



Friends of the Randell Research Center

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Did the Calusa Have A “Great Fishery of Mullet”?

*New Analysis Reveals
Interesting Patterns*

by Karen Walker

A hallmark of complex human societies is the existence of surplus foods. Surplus foods enable people, past and present, to spend time on things other than producing food. Mullet, especially the striped mullet (*Mugil cephalus*), because of their predictable, mass-schooling behavior and preservability via dry-smoking, is the most likely fish to have provided a surplus food for southwest Florida's non-agricultural Calusa people. Moreover, López de Velasco, writing in about 1570, stated that there was in southwest Florida a “great fishery of mullet [*licias*], which [the Indians] catch in nets as in Spain.”

And yet, mullet remains were not recorded as particularly abundant in archaeological sites of the region. Moreover, mullet bones were no more numerous than bones or individual counts of many other kinds of fishes.

My original conclusion in 1992, published in *Culture and Environment in the Domain of the Calusa*, was that in the subtropical Pine Island Sound region, finfish and shellfish were diverse and abundant year-round, so perhaps there was no need for a storable surplus. Results from analyses of Pineland samples, published in 2013 in *The Archaeology of Pineland*, did not change my position.

However, the 1570 Velasco statement bothered me for many years. What if sample size made a difference? What if other biases existed? What about time periods?

The majority of the earlier work which indicated little support for a substantial mullet fishery was derived from sites located across the region. They were small samples, measuring 50x50x10 cm and involved fine-mesh screening, the use of screen about the size of window screen.

I turned my attention to other curated Pineland samples. Since about 1990, many volunteers hand-collected and



Calusa seine-netting in shallow Pine Island Sound just off the shoreline of Pineland..
(Art by Merald Clark.)

cleaned all animal bones, including fish otoliths, from 1/4-inch-mesh screens during various Pineland excavations. These samples were from larger areas, often 200x200x10 cm. The resulting hundreds of bags of bone were given catalog numbers, boxed and shelved at our parent museum, the Florida Museum, at the University of Florida (UF), in Gainesville. Over the years, UF students taking the graduate Zooarchaeology course were assigned some of these samples to analyze and report on. I chose the samples so that different time periods, ranging from the Caloosahatchee I-late (A.D. 1-500) through Caloosahatchee IV (A.D. 1350-1500) periods would be represented.

As the number of analyzed samples increased, what emerged was a pattern where the samples dating to the latest time period, Caloosahatchee IV, the height of Calusa society, contained significantly more mullet remains. Although I could not be certain of the accuracy of the student work, I was intrigued that this suggested support for Velasco's observation.

Thus, as part of a recent, broader, collaborative National Science Foundation funded study with the University of Georgia (Victor Thompson), Florida Gulf Coast University (Mike Savarese), and the Florida Museum (William Marquardt), I had the opportunity to re-evaluate my earlier conclusion and again ask, “Did the Calusa have a great fishery of mullet?”

To do this, I re-examined a selection of the fine-screened, smaller samples that had been analyzed by several people,

Continued on page 2



including myself, and another selection of the coarse-screened, larger samples analyzed by students. Samples came from Pineland, Mound Key, and other sites. The overall result was that re-analysis resulted in increased numbers of identified mullet bones (NISP: Number of Identified Specimens) and number of individual mullets (MNI: Minimum Number of Individuals). This was true also for the percentage of mullet remains relative to all fishes.

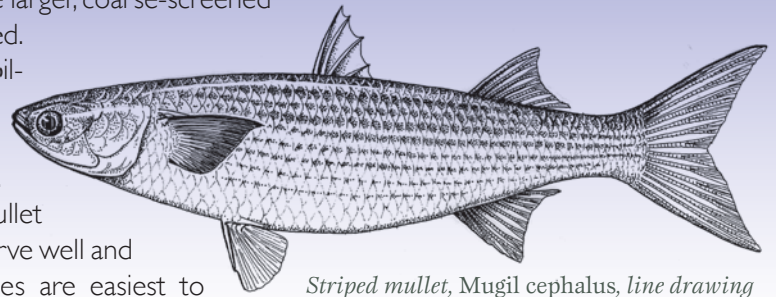
Interestingly, though, the Mound Key results produced higher mullet percentages for the IV period with the latest two samples showing 35% NISP and 58% MNI as the high percentages of mullet for all fishes consumed.

