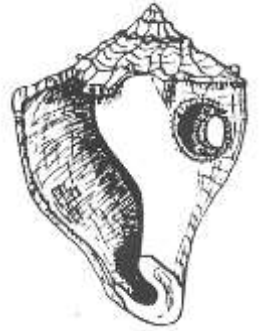


SWFAS

NEWSLETTER

THE SOUTHWEST FLORIDA ARCHAEOLOGICAL SOCIETY



JOHN G. BERIAULT, ACTING EDITOR VOLUME 19, NUMBER 2 FEBRUARY, 2003



Seminole canoe trail in what is purported to be the Everglades in 1908. This is probably the area near Ochopee or east in what is now the Stairsteps near Turner River. But in 1908 I guess you would call it the Everglades... from A.M. Dimmock's article, [On to Marco Pass](#), *Outing Magazine*, January, 1909.

A PLEA FROM THE PRESIDENT OF THE FLORIDA ARCHAEOLOGICAL COUNCIL...

The following is from an email message by Robert Austin:

As you may have heard, the Governor has recommended the merger of the Department of Community Affairs and the Department of State.

The new agency will be called the Department of State and Community Partnerships and will be effective on July 1, 2003. The merger will result in many changes for the Division of Historical Resources, not all of which have been finalized. However, what is known is that the Department of State may lose 194 positions out of approximately 600 in an effort to reduce state costs. The state library will be physically moved to FSU.

Collections, the museum, San Luis, and other properties managed by the Division are to be moved to the Department of Environmental Protection's Recreation and Parks. Division staff will likely be cut with some positions shifting to DEP. The future of Compliance Review at this point is uncertain. In addition, there are rumors that the Business Trust Fund, which supplies monies for Historic Preservation Grants-in-Aid, is in danger of being raided or discontinued entirely.

Inside this Newsletter

- 1 We have Moved! Florida Gulf Coast University is the new site of our General Meetings**
- 2 Can You Canoe? Read Robert Gore, Part Four...**

**DON'T FORGET
QUESTIONNAIRE SENT
IN LAST ISSUE!!! –
PLEASE FILL OUT**

This is incredibly bad news for cultural resources! ...these measures appear to be headed for quick legislative approval. However, there is still time to contact your legislators and register your protest to the dismantling of DHR and to urge them in strongest terms to retain the Division's Compliance Review program in its current form with appropriate staff and funding to carry out its federally and state mandated duties.

PLEASE WRITE OR EMAIL YOUR LEGISLATORS NOW!! IT IS CRITICAL THAT THEY HEAR FROM THOSE OF US WHO CONSIDER CULTURAL RESOURCES AND HISTORIC PRESERVATION PROGRAMS ESSENTIAL TO MAINTAINING THE HIGH QUALITY OF LIFE THAT WE ENJOY IN FLORIDA.

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About SWFAS

The directorate: President Tom Franchino, first vice president Corbett Torrence second vice president Theresa Schoeber, membership secretary Charlie Strader, treasurer Charlie Strader, recording secretary Jo Ann Grey, directors Bud House, Sue Long, Liz Clements, Jo Ann Grey, Don Taggart, Jack Thompson, John Beriault, Charlie Strader, John Worth, and Dr Susan Stans.

The committees: Field: Beriault, 434-0624; Hospitality: position open; Membership: Charlie Strader, 941-992-6133; Publicity: Dottie Thompson, 597-2269; Sales: position open; Finances, Jack Thompson 597-2269, 774-8517; Lab: (774-8517), Art Lee, 261-4939, Walt Buschelman, 775-9734, Jack Thompson, 597-2269.

To Join: Address your check to the Southwest Florida Archaeological Society, P.O. Box 9965, Naples, FL 34101. Dues are: Individual \$20, Individual Sustaining \$50.00, Family \$35, Student \$15.

Any questions, comments, contributions to the Newsletter: John G. Beriault, acting editor, P.O. Box 9074, Naples, FL 34101-9074 or Email to: JGBeriault@aol.com.

