ARCHAEOLOGICAL DISCOVERY WITH
THE AUCILLA RIVER PREHISTORY PROJECT

Aucilla River TIMES

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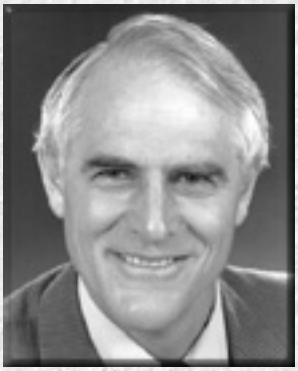
The view from the bridge

By Dr. S. David Webb



As the millennium turns we tend to look in judgment on what has been accomplished. This applies as much to our Aucilla River Prehistory Project (ARPP) as to any other long-term enterprise. So how will the ARPP score two (or three) years hence? It is not too soon, even now, to consider our long-term trajectory. What will be our legacy to future Floridians? What will be the substance of our ultimate contribution to science?

In reality such questions have surrounded and suffused our project's daily decisions for more than a dozen years. Only one concern ranks higher than our scientific contribution: and that is safety. Throughout the ARPP's existence we have stated as our purpose the avid pursuit of three goals: they are, in order of their priority, Safety, Science, and Smelling the Roses. So far it seems that we have adhered rather well to this formula of "The three S's". But let us return to this millennial matter of the ARPP's scientific achievements.

In a recent essay Ed Wilson, Pellegrino Professor of Biology at Harvard University, defined science as the "organized systematic enterprise that gathers knowledge about the world and condenses that knowledge into testable laws and principles." He goes on to describe some of the features of science that distinguish it from pseudoscience such as repeatability of results and scrutiny of evidence by testing. He notes that "the best science stimulates further discovery, often in unpredictable new directions." And finally he cites the importance of consilience. Consilience of evidence takes place when "explanations of different phenomena... prove consistent with one another."

The scientific thrust of the ARPP is to learn firsthand what happened in prehistoric times in the area through which the Aucilla River now flows. Meticulously we collect specimens and samples and submit them to a variety of experts and analyses in order to gather knowledge and condense it into meaningful patterns which approximate the true history of events involving the first Floridians and their natural environments.

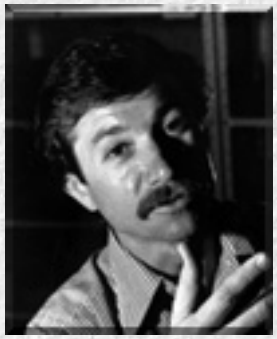
Some of the ARPP's most exciting discoveries have come during our underwater excavations, notably the seven-foot, glowing-orange tusk found on October 24, 1993. Much smaller, but equally important, was recovery of a large sample of seeds representing the oldest gourds, Cucurbita pepo. These seeds have now been used as a basis of comparison for the first domesticated organisms in the New World: gourds from a cave in Oaxaca, Mexico. Many other discoveries came later, in the laboratory, for example when a series of carbon-dates showed that we have "stair-step stratigraphy", representing a true chronological series of events. Likewise the orange tusk took on added significance when lab experiments showed that it had been repeatedly cut by a lithic tool in order to remove it from the mastodon skull.

Sometimes the best science involves unexpected cross-connections between diverse disciplines. Someone once remarked that the ARPP research team includes "all of the -ologies". And I suspect that our most important scientific achievements, building on our solid field collections, will come from consilient discoveries, that is by intertwining the results from multiple disciplines. My favorite ARPP example of a consilient discovery, thus far, is the recognition that some of our peat deposits are in fact mastodon stomach contents, thus revealing the mastodon's diet and habitats, and that they contain steroids and epithelial cells. So far this study cross-links field collecting, plant analyses, and animal physiology, but this resource offers still other scientific ramifications. We are currently studying with colleagues many more samples ranging from more than 12,000 years ago to about 11,000 when mastodons became extinct. Possibly some patterns in these digesta will elucidate the cause of mastodon extinction, such as human hunting or rapid climatic shift. Furthermore, the presence of 30,000 year old mastodon digesta at the Latvis/Simpson site offers yet another point of comparison still to be studied. New research on carbon and strontium isotopes present in mastodon (and other extinct animal) teeth illuminates diet and migration patterns that bear on human hunting strategies. The ARPP research engine has not finished generating new kinds of evidence. I predict that multidisciplinary scientists studying Aucilla River results will give us all still more incredible thrills from consilient studies well into the next millennium.

If indeed the ARPP is attaining a degree of scientific success, then we share our pride in these attainments with our many friends, students, volunteers and supporters. This is where our third goal, "smelling the roses" comes in. Repeatedly we hear from participants in the ARPP how their individual lives and perspectives have been enriched by the shared work and adventure. I certainly concur. When we are working at the river, typically ten weeks each year, the technical details of the scientific quest and the mundane matters of logistical support melt into the mystery and beauty of the Aucilla River itself. Some days are exhausting and discouraging, yet the sense of pride in our accomplishments wins out. I cannot say enough in praise of our project's friends and personnel. At the end of our October season (or was it early November by then?) we were deeply touched by a cash gift presented by Dr. David G. Anderson. He was donating to our project (as well as to the Dust Cave Project in Alabama and the Big Pine Tree Project in South Carolina) the royalties from his recent book "The Archaeology of the Mid-Holocene Southeast". Somehow this captures for us the sense that our heads and our hearts are working well. We welcome all students of the lessons to be learned from the past to join us as we march forward to fulfill our goals for the rest of the millennium.