Several sources of bias likely explain the dampened mullet numbers of the earlier work. First, small sample and screen sizes tend to produce large numbers of remains from very small fishes. One sample, for example, can contain the bones of a couple of hundred pinfish, which grow to only several inches long, but those of only one, much larger mullet, which de-emphasizes the mullet. Balancing these

samples with the larger, coarse-screened samples is needed.

Analyst variability is another bias, even with larger samples. Because mullet vertebrae preserve well and the thoracic ones are easiest to identify, a common short-cut method of figuring MNI was used in the earlier work. An average of 11 thoracic vertebrae was used to represent one individual, and if 12 or more were found, then 2 individuals were counted, and so on. And if one's interpretive focus is on MNI rather than NISP, then one might not bother identifying the remaining vertebrae, all of which are also identifiable with close study. The shortcut results in undercounted specimens (NISP).

The nature of the mullet's skeleton itself is likely another factor in earlier results. In many fishes, the highly diagnostic elements of dentaries, premaxillae, and otoliths are frequently found and identified, accounting for many MNIs. Mullet mouthparts and otoliths, however, are very fragile and rarely recovered, especially by the coarser screens. Also, the mullet atlas is unlike the classic fish atlas; it is similar in form to



Striped mullet, Mugil cephalus, line drawing by Merald Clark.

other vertebrae and is easily missed.

Thus, the re-analysis demonstrates that mullet remains were underrepresented in the earlier work. It also confirms the pattern of more mullet during the Caloosahatchee IV time period. But with 14% NISP and 23% MNI being the "high" percentages of mullet for all fishes consumed at Pineland, these numbers do not translate to a "great fishery of mullet."

Interestingly, though, the Mound Key results produced higher mullet percentages for the IV period with the latest two samples showing 35% NISP and 58% MNI as the high percentages of mullet for all fishes consumed. Although more analyzed samples in the future may alter this view, for now it appears that the "great mullet fishery" of the Calusa may have been a late phenomenon and one centered at Mound Key more-so than at Pineland.

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Last Parcel of Land on Mound Key Bought by Lee County

Island in Estero Bay was once Capital of the Calusa Nation

by Bill Marquardt

Pedro Menéndez de Avilés, appointed by the King of Spain to advance interests in Florida, set foot on Mound Key with a formidable entourage of some 20 officers, 200 soldiers, flag bearers, and musicians. It was winter, 1566, and Menéndez had been invited to dinner in the palatial home of Calusa King Caalus, the undisputed ruler of South Florida. Pipers played and drummers drummed as the Spaniards marched to the top of a 30-foot-tall hill dominated by a structure that could hold 2,000 people. Menéndez and the officers and musicians entered, but – wary of betrayal – Menéndez ordered his soldiers to remain outside with the fuses of their portable matchlock cannons smoldering.



Mound Key seen from the air in 1994. (Photo by Corbett Torrence.)



Crew outlines edges of outer wall of Fort San Antón de Carlos, 2017. (Photo by Victor Thompson.)

Outside the palace, 500 young Calusa girls sang joyous songs. Inside, gifts were exchanged and diplomatic speeches were offered. The Calusa brought a sizable feast of fish and shellfish, the Spaniards contributed honey, biscuits, wine, and quince. An uneasy alliance was arranged, and by 1567 a fort and mission known as San Antón de Carlos had been established. Spanish ambitions went unrealized, however, and by June, 1569 they had withdrawn from the island.

Recent work by a team from the Florida Museum, the University of Georgia, Florida Gulf Coast University, and Flagler College has resulted in the identification of the

remains of the Calusa king's house on Mound 1; the site of Fort San Antón de Carlos; and engineered watercourts that served to capture and store fish that supported the Calusa population.

Now, more than 450 years after the Spaniards abandoned their fort and mission, on September 17, 2019, the Lee County Commission voted to buy the last privately owned property on Mound Key, the Calusa capital. The county's 20/20 conservation program will pay \$860,000 for the McGee property, the last 9.5 acres in private ownership. Most of the 113-acre island has been owned by the state since the 1960s.