Let's now look at a completely pragmatic but even more important consideration: Did the aboriginals know just how much toil building these two canals would entail? The yes or no answer remains unknown, but is also moot. The canals were excavated. But by whom--villagers? hired help? prisoners? all three groups?--is yet another unanswered question. It may even have been a sort of "public works" conglomerate of different villages around the Lake, all working together to get the job done, because their combined labor would benefit everyone. Whether this "all for one, one for all" philosophy prevailed is, again, unknown. What cannot be denied is that the excavation of 317,000 cubic feet of dirt per mile X 2 miles, twice, for nearly 1,268,000 total cubic feet, is no small matter. Even if it was mostly "sugar sand."

So let's turn now to considering the actual construction of the Ortona canals. The methodology was seemingly simple: The Ortona canals were dug by hand. It has been postulated that the aboriginals used wooden, shell, and probably bone tools as excavators. Although certainly effective (as the resulting canals indicate) this is not work for a Sunday afternoon--it is, instead, a monumental labor project requiring scores of weeks--and certainly a large number of people. To be sure, neither of these stipulations are impossible. Rather, they are mandated. We see today, in a parallel example,



POTSHERDS AND POTSHOTS... AN ONGOING SERIES BY ROBERT GORE

THE ORTONA ENIGMAS: CANOES, CANALS, COMMERCE, AND CONVEYANCE: IV. "LIFT DAT SHELL-SCOOP, TOTE DAT BUSHEL BASKET"

THE DATE BOOK

February 12th SWFAS Board Meeting – Hampton Inn, Bonita Springs, 7:00 PM

February 19^h SWFAS Meeting 7:30 PM Howard Hall, Room 111, Florida Gulf Coast University

large numbers of Chinese coolies working in concert and en masse to excavate numerous canals, channels, and other waterways in the Yang Tze Valley on the one hand, and shore up sagging river

the work force, that would mean that no more than 150 men were available as laborers, if only the Ortona villagers were used. Within these 150 men were

particularly as the ditch got deeper and longer) let us further assume that 50% (viz. 50 men) dug and the other 50 men (50%) hauled.

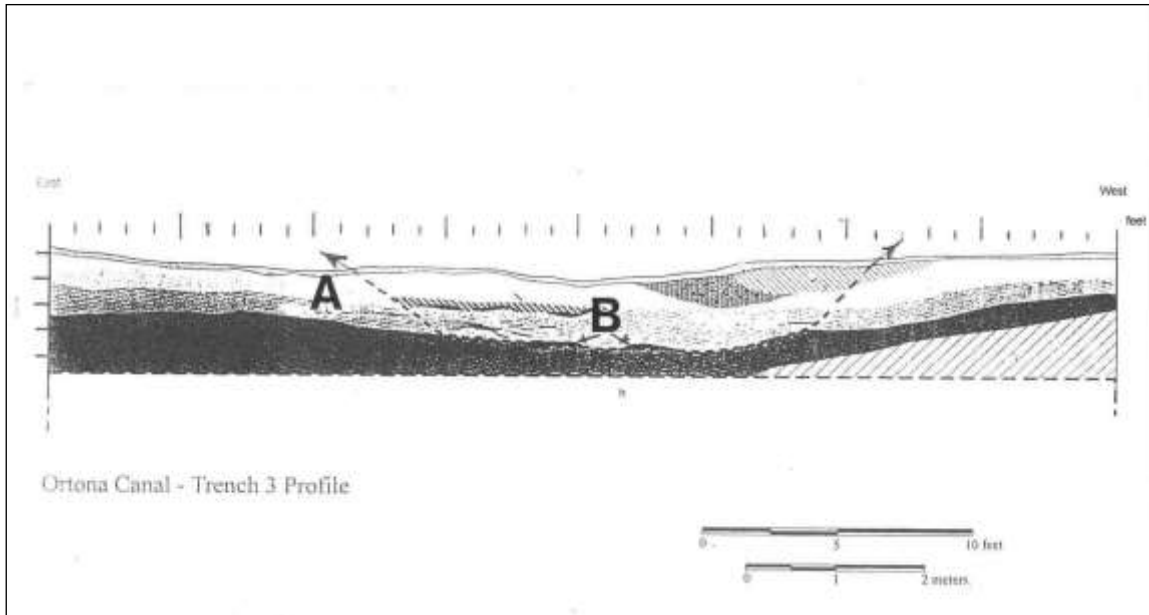


Figure 8: Cross-section of a portion of the mostly filled in Ortona Canal. Dashed lines and arrows show approximate original configuration. A) Sandy layers; B) Organic sediments on original canal floor. Tick marks in feet. Redrawn and modified from Carr et al., 2002.

banks and build flood dikes on the other, following a tradition begun in the days of the Chinese Emperors. But did the Ortona or related peoples have enough workers? Collectively, they must have. Individually by tribes maybe they did not.