Florida's indians from ancient times to the present

By Dr. Jerald T. Milanich



Since at least the 1920's residents of Florida have been finding Indian artifacts in the bottoms of rivers in the northern part of the state. The Simpson family of High Springs were pioneers in river collecting, diving the depths and wading the shallow portions of the Ichetucknee River long before it became a state park.

One artifact found by the Simpsons would offer dramatic proof of the antiquity of humans in Florida. That artifact—a broken portion of a harpoon-like spear point—was made from the ivory tusk of a mammoth, an elephant which lived in Florida during the Ice Age but became extinct shortly after. Not only was the point made from an elephant's tusk, it was identical to an ivory artifact found at the Blackwater Draw archaeological site near Clovis, New Mexico. In the 1930's at that site Paleoindian artifacts were found for the first time in America in association with the bones of extinct Pleistocene animals. Blackwater Draw proved humans—Paleoindians—lived in the Americas at the end of the Ice Age. The Ichetucknee River point, as well as other artifacts and animal bones found by the Simpsons, showed Paleoindians were living in Florida at the same time and they, too, must have hunted now extinct animals. Today we know that the earliest Paleoindians lived in Florida 12,000 years ago.

Who were these Paleoindians, these "ancient Indians," and how did they live? What was the significance of their stone, bone, and ivory artifacts being found with animal bones in the bottom of rivers, not only the Ichetucknee but the other limestone-bottomed rivers of northern Florida like the Santa Fe, Aucilla, and Wacissa?

The Florida Paleoindians were descendants of people who crossed into North America from eastern Asia during the Pleistocene epoch. At that time the oceans of the world were several hundred feet lower than they are today and Asia and Alaska were connected by a bridge of dry land more than a thousand miles in width. The higher sea levels that followed the Ice Age have covered that bridge, leaving the two continents separated by the narrow Bering Strait.

Exactly when humans crossed Beringia, as the land bridge is known, is still a matter of discussion. What

is certain is that it first occurred more than 12,000 years ago. These early American Indians rapidly spread throughout the Americas. In North America, including Florida, these ancient people lived by roaming over large tracts of land hunting game and by gathering plants and catching small animals. Among the animals they hunted were elephants—mammoths—as well as many other species, some of which are now extinct.

The Florida of the Paleoindians would not be recognizable to you or me. Lowered sea levels meant that the coasts were much farther out than they are today, especially along the Gulf of Mexico. As a result, Florida's land area was about twice what it is today; modern Pinellas Peninsula where St. Petersburg is situated was some 50 miles from the Paleoindian shoreline.

From the cover of "Florida's Indians from Ancient Times to the Present", this oil painting entitled "Potano Male", is by Theodore Morris, of Sarasota. The Potano Indians live in north-central Florida at the time of European contact.

Lower sea levels and massive glaciers created a climate that was much drier; ground water levels in the interior of the state were greatly below what they are today. Florida was cool and arid; the springs, lakes, rivers, and other wetlands so important at present did not exist. There were some fluctuations in climate, with slightly wetter conditions replacing drier ones, but it always was much more arid than it is in modern times.

More arid conditions meant that a different array of animals and plants was present. Some of those animals, like mammoths, Pleistocene horses, and a now-extinct species of bison, had prospered during the Ice Age, but would disappear as the climate warmed and they fell prey to human hunters. Typical vegetation included plants which could live in the dry conditions; scrub oaks, pine forests, open grassy prairies, and savannahs were most common. In the restricted localities where water was present plants better suited to wetter conditions were found. Because the climate did fluctuate, the vegetative communities present in any one location fluctuated over time.

When the Paleoindians first lived in Florida it was during one of the more arid periods. How did the climate affect their way of life? The answer to that question explains in large part why Paleoindian artifacts are found in the river bottoms of the northern half of Florida.

The Paleoindians, like ourselves, needed water to drink and for other necessities. Because water was in short supply, the places where water was available drew the Paleoindians. These same watering holes attracted animals as well. In Florida such water sources were found in the limestone catchment basins of northern Florida. Although limestone formations are found throughout Florida, it is in the northern half of the state that limestone is common on or very near the land surface. Water from rain or ground seepage collected in pockets in the limestone, forming water holes not terribly unlike the watering holes found today in parts of Africa.

At the time of the Paleoindians what are now the Ichetucknee, Aucilla, Santa Fe, and other northern Florida rivers were not flowing rivers but series of small limestone catchment basins or watering holes. At times, perhaps during slightly less arid times, surface water also collected where clay or marl deposits provided somewhat impermeable catchments. Water also could be found in a few very deep sinkholes fed during wetter intervals by springs.

But over time the most consistent watering holes were those in the northern half of the state where the limestone formations reached the surface of the ground and formed catchments. That region is from Tampa Bay north through the western half of peninsular Florida into the panhandle to the Chipola River. Such formations also extend out into what is today the floor of the Gulf of Mexico, but was then dry land. It is this limestone region of Florida that drew the Paleoindians.

The same oases that provided humans with water also were used by animals. Consequently, not only were watering holes places where people camped, they were sites where animals were ambushed, butchered, eaten, and their remains discarded along with other debris discarded by the Paleoindians. Today these camps are river bottoms and in sinkholes. Over two and a half millennia there must have been thousands of such camps and kill sites. It is no wonder Paleoindian-age tools and butchered animal bones are found in those rivers and sinkholes.