The parcel contains a substantial portion and the mouth of the great canal; both of the massive water courts; intact ridges above the courts that reveal evidence of mass food preparation during the heyday of the Calusa; a large part of Mound 2— and waterlogged deposits with preservation of organic materials such as wood, cordage, and netting. Logistically, the parcel

is accessible from a sturdy dock built by the McGees, and the ground is free of most vegetation.

Archaeological potential is exceptionally high. The McGee brothers – Ted, Todd, and Tim – carefully preserved the land, leaving artifacts in place on the surface and prohibiting digging in the deposits except by trained professionals. Their parcel has been used as a goat farm for many years, and despite trepidation that the goats would destroy archaeological deposits, quite the opposite is true. The goats eat most of the vegetation on the ground and what they can reach in the trees, but – unlike wild hogs – they do not dig beneath the surface nor cause erosion damage. The result is an open landscape where topography is evident and remote-sensing techniques such as ground-penetrating radar can be employed with ease.

To learn more about ongoing work on Mound Key, look for its Facebook site, or read past articles in this newsletter, available online at <https://www.floridamuseum.ufl.edu/rrc/newsletter/>. The following newsletters contain more on Mound Key: Vol. 13, No. 2; Vol. 14, No. 1; Vol. 15, No. 1; Vol. 15, No. 2; Vol. 16, No. 1; Vol. 16, No. 3.



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New Flag Pole for Historic Post Office

Harbor History Tours Return in 2020



Andy Jendrusiak, RRC Groundskeeper, raises the flag on the new flag pole he installed at the Pineland Post Office.
(Photo by Bill Marquardt.)

located in a small building on a Calusa midden-mound across from where the Tarpon Lodge sits today. In 1924 or 1925, under postmaster Ruby Vance Gill, a storm washed it away. Soon after, Ruby built a post office just west of her two-story home on Pineland Road. It is unknown how long that structure stood, Pine Island resident Florence Hiltbrand, interviewed by author Elaine Jordan, noted, "you could see the daylight all the way through it". The current building was constructed in 1925, precisely when is uncertain. Buffered by a fringe of mangroves, the distinctive building has endured nine hurricanes and subsequent repairs. It is our hope the new pole, replacing the rusted one, does justice to the resilience of Pineland.

*I*t gives us great pleasure to announce the installation of a new flag pole at the Pineland Post Office, replacing the worn and corroded pole that stood through Hurricanes Charley and Irma.

The Pineland Post Office was established in 1902. Until 1917, it was

*T*he Randell Research Center is partnering with Captiva Cruises to offer five exciting Harbor History Boat Tours of Northern Pine Island Sound each departing on a Tuesday from Pineland at 12:30 p.m. The 2020 dates are Tuesdays, Jan. 7, Feb. 4 and 18, and March 3 and 24.

The 90-minute, round-trip will be aboard the *Santiva*, a stable pontoon boat with shade over most of the seats. Our narrator will be Denége Patterson, author of *A Tour of the Islands of Pine Island Sound: Their Geology, Archaeology, and History*. You will learn about the surprises encountered when Wilson's Cut was dredged, discover why the stories of Useppa Island are a metaphor for all the islands, learn how mysterious islands received their names, and explore



Boat by and learn about the fish houses at Captiva Shoals on the Harbor History Boat Tour. (Photo by Ron Mayhew.)

how geologic processes worked to create the Pine Island estuary.

Your reservations and \$35 per adult payment are made with Captiva Cruises by calling at (239) 472-5300. Car parking, check-in and pre-trip orientation will be at noon on the day of your reservation in the Classroom at Calusa Heritage Trail, 13810 Waterfront Drive, Pineland, FL. If you have questions, please call Captiva Cruises, (239) 472-5300.

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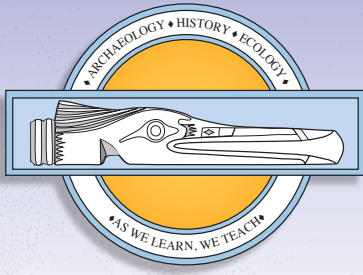


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Friends of the Randell Research Center

Pineland, Florida • December 2019
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Sincerely,

Cindy Bear
Co-Director
Randell Research Center



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Photo by A. Bell.

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