The Ortona canals crisscrossed, in part, four modern sections of land, while the actual village-mound complex, outlying mounds, and canals occupied about a two square mile area (the equivalent of two modern real estate sections of land). The complex is estimated to have housed some 200-300 people. Assuming that about half would be women.- and ignoring children as not being countable or inclusive in

numbered the village hierarchy (excluded from work because they were rulers or shamans), and the elderly and infirm. Thus, a reasonable estimate would be that about 100 men would have done the majority of the labor. Now, assuming a division of labor between diggers and haulers (more effective than having an individual both dig and then haul away what he dug,

modern bushel. Thus, excavation of 316,800 cubic feet of dirt would entail 254,707-bushel basketful per mile. With the combined labor split equally among 100 men, 50 of them would still have to fill, and the other 50 haul away, each a grand total of 254,707 bushels to complete the digging of just one mile of canal. Looking at just the diggers, if the filling time, using sticks, shells, canoe paddles as shovels, straw baskets as make-

Next, assume that the diggers put the excavated soils into bushel-sized baskets. We have already calculated that to excavate a one mile long ditch, 3 feet deep and 20 feet wide, requires the removal of at least 316,800 cubic feet of dirt, peat and rocks. (And never mind the trees, bushes, and grasses that grew in the canal-path). A cubic foot of dirt is equivalent to about 0.8 a

shift buckets, and so on, required (let us quite generously say) 5 minutes for each bushel, then one man, working non-stop, could fill 12 bushels each hour. Therefore, 50 digging men would fill 600 bushels every hour, with the other 50 men hauling the 600 baskets away. At a rate of 600 bushels per hour it would take at least 425 hours (about 53 8-hour days) to remove 254,707 bushels or a mile's equivalent of dirt. Now, let us suppose instead that 100 men were diggers. If all 100 men dug the canals, and each worked a "standard" 8-hour day, then 100 men would fill 1,200 bushels every hour (dumping it, say, canal-side). But the overall digging time would be reduced to about 212 hours, or about 26 8-hour days, to remove the same amount of dirt. True, even more people might have been involved, and the excavations may have continued both day and night, in which case the digging time for a one mile canal might drop to about three weeks or less. But even having more diggers (and

fewer, or no haulers) might still put an onerous burden on both, because they would be working, say, 16 hour days. Moreover, anyone who has stood on the Hoover Dike at night during the high

mosquito season could fully appreciate why this would probably try the patience of any Ortonan saint during the declining wet season.

But given the magnitude of the job, time may not have been of the essence in this case. In fact, the end result of working just an 8-hour day, with no time off for sickness, injury, calling In drunk, weekends, or holidays, would require 50 men, digging just one mile of canal, to put in nearly two solid months of labor. Concomitantly, four miles of canals would require 8 months of labor, or 2/3 of the working year, and the removal of over a million bushels of dirt if done under reasonable conditions, and the suppositions noted above. The image of a train of coal-hoppers moving in a circle, filling up, moving away, dropping their load, and queuing up again, comes to mind. So, too, does a

colony of leaf-cutter ants.

All this assumes, of course, that the Ortona engineers were 1) working only 8 hour days; 2) excavating in a straight line; and 3)