Now we know who the Paleoindians were and why we find their artifacts and debris in inundated archaeological sites in Florida. What else have we learned about them? Although artifacts picked up from rivers and sinkholes have been important for understanding where Paleoindians once lived and what their environment was like, other types of information must come from the excavation of sites. But if most Paleoindian camps today are underwater, how can they be excavated? The answer: go in after them. This is exactly what researchers in Florida are doing, combining scuba diving and archaeology.

At the present time the largest of these underwater Paleoindian projects, the Aucilla River Prehistory Project, is taking place in the river of the same name, one of northern Florida's many limestone-bottomed rivers. Under the auspices of the Florida Museum of Natural History and directed by Dr. S. David Webb, the Aucilla River Prehistory Project has located nearly 40 inundated Paleoindian sites in a

short stretch of the river.

Webb and his research team were originally drawn to the site by reports of Paleoindian tools and animals bones being found there. A short distance away in the Wacissa River which empties into the Aucilla, sport divers had found a Bison antiquus skull (a now extinct species of large bison) with a broken stone point in it, dramatic evidence for Paleoindians and Pleistocene animals having lived there at the same time.

The excavations in the Aucilla River have yielded seeds and rind fragments from wild gourds, evidence that Paleoindians were collecting a plant not previously known to even have been in Florida at such an early time. Preserved hickory nuts have been found, as have carved wooden stakes, perhaps items associated with small, temporary tent-like structures or lean-tos.

The Aucilla River underwater excavations also are providing new information on the animals hunted by the Paleoindians. Analysis of growth rings of mammoth tusks suggest that these animals may have been moving seasonally from north to south and back again. That raises an interesting possibility: did the Paleoindians move with the herds, following them as they made their seasonal treks northward in summer and southward in winter?

An offshoot of Webb’s team’s excavations is information about the diet of these giant creatures. Hundreds of samples of elephant digesta, the remains of the plants eaten and then defecated by the animals while standing in the watering holes, have been preserved. Plant fibers in the digesta give clues not only to the elephants’s diet, but are indicators of the climate as well. Scientists have even extracted elephant hormones from the digesta!

Some day comparisons of digesta samples and skeletons might even shed light on the extinction of the elephants. Both pre-Paleoindian samples and samples from Paleoindian occupation are known. Evidence of stress caused by over-hunting may show up in the latter, perhaps in dietary changes, in comparisons of bone densities, or in the ages of the animals hunted. For instance, as herds became smaller and animals harder to find, the Paleoindians may have become less selective in the animals they hunted, seeking to kill not only easy prey—youngsters or weaker individuals—but healthy adults as well. Only a few short years ago studies such as these would have been unthinkable.

Collecting the Ichetucknee

As an undergraduate student assistant in the Florida State Museum, then located in the Seagle Building in downtown Gainesville, one of my duties was to write catalogue numbers on the many objects of the Simpson Collection. It was definitely menial labor, but I became very interested in the collection, assembled by the Simpson family of High Springs, Florida, and later donated to the Museum.

Thirty years have passed and today I am back at the Museum, which has a new name and is in a new building. I often have occasion to refer to artifacts in the Simpson collection, using the very numbers I wrote three decades ago. Of great importance are the many bone tools from the Ichetucknee River.

Recently, I ran across a charming article written by Mrs. H. H. Simpson, Sr., and published in 1935: "Until the summer of 1927 our collection consisted of flint and stone implements, shell ornaments and pottery, but in June of that year began the addition of a section that to us is more interesting, if possible, than any of the others. At that time we found, by accident, a clear river [the Ichetucknee] about sixteen miles from our home. I would have to be an artist to describe the beauty of the place. At all times the river is perfectly transparent. In the sandy portions of the bed of the river vari-colored grasses grow, waving back and forth, the different colors blending and forming a beautiful underwater moving picture in the swift current.... The day we found it we waded in the clear water close to the bank, and could see, out in the deeper water, pockets in the rocky bottom which were full of bones of different shapes and sizes. Swimming out and diving Clarence brought up handfuls of the material for examination. Some of the smaller pieces were smooth, and shaped as though made by hand but they were such small fragments that we couldn't arrive at a definite conclusion. We returned on a second trip hoping to find some large pieces of what we suspected were bone implements of a vanished race of people. As we stood on the bank and watched him, Clarence dived again and again. In shallow water he picked the bones up with his toes, which have been trained to serve him for various purposes beside the ordinary use of toes. Finally we saw him make a high leap, and run toward shore as fast as he could. Racing to where we stood, and taking a small black object out of his mouth, he exclaimed, excitedly: 'Now, I know these things are handmade!' Upon examining it we found it to be a upper section of a bone artifact, ornamented with lines at the top.... We were overjoyed" (Hobbies, 1935, 40[4], pp. 93-94).

Editor's Note: This article is excerpted from "Ancient Floridians" chapter of* Florida's Indians from Ancient Times to the Present*, by Jerald T. Milanich, published by University Press of Florida in 1998.

PREVIOUS CONTENTS NEXT

Universities share commitment to underwater archaeology

By Dr. Michael K. Faught

The Department of Anthropology at Florida State University recently hired me to direct the Program in Underwater Archaeology working with George Fischer and Gregg Stanton at the Academic Diving Program in teaching underwater archaeology, focusing on anthropological issues associated with underwater sites—be they prehistoric or historic, continuing a hands-on approach to training, and conducting research on local underwater cultural resources. There is a group, a *Cadre*, of very capable staff and students, both at Anthropology and at the ADP, who are already experienced in underwater archaeological projects, and enthusiastic about learning and doing more. The fact that Anthropology hired an underwater archaeologist demonstrates their belief that this subdiscipline has much to offer our understanding of the past.

