchee I, II, and IV cultural periods of Mound Key (Estero Bay) and Pineland (Pine Island Sound). Radiocarbon dating was used to assign each sample to a cultural period. We used taphonomic grading, a method commonly employed in paleontology, to establish whether oysters were collected alive as food, or dead for building material. Taphonomic grading is an assessment of the quality of shell preservation. Bivalve mollusks, such as oysters, if collected alive, have pristine shell interiors. If collected dead from reefs, the oyster shells would have



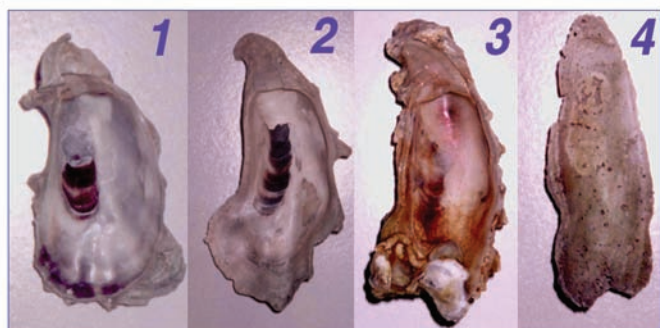
interiors encrusted or corroded by other organisms, such as boring sponges, oyster drills, and barnacles.

Samples from all shell midden layers showed relatively clean shell interiors. Dead oyster shells collected from oyster reefs in Estero Bay and Pine Island Sound for comparison had significantly more evidence of encrustation and corrosion. This confirms that throughout their history the Indian people collected oysters for food before using the shells as mound-building material.

But did the Calusa affect the oyster populations? When we measured the sizes of oysters and compared them across cultural periods and localities, oyster shells from times of peak Calusa population during the later Caloosahatchee periods were significantly smaller compared to the those from the earlier periods, and shells from both samples were smaller than those of modern oyster populations that live in protected areas that are not harvested at all. This shift to a smaller mean size and subsequent return to pre-Calusa size suggests that Native Americans did overharvest enough to cause a population shift, but they did not permanently influence the oysters' potential for growth. This pattern is not affected by climatic conditions; the size shift persists through a number of climatic warm and cool intervals.

Results from this study suggest that oysters always existed in abundance, though not to such an extent as to avoid all effects of overharvesting. Today, however, the American oyster is often commercially harvested from our Atlantic and Gulf of Mexico estuaries so intensively that oyster reef density and areal extent have been severely reduced. When coupled with other human-induced causes of estuarine health decline, such as habitat destruction, disease, and nutrient enrichment, historically productive oyster beds in places like Chesapeake

#### Biologic Taphonomic Grades

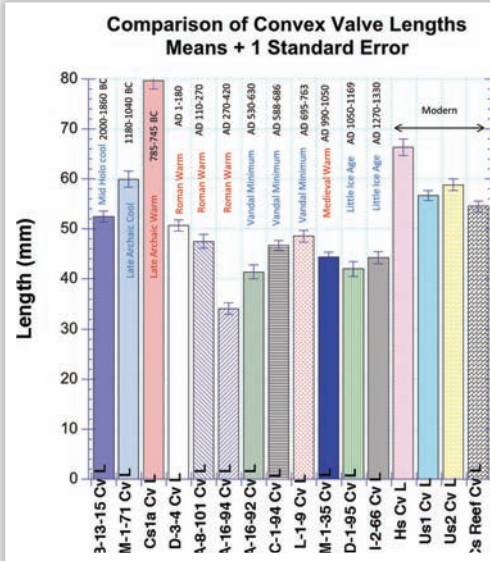


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Bay, New York Harbor, and Apalachicola, Florida are mere remnants of their former selves. Southwest Florida's oyster reefs, though not commercially harvested, have declined for other reasons, and this has contributed significantly to the degradation of our coastal waters.

Overharvesting of shellfish and finfish beyond a species' ability to sustain a healthy population size is a common



societal problem that must be resolved. Overharvesting, however, is not an exclusively modern occurrence. Our work shows that Indian peoples were also capable of influencing native species through over-fishing and over-hunting.



Summer 2014 excavations at Mound Key, which contains many oyster shells.

The Randell Research Center (Cindy Bear, coordinator) greatly facilitated this research, allowing use of the RRC's Ruby Gill House as a field headquarters. RRC volunteers Jim Friedlander, Alan Marcus, and Frank Potter kindly provided boat transportation. Field and laboratory assistance was provided by numerous FGCU students, but most significantly by Shanna Stingu, John Milcetic, Sara Hilderbrandt, Candise Forde, Jacqueline Fitzgerald, Wade Kemp, Kerri Foote, Emma Fain, Alex Maruszczak, and Jeff Rice.