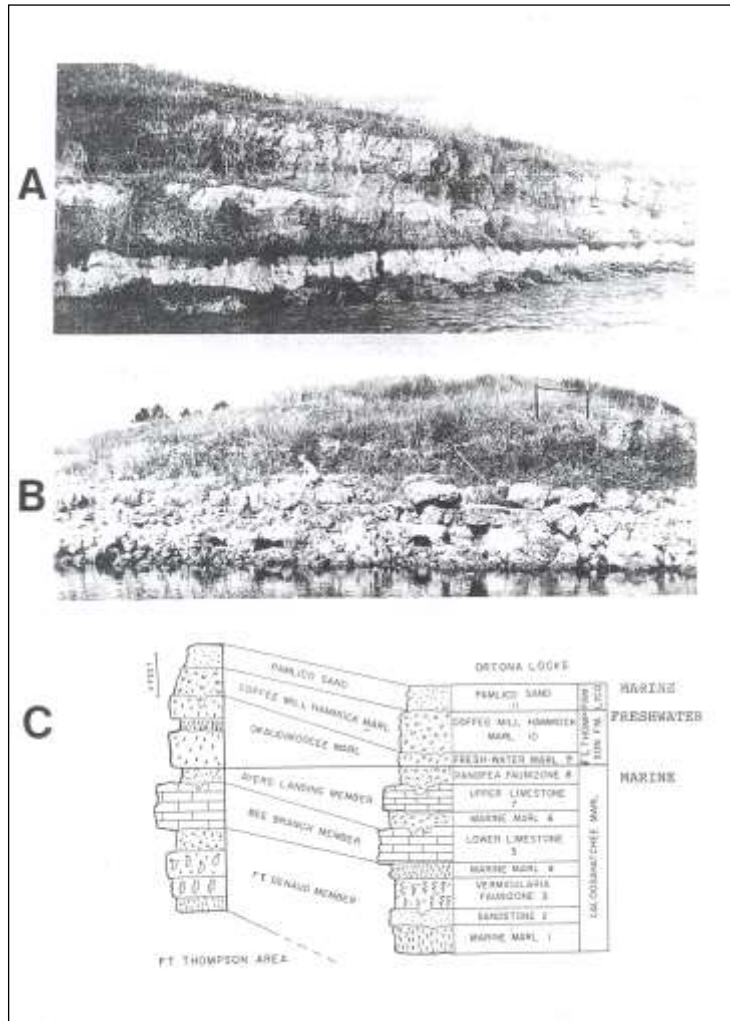


Figure 9: Cross-section photographs and schematic diagram of the surface geological stratigraphic sections at A) Lake Flirt Basin; B) Ortona Locks; C) Schematic cross-section of typical geological layers. In the photograph light-colored beds are freshwater marls; dark colored bands are sandy mucks. The rocks in the middle photo- graph were dredged from beneath the Caloosahatchee River bed. Modified from Brooks, 1974; Parker, 1974.

through "virgin" land, i.e. not following any pre-existing sinuous watercourse caused by runoff. But did they actually dig three feet down and 20 feet across? Maybe not. Perhaps the canal course was laid out, and a preliminary 1 foot deep X 20 foot wide channel was excavated. Then, during the subsequent rainy season the natural flow of runoff water would further excavate the shallow ditch, making it deeper. During the next dry season the ditch could be dressed and evened, and its slope adjusted until it finally (perhaps over several seasons) reached an easily maintained and required depth, slope, and width. (Figure 8]

An interesting feature on the surveyor plat maps is that both canals dead-end into a swamp--Turkey Creek on the west, and the unnamed swamp on the east. The eastern canal also appears to flow for some distance between the Y-shaped prongs of the right hand swamp before entering it. This suggests that both swamp termination-points were carefully chosen. Now, the interesting thing

about swamps is that, phytographically, they show the effects and extent of their hydrology vegetationally; viz. both yearly inundation, pondings, and water-

swamps at an angle of almost 45 degrees from the upper baseline. In fact, the two canals, like the aforementioned engineering dividers, form almost a perfect right triangle--on the survey plat maps at least. If the right triangle aspect is indeed correct (and not a surveyor's adjustment), this raises the Ortonan engineering aptitude to yet another level. Did they have a basic knowledge of plane geometry?