Some readers of the *Aucilla River Times* may not know it, but over the thirty or forty years that this subdiscipline of archaeology has been developing, both UF and FSU have undertaken some landmark projects, developed innovative techniques for doing underwater archaeology, produced influential publications, and trained numerous underwater archaeologists in the process. There isn't space here to detail all of the projects that have accrued over this history, but there are some milestones and new developments that need to be shared.

In 1960, John Goggin, of the University of Florida, published "Underwater Archaeology - Its Nature and Limitations" in American Antiquity. This early article described several underwater projects Goggin and his students had conducted in the late 1950's in the rivers and springs near Gainesville. Goggin detailed the kinds of sites to be expected in underwater settings, as well as their condition. This article is pertinent even today, both for its historical value, and for its clear exposition of principles. Another early project undertaken in Florida was Stanley Olsen's research at the Wakulla Springs, which originated from FSU. Olsen, then State Paleontologist, brought up an amazing array of extinct and modern faunal bones from deep in the spring head, as well as numerous bone pin artifacts. The mastodon currently on display at the Florida Museum of History in Tallahassee is one of these paleontological samples. These two projects rival any others in the United States for their early occurrence and contributions to theory and methodology.

In the 1960's and 1970's, much shipwreck archaeology was conducted at FSU in cooperation with the Park Service's Southeastern Archaeological Center. George R. Fischer came to prominence in the field of underwater archaeology during this time, and he has been involved in several significant shipwreck projects, such as the H.M.S. Fowey (1748) and the Nuestra Senora de Rosario (1622). George has also been instrumental in developing legislation and policies regarding submerged remains, as well as instructing numerous underwater archaeologists over the years. Gregg Stanton has directed the Academic Diving Program at FSU since the early 1970's. FSU's ADP is a premiere diving institution, capable of assisting archaeological projects in a wide range of diving conditions. Wilburn Cockrell's well known operation at Warm Mineral Springs was organized through the Academic Diving Program at FSU for several years in the 1980's and early 1990's. These projects and others are highlighted in FSU's award winning web page (http://www.adp.fsu.edu/uwarch.html).

The Aucilla River Prehistory Project, initially under the leadership of David Webb and James Dunbar, had its beginnings in the early 1980's out of the Florida Museum of Natural History and the University of Florida. Over the years, as you know, the ARPP has produced a wealth of new discoveries, developed new and innovative methodologies for conducting underwater research, and has provided a training ground for interested and capable students. For the last few years, the Aucilla River project and the Academic Diving Program at FSU have engaged in active cooperation by sharing equipment, underwater research expertise, and students. Many students from FSU have been involved with the Aucilla River Prehistory Project through the years. Here are some *Cadre* names you may remember: Dave Ball, Chip Birdsong, Rhonda Brewer, Melanie Damour, Grayal Farr, Peter Frank Edwards, Hank Kratt, Alyssa McManus, Chuck Meide, Tammy Montes, Thadra Palmer, Jerry Smith, Brad Stackpoole, Susan Tuttle, and Brian Yates. Tanya Peres got her Master's Degree from FSU working on faunal remains from Page/Ladson (see "Page/Ladson Faunal Remains and the Paleoenvironment"), and she is now in the doctoral program at UF, under the direction of Dr. Lynette Norr. Jim Dunbar, a leader in prehistoric underwater archaeology nationwide, is working on Page/Ladson related research for his FSU thesis.

With so many cultural resources available for underwater scrutiny, it is no wonder that other Florida Universities are also beginning to conduct underwater archaeological projects. The University of Miami, Rosensteil School of Marine Research has a state of the art research project at the prehistoric site of Little Salt Spring, under the leadership of John Gifford. The University of West Florida has a growing program in underwater archaeology which is focused on the excavation of the early Spanish shipwreck at Emanuel Point under the leadership of Judy Bense and Roger Smith of the Bureau of Archaeological Research. Their conservation lab is world class, thanks to the fine efforts of John Bratten. I might add that FSU students have also worked on both of these fine projects.

One question that might be asked is how these institutions can work together in the future to conduct more research, offer more experience and instruction for students, and contribute to the management of the State's remaining cultural heritage? There are lots of ideas going around, we are already making some plans, and more are sure to follow. For instance, this April members of the *Cadre* will be joining

the ARPP team to conduct a remote sensing survey of several sites in the Aucilla River, using an ARPP vessel specially modified to tow FSU's new sidescan sonar. Sidescan is a device that reconstructs the seafloor bottom with sound waves, making virtual photographic images (to be published in the 1999 issue of the *Aucilla River Times*). These images will be used to illustrate details of the channel system in publications, and to look for new areas for research sites.

My own research plans are to focus FSU based research on the PaleoAucilla offshore; to find, excavate, and evaluate submerged prehistoric archaeological sites. I think we all agree that the offshore research represents a kind of sister operation to the ARPP, in so far as it is focused on the PaleoAucilla offshore. In the *Aucilla River Times* of September, 1993 (p. 12) Dr. Webb envisioned: "From the Clovis Shoreline .... to several sites on the Wacissa River; the Aucilla River Project has a powerful string of relevant options for further research." The Clovis Shoreline is approximately 85 miles out to sea and it is a logical step to continue investigations out there searching for early Paleoindian sites. An offshore archaeology field session is planned for this coming July, and students from both FSU and UF have expressed great interest in participating in this research effort.