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## Randy Wayne White Hosts Fundraiser for RRC

February 11 "Calusa Coast" Event at Doc Ford's Brings in Needed Funds

by Bill Marquardt

**More than 50 people** showed up at Doc Ford's Rum Bar & Grille in Captiva recently for an afternoon of food, cocktails, stories, and a fantastic auction of unusual items, all contributed for the benefit of the Randell Research Center endowment fund. New York Times–bestselling author Randy



Randy welcomes the crowd.  
(Photo by Wendy Webb.)

Wayne White hosted the event, welcoming the attendees and speaking about the importance of preserving and learning from archaeological sites such as Pineland. Fans of Randy's flew in from



Victor Mayeron (left) conducts the exciting live auction at Doc Ford's, February 11, 2016. (Photo by Bill Marquardt.)

as far away as California, Iowa, and Michigan. RRC staffers Cindy Bear and Linda Heffner were there, along with a number of RRC members. Making the trip from Gainesville were Florida Museum director Doug Jones, associate director Beverly Sensbach, development director Marie Emmerson, annual giving and development coordinator Kara Schwartz, development assistant Brittany Snipes, and archaeologists Karen Walker and Bill Marquardt.

Food and service were donated by Randy and his business partners, Marty Harritty and Mark Marinello. Doc's–Captiva manager Julie Grzeszak and her staff did a fine job helping set up for the event and made sure everyone got food and drinks. Victor Mayeron donated his services as auctioneer. Randy's donations to the auction included a guided trip to Cuba, a baseball signed by President Jimmy Carter, a signed manuscript of a Doc Ford novel, rare Cuban cigars, naming of a character in his next novel, a half-day flight in his seaplane piloted by Mark Futch, two signed framed photographs, and two week-long stays in his Pineland home.

Red Sox Hall-of-Famer Bill "Spaceman" Lee contributed a signed photo and bat, Kayak Voyagers donated a 5-day cruise for two to the Berry Islands in The Bahamas, Tarpon Lodge contributed a stay at the Lodge, and Useppa Island donated a stay in the Collier Inn and a one-year preferred membership in the Useppa Island Club. A Florida Gator football weekend with game tickets for two and lodging at Sweetwater Branch Inn was donated by the Florida Museum and Sweetwater Branch Inn, and Peter Sottong donated plated silver replicas of the pelican and deer head wooden artifacts from the Key Marco site. Charles O'Connor donated a complete giant fossil shark tooth and a half-day fossiling trip for four to the Peace River, while Bill Marquardt offered a tour of Pineland and Useppa Island, with lunch for two on Useppa. Proceeds from the auction will be put toward research, site interpretation, and education. We express our sincere appreciation for the outpouring of support by Randy and many others who contributed auction items and attended the event. Thank you all! 🍷

## FHC Grant Awarded to Interpret the Smith and Low Mounds!

As we go to print, we've just received notice that the Florida Humanities Council has granted funds for new signs to teach about the Smith and Low Mounds on an extended Calusa Heritage Trail. The 5 acres containing these mounds were purchased last year with funds donated by the Sear Family Foundation and the Calusa Land Trust. The Smith Mound is a burial

mound dating to A.D. 900 and the Low Mound is a midden mound dating to about A.D. 300. The grant funds will primarily cover the costs associated with developing new artwork by artist Merald Clark and the fabrication and installation of the signs. Merald is responsible for the dynamic and informational signage currently seen by visitors on the Calusa Heritage Trail.

We anticipate opening the area in March of 2017 with a public event. However, we are still in the process of raising the required funds to extend the fences and clear the invasive exotic vegetation. To make a donation earmarked for this project, please contact Cindy Bear at [clbear@ufl.edu](mailto:clbear@ufl.edu) or 239-283-6168.





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Each year the Randell Research Center recognizes all those who have donated \$100 or more during the previous calendar year by listing them in the Annual Honor Roll. We extend our heartfelt appreciation for the support that these and all our gifts represent (\* = in-kind services).

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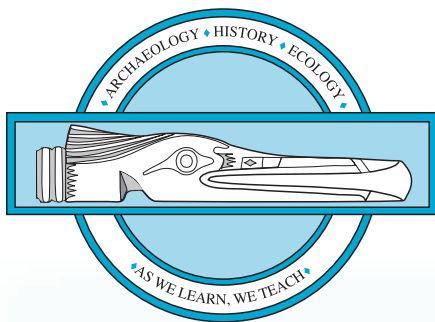


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## Friends of the Randell Research Center

Pineland, Florida • March 2016  
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Sincerely,

William H. Marquardt  
Director  
Randell Research Center



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