But now consider this. By rotating the western canal upward or downward, its disemboguing point is removed from the eastward curve of Turkey Creek Swamp nearest the mound complex. Now to reach the swamp the canal would either have to be lengthened, or rotated still farther to the north or south. For example, to reconnect the canal to the next curve of the swamp, farther north, would require changing the canal's "angle of attack" from 45 degrees to about 30 degrees, enabling its length to remain the same as it was at 45 degrees. Why didn't

the Ortonan engineers do this? One guess is that the canal would now extend very close to due

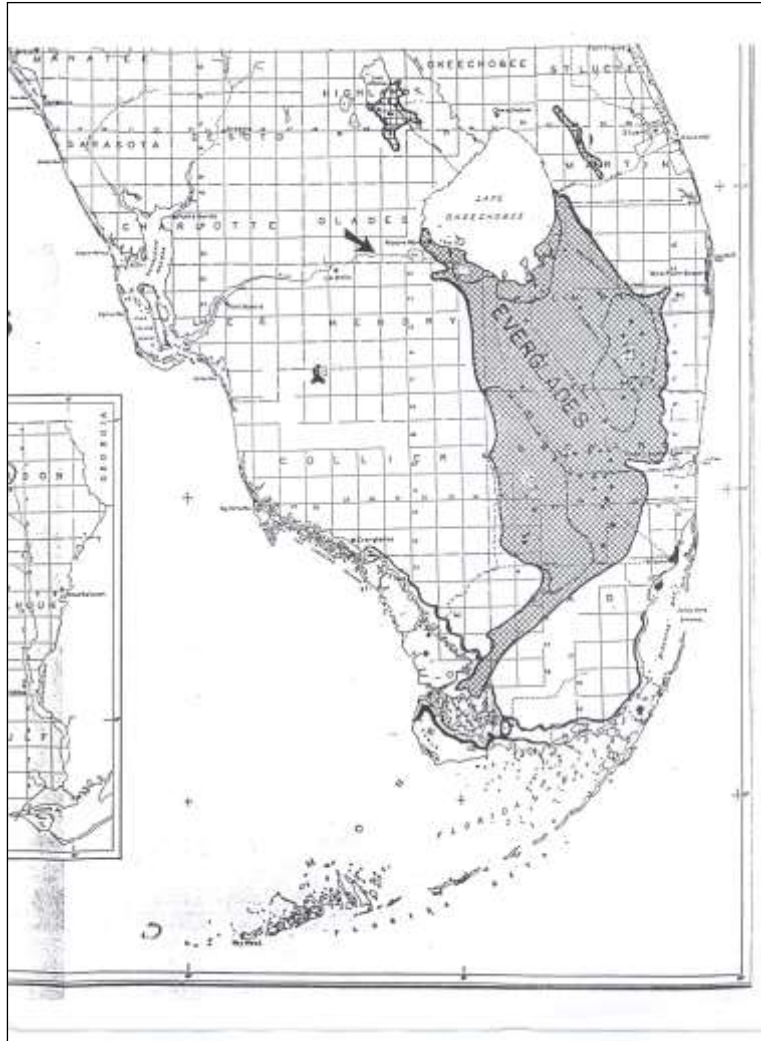


Figure 10: Map of peat deposits (magnified) in and around Lake Okeechobee and the upper Caloosahatchee River. Arrow indicates Ortona Site. From Davis, 1946, figure 1.

flowways. Which raises another interesting situation. The two canals terminate directly in their respective

west-east and thereby be less effective in draining water southward off the adjacent uplands. A second guess is that the canoe journey through the Turkey Creek Swamp down to the Caloosahatchee River would then be concomitantly lengthened.

On the other hand, had they swung the western canal southward to an "angle of attack" of some 60 degrees the canal length would have remained about the same as at the 45 degree angle. But sawgrass (labeled "intractable" on the Tannehill survey map), and the presence of Coffee Mill Hammock, an upland area between the two canals, may have had a decided impact in the decision not to do so. Poling through the swamp, presumably always filled with some water, may have been substantially easier. All this supposition, of course, assumes that what was seen and indicated in 1871 was present in some similar form around 450 AD. [Figure 9]

Additionally interesting questions regarding canal construction can now be raised, beginning with the geological environment. A geological cross-section of the Ortona area suggests that as long as the aboriginals did not excavate too deeply, the main surficial strata (based on present-day data) which they would have encountered was a fine "silica" sand, known colloquially as "sugar sand" because of its whiteness and grain size. The easy part is that sugar sand can be easily excavated; the hard part is that the side walls of any excavation tend to collapse inwardly and refill

the excavation. This would be especially true (and bothersome) in areas where sugar sand also formed the banks for the waterway or pond. The scouring effects of fast-moving water would present an even more onerous problem than quieter water.