There is a lot of water in Florida, and archaeological and paleontological remains have been found in many of the rivers, sinkholes, lakes, bays, inlets, and on the offshore. Many of these finds demonstrate that water levels (both fresh and salt) were lower in the past, and that there was a greater area of landscape on which successive cultures could "make a living". Many shipwrecks of all ages since the times of Columbus are known, and many more remain to be discovered and investigated. Surely there is plenty for all of us to do, and surely more work will get done if we approach it with a commitment to cooperation, rather than a sense of competition or isolation, and this is exactly how we are proceeding.

Frankly, there has been much damage done to sites underwater in Florida, by natural forces, urban growth, and artifact collectors, well intentioned, or not. These sites are truly nonrenewable resources, and there is much to do in order to manage and interpret what remains. We need to do more than just find the physical remains—we need to save the stories that these sites and artifacts have to tell us, and train students in the process.

Editor's Note: Dr. Michael Faught is Director of the Program in Underwater Archaeology, Department of Anthropology, Florida State University.

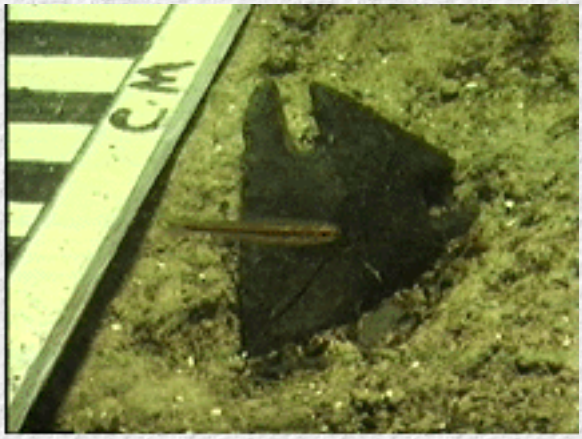
PREVIOUS CONTENTS NEXT

Underwater site opens window on big environmental change

By George Wisner

Florida researchers are opening a window on a time when Paleoindian hunter-gatherers were adjusting to a dramatic climate shift at the close of the last Ice Age. Early Floridians were poised on the knife-edge of transition to a more sedentary lifestyle.

Evidence from an underwater site in the Aucilla River southeast of Tallahassee is presenting a unique view of the cultural dynamics of the change occurring about 10,000 years ago, according to Brinnen S. Carter, a doctoral archaeology student at the University of Florida in Gainesville. He is overseeing excavation of the site that has yielded projectile points, an apparent hearth, and what probably are bola stones. Also recovered in the excavation were wood fragments that may be tent stakes or building poles. Wooden artifacts are seldom preserved at sites of this age.



A small fish swims past a corner-notched Bolen projectile pictured in situ on a paleosol at the Bolen component of a site about 15 feet deep in northwest Florida's Aucilla River. Bolen points date to 10,200 and 9,900 years. (See "The Cover" in "About the 'Aucilla River Times'").

Colloquially known as the "Bolen component" of the Page-Ladson site, the late-Pleistocene strata are being investigated as part of the long-term Aucilla River Prehistory Project ("Underwater Site Details Mastodons' Life History," **Mammoth Trumpet** 10:1). Research has been in progress for more than a dozen years, and scores of Paleoindian sites and Pleistocene-mammal sites have been discovered beneath the waters of the lower Aucilla and other rivers in northwest Florida ("Florida Archaeologists Plunge into the Past," **Mammoth Trumpet** 3:2).

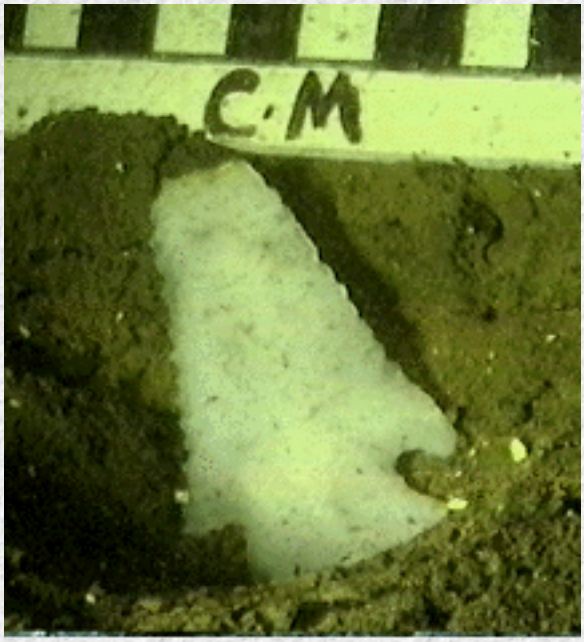
The Bolen component is providing "the first step in being able to say what the people living then were doing in the local area, and how they adapted to the rapid environmental changes that were occurring," Carter said in a telephone interview. There is little question that the changes were dramatic.

Before the end of the last Ice Age, the site—now under 15 feet of water—was part of a considerably drier landscape. It was about 100 miles from the Gulf of Mexico and the river was intermittently dry. From 10,000 to 5,000 years ago melting glaciers had brought the site to within about five miles of the Gulf by raising sea levels approximately 80 meters. The inhabitants 10,000 years ago must have watched as pine ecosystems initially gave way to thick oak forests. Scientists believe that the greatest degree of change in Florida's flora occurred at precisely that time.

The change would have deprived people of familiar resources while offering them new ones. Carter believes that the people were well enough adapted to their environment before the changes that they could easily withstand them. Environmentally initiated cultural adaptations soon followed. These Paleoindians probably became less nomadic. Carter says they settled in villages, and produced new styles of stone projectile points and a variety of new hunting and gathering instruments. Later generations ultimately turned to agriculture as a survival strategy.

Researchers believe the window presented by this site, which Carter believes was a seasonal camp, allows them to clearly view a transition point for a culture.

"These people were the region's first humans who weren't big-game hunters," says Carter. Mammoths and mastodons, which formerly had been hunted or scavenged, vanished, so the people came to rely on smaller animals. Faunal materials are sparse at the site, Carter said. But fish bones and burned turtle bones are evidence of one potential shift in subsistence. And they had to adapt to changing vegetation.



A white Bolen projectile shimmers in the bright lights used to penetrate the tannin-stained swamp water.
Brinnen Carter captured still images of underwater subjects from Hi-8 video images made in 1995 by archaeologist Joe Latvis.

"My guess is they were well attuned to those resources prior to changes and were merely shifting their emphasis to the new resources. It doesn't look to me like they really changed their essential way of interacting with the environment; they didn't simply adopt agriculture, they remained hunter-gatherer groups."

He estimates that people lived at the site for only a few generations, until rapidly rising water levels about 10,000 years ago forced them to move. Rising water also sealed the remains of their camp under a protective layer of clay that enhanced artifact preservation.

The density and amount of artifacts preserved in the Bolen component of the site is quite amazing, says Dr. David Webb, Curator for Vertebrate Paleontology at the Florida Museum and a principal investigator of the Aucilla River project.

The site is in the middle of a swamp on the west bank of the Aucilla River. Tannin in the swamp water allows daylight to penetrate only to a depth of seven or eight feet. At a depth of 15 feet, Carter says, the crew must work in “a Heart of Darkness” environment using powerful lights for illumination. Though stained, the water is relatively clear. Excavation is time-consuming, and field workers must be competent divers. Carter, who has a master’s degree in nautical archaeology from Texas A&M University, has been working at the site since 1988. His specialty is the late-Paleoindian period.

A buried soil surface, or paleosol, is the focal point for the excavation that so far has covered about 22 square meters. The site seems to extend farther into the river’s bank, but to follow it is not yet practical because it would require removal of up to five meters of overburden.

The underwater archaeologists have found side-notched Bolen projectile points, which have been stylistically dated to between 10,200 and 9,900 years ago. One piece of cypress wood recovered from the Bolen level yielded a date of 10,000 ± 80 radiocarbon years (Beta 21750); a piece of wood in compacted soil below the paleosol’s surface produced a date of 10,280 ± 110 radiocarbon years (Beta 21752).

Other cypress wood that may have been part of either a canoe or a large log, believed to have washed into the site after the flooding, yielded a date of 9,930 ± 60 radiocarbon years (Beta 58858). Carter says

he has more samples to be radiocarbon dated—hickory nuts and seeds carefully teased from the surface of the paleosol and overlying clay layers.

In a layer dating to the Bolen period, team members recovered what they believe is a completed bola stone from another part of the site. Carter described it as teardrop-shaped, four to six centimeters in diameter, with a small dimple on top. It was part of a weapon of thong or cord thrown to ensnare wildlife. They also found what is probably a bola-stone preform that broke before it was finished, and another bola-stone fragment on the paleosol surface.

‘It looks like this could be some kind of bola-stone manufacturing site,’ Carter said. Possibly bolas were being pecked to proper shape. Alternate hypotheses to these stones being for bolas could be that they were heads for maces or clubs, or perhaps hammerstones for percussion knapping of flaked stone tools.

Another interesting feature is a hearth, depressed about eight centimeters into the surrounding surface, which contained a piece of wood charred on one side but not on the other. Carter says it presumably is the same age as other materials from the Bolen surface.

Among small wooden stakes recovered was one found driven vertically through the paleosol. Carter said that stake yielded an accelerator mass spectrometry date of 8,905 ± 65 radiocarbon years (UA-7454). “It is difficult to say this is evidence of some kind of shelter, but my inclination is that it is some kind of structure. The stake in the paleosol was about three meters from the hearth.

The team has recovered what appear to be adzes or adze preforms, but no lithic flakes. “We are not seeing any debitage, just finished flaked and ground stone tools,” Carter says. “Maybe we are seeing some new type of site that’s only found in an underwater context or adjacent to a stream.”

At the very least, he added, the site is providing researchers with a significant opportunity to gain new insights into a critical period of human adjustment to sweeping climatic changes.

The Aucilla River Prehistory Project has financial support from the National Geographic Society and a Florida Department of State Special Grant.

Editor’s note: This article is reprinted from the Center for the Study of First Americans’ newsmagazine* Mammoth Trumpet*, Volume 12, Number 2, April 1997.

Page/Ladson faunal remains and the paleoenvironment

By Tanya M. Peres

Many of the reports and articles in this newsmagazine are site updates and field reports. However, the majority of this work that is not seen or publicized is the actual analysis of artifacts and remains. Over May and June 1997, I identified and analyzed faunal remains from the Page/Ladson site, which resulted in my Master's thesis at Florida State University. The assemblage that I looked at was excavated in October 1995 by Brinnen Carter and the ARPP crew. Remains were recovered from strata above, and perched on, the Bolen level.