Which then raises another possibility: Was the area where the two canals were excavated at one time covered with peat? In his monumental work on The Peat Deposits of Florida in 1946, Dr. John H. Davis provided maps that indicated that "Sawgrass Peat" occurred in layers from 1-3 feet deep all around the western margins of Lake Okeechobee and the Shark River Valley. A separate large area extending westward along the Caloosahatchee River was indicated as having peat ranging from 0-1 feet in depth. Two questions can then be raised: Did the Ortona people line their excavated canal banks with peat to delay or prevent collapse? And, did they burn peat, substituting it as an easily ignitable fuel in an area often so completely covered in water that trees, dead or alive, might be too water-sodden to burn? The answers to these intriguing questions remain to be determined. (Figure 10)

Now then, where does one put a million bushels of excavated dirt? Very simple. Into basal fill and platform mounds. This then implies that canal building preceded, at least for a while, the mound-village. It also stands to reason. How else would the Ortona easily get a mile away from the Caloosahatchee River during the wet season? The scenario might then have been: First, build a shallow ditch from the River up toward the higher ground. Second, let seasonal surficial waterflows enlarge or scour the original hand-built ditch from the higher land down to the River. Third, once a relatively higher and drier settlement site was determined then begin to place all the excavated dirt on it in the form of mounds. Presto! A village foundation high and dry above the waterlands. And a place to come home to after a hard day's work.

Note, as well, that the canal line on the eastern side of the construction site is slightly more erratic than the one on the western side, which is quite straight. This suggests that the eastern canal was built first. Lying as it did above the Caloosahatchee rapids, its main destination was quite probably Lake Okeechobee via the large body of water known as Lake Hicpochee (to the Seminoles, anyway) into which it drains. But the eastern or right-side canal may also have provided access into the Everglades, Shark River, and ultimately Florida Bay.

The left side or western canal may well have been built using lessons first learned from constructing the eastern (right side) canal. The western canal, approximately one mile longer than its eastern counterpart, also bypassed most, if not all, of the formidable Caloosahatchee rapids, and at the same time gave a protected western entryway into the middle Caloosahatchee River.

The Ortona Saga continues, in this Newsletter, next month.

FEBRUARY MEETING

Corbett Torrence and Theresa Schober, professional archaeologists and Co-Directors of the Cultural Resource Management Program at Florida Gulf Coast University, will be the speakers at the February 19th meeting of the Southwest Florida Archaeological Society. The title of their talk will be "A View Through Time: Archaeological Investigations at Estero Island Site". A total of 115 volunteers employed a variety of archaeological techniques including topographic survey, excavation, and ground penetrating radar to determine the extent, age, structure, content and integrity of the archaeological deposits at the site. Corbett and Theresa are officers of SWFAS.

The meeting will be held at Florida Gulf Coast University in Howard Hall, Room 111, at 7:30 P.M. SWFAS members are invited to attend a reception for the volunteers who worked on the project at 6:30 P.M.. Talk title: A View Through Time: Archaeological Investigations at Estero Island Site: Corbett Torrence and Theresa Schober will summarize the results of an archaeological investigation of the Estero Island site and place their findings in broader regional and historical contexts. A total of 115 volunteers employed a variety of archaeological techniques including topographic survey, excavation, and ground penetrating radar to determine the extent, age, structure, content and integrity of the archaeological deposits at the site. How these different archaeological techniques aided in the interpretation of the site will be discussed. The Estero Site contains archaeological components dating to every major historic period in Florida over the last 2,000 years including deposits attributable to the Calusa, Cuban Fisherfolk, the

Homestead Period, and possibly deposits concurrent with the Mission attempt on Mound Key ca. 1567.

A reception from 6:30 to 7:30 p.m. with light refreshments will be held for volunteers from the Estero Island archaeology project and SWFAS members. Also on display will be select experimental archaeology projects produced by FGCU students enrolled in the Introduction to Archaeology course taught by Corbett Torrence.

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Corbett Torrence and Theresa Schober are professional archaeologists who are Co-Directors of the Cultural Resource Management Program at FGCU, where they are also Visiting Instructors in Anthropology. As part of the CRM program, they conduct archaeological mitigation and adult education projects in Southwest Florida and currently manage and direct educational programming at The Mound House - a cultural and environmental learning center on Fort Myers Beach.