I began my research thinking that I would be looking at the prehistoric meals of the ancient people that inhabited this site long ago. About halfway into the analysis I realized that there was little or no evidence left on the remains of use by humans. After confirming my suspicions with my professor, Dr. Rochelle Marrinan, I designed a system that scores certain attributes of an assemblage (in a presence/absence fashion), with the total score determining if the assemblage is a result of a) human use (cultural); or b) environmental deposition (natural). The criteria that I used are: butchering marks, worked bone, association with artifacts/features, thermal alteration, and presence of "exotic" taxa. The assemblage from the Bolen level had an overall score that denoted it as an environmental assemblage. There were three bone "pins" in the sample, but they were most likely out of context, thus even though they were cultural in origin, they were natural in deposition. Since the assemblage did not support my original hypothesis that the collection would demonstrate human activity at the site, little can be said about subsistence practices. We do know, nonetheless, that the identified taxa were present in the environment, and thus available for selection by humans.

Taxonomic Name	*Common Name*
Osteichthyes	**Class of bony fish**
Lepisosteidae	gar
Amia calva	bowfin
Ictaluridae	Family of freshwater catfish
Ictalurus sp.	freshwater catfish
Esox sp.	pike fish
Anura	**Order of frogs and toads**
Bufonidae	Family of toads
Rana sp.	frog
Caudata	**Order of salamanders**
Amphiuma means	amphiuma
Siren lacertina	siren
Alligator mississippiensis	alligator
Testudines	**Order of turtles**
Chelydra serpentina	snapping turtle
Kinosternidae	Family of mud/musk turtles
Kinosternon sp.	mud turtle
Sternotherus sp.	musk turtle

These findings may be disappointing to some, but in actuality they are just as important, if not more so, than a culturally deposited sample. This sample is unique in that it is the first to be analyzed and quantified from this site and time period (ca. 10,000 years BP) in particular, and along the Aucilla River in general. The species list (Table 1) that has been derived from this collection will aid in future analyses of additional samples from the project's excavations. The preservation of the faunal remains is excellent and allowed for identification of individuals to the species level, which is important in determining the

Testudines	**Order of turtles**
Chelydra serpentina	snapping turtle
Kinosternidae	Family of mud/musk turtles
Kinosternon sp.	mud turtle
Sternotherus sp.	musk turtle
Emydidae	Family of cooters, sliders, box turtles
Deirochelys reticularia	chicken turtle
Malaclemys terrapin	diamondback terrapin
Pseudemys/Trachemys sp.	pond turtle
Terrapene carolina	eastern box turtle
Testudinidae	Family of tortoises
Serpentes	**Order of snakes**
Natricinae	family of water snakes
Nerodia sp.	water snake
Anatinae	Subfamily of geese, swans, ducks
Mammalia	**Class of mammals**
Didelphis virginiana	opossum
Rodentia	**Order of rodents**
Rodentia cf. *Rattus* sp.	rat
Sciurus niger	fox squirrel
Sylvilagus sp.	rabbit
Equus sp.	extinct horse
Artiodactyla	**Order of deer, pig, cattle**
Cervidae	Family of moose, elk, deer
Odocoileus virginianus	white-tailed deer

Table 1: Page/Ladson Vertebrates

type of environment that would have existed to support such faunas.

This sample is also of value to the interpretation of the environment of the Aucilla River area at the time of the late Pleistocene to early Holocene transition. Using modern habitat data on extant species and paleobotanical data from Florida and southern Georgia, I proposed a picture of what the natural setting would have been for the people that lived in this area. These data, added to what is already thought to have existed, allow us to form a clearer view of this important site of prehistoric activity.

I will summarize the paleoenvironmental data that were used in my thesis. Researchers believe the late Pleistocene period (ca. 12,000 - 10,000 BP) in the Southeastern United States was characterized by much lower water levels than at present, because much of the earth's water was frozen in the glaciers at high latitudes. During this time, Florida experienced some of its driest ecological conditions. Wood and organic remains recovered from sinkholes in the panhandle region of Florida imply shallow water environments in the late Pleistocene followed by what appears to be deeper water in the early Holocene. It seems that at the Pleistocene-Holocene boundary, much of Florida and southern Georgia was already covered by a dry, oak-dominated, grass and herb forest punctuated with prairie-like areas. The Holocene began around 10,000 BP with the rise of pine and oak dominated environments, as a warm, dry phase ended with an increase in precipitation in the late Pleistocene (ca 14,000 BP). The Aucilla River corridor was no different. The area was probably surrounded by an oak dominated forest, with scrub vegetation consisting of grasses (Gramineae) and herbs such as ragweed (*Ambrosia*). The water levels were in a state of flux at this time, and the Page/Ladson sinkhole was a steady source of water in a relatively dry landscape.

The early Holocene environment is reminiscent of what is present at the Aucilla River today. The Florida Department of Natural Resources describes this area as being composed of a number of vegetative communities. On the higher banks of the river, hardwood forests are present, while cypress swamps dominate the low-lying areas. Most of the river corridor is undeveloped. Many of the lands adjacent to the river are owned and managed by various state agencies as wildlife refuge and management areas. Private landowners account for the balance.

Various animals live in this area, a number of which are endangered or threatened, such as: Atlantic Sturgeon (*Acipenser oxyrhynchus*), Suwanee Bass (*Micropterus notius*), wood stork (*Mycteria americana*), West Indian Manatee (*Trichechus manatus*), bald eagle (*Haliateeus leucocephalus*), red-cockaded woodpecker (*Dendrocopos borealis*), Mississippi Kite (*Ictinia mississippiensis*), and black bear (*Ursus americanus*). All animals that have been identified in the prehistoric collections are present today in the environment, except *Equus*.

As a result of this study, some questions have been answered, but many remain for future research. Since this is an isolated study for this time frame, more faunal collections, pollen analyses, and hydrological studies are needed to support the proposed paleoenvironmental reconstruction of the Pleistocene-Holocene boundary. Fortunately, Erika Simons and I are currently analyzing earlier faunal remains from all excavation years at the Page/Ladson site to add to this database and to test my paleoenvironmental model. I am also identifying, analyzing, and quantifying faunal remains from the Little River Rapids Site that were excavated as part of Mark Muniz' thesis project. The data collected from this study will be added to the existing knowledge of faunal remains at the Pleistocene-Holocene boundary, and afford us a more holistic view of the Aucilla River area. Thus, the Page/Ladson site has afforded scientists a unique opportunity to recover, document, and study the presence of the earliest occupation of Florida by humans, as well as the environment that shaped and supported their subsistence practices. The Aucilla River, along with other river corridors in Florida, is rich with these types of deposits and should be explored further to expand our understanding of this little known time period of human history.

PREVIOUS CONTENTS NEXT

Bone fishhooks

By Andy Hemmings

Prehistoric fishhooks have been found in several of Florida's rivers. Florida's prehistoric fishhooks were made of bone, shell, antler, and possibly stone. All of the examples I would like to discuss here are bone hooks found in the Aucilla River.

Bone hooks exist in various forms:

a) Gorge - bipointed bone about four inches long, often with a hafting groove in the center.

b) Composite - from more than one piece of bone, lashed together to make the shank and point a usable hook.

c) Raccoon Bacula - roughly two inch curved bone with a sharp tip. Some have a hafting area near the head.

d) J-shaped long bone hook - most common, probably made from deer long bones. Arm curve is ~180 degrees making a J of the shank and point.

e) V-shaped long bone hook - probably made of deer long bones. No real arm, point comes from base of the shank, generally ~130 degrees of curvature- thus you have a rough V in profile.

f) Phalanx J-shaped hook - made from deer phalanges almost exclusively, arm has distinctive flat squared bottom, shank and point approaching parallel as in the other J-shaped hooks.

Figure 1: Gorge hook.

Gorge hooks may represent a stage between leisters or bone point tipped spears on the one hand and modern style hook and line fishhooks on the other. It is not unlikely that this was the first kind of line-fishing hook. The gorge works when a fish swallows and the line is pulled, thus turning the hook sideways so that the points stick in the throat of the fish when it is set.

The shank of a composite bone fishhook found in Sloth Hole appears to have fine thread imprints in mastic residue on the flared head. It will probably take a destructive test to determine the true composition of the ridges because a thin coating of geothite prevents clear examination, even with a microscope. The bottom of the shank is slightly bevelled, as though prepared to haft a point to make a V-shape. Several semi-triangular short bone points have been found that fit snugly against the bevelled end making a large serviceable hook.

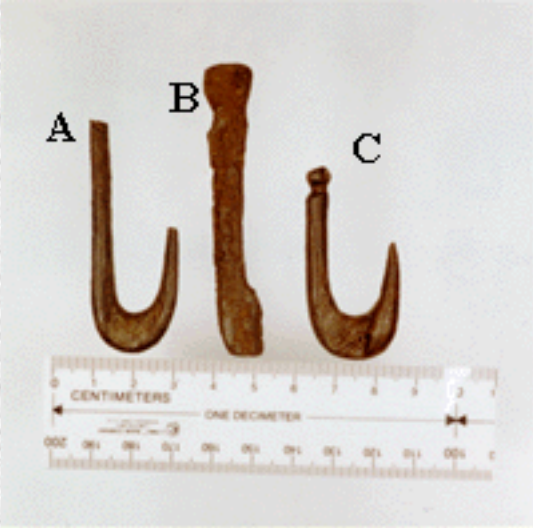
Raccoon bacula have been cut nearly in half, the distal end removed, and then sharpened to a point to form this type of hook. One Aucilla example has a hafting area 1cm long cut into the top of the shank. Singly these hooks seem unlikely to be very effective. Probably they were combined to form a composite treble hook. I plan a replication study of this hypothesis to see if it will work.

The most common type of bone fishhook in the Aucilla collections is the J-shaped long bone hook. These large hooks are probably made from the cannon bones of deer. Frequently the interior curvature of the bone is preserved in the arm of the hook. Generally these hooks are quite large, greater than 4cm. However, a single tiny J hook (shorter than 2cm) from the Aucilla is in the museum collection. Three J-type hooks have been found at Sloth Hole in the last three years.

A close relative is the V-shaped long bone hook. As a rule these are smaller than J-shaped long bone hooks. The arm between the shank and the point has been nearly removed from this form of hook. The point comes right out of the base of the shank and the hook looks almost like a check mark in profile.

Possibly the most interesting fishhook from the Aucilla River is a Phalanx J-shaped hook that Jack Simpson found several years ago. Normally this hook type is made by grinding a section of a deer toe into a flat bottomed expanded J-type hook. The flat bottom is very diagnostic of the hook being made from a phalanx. This particular hook is very large to have come from a deer and may well be from the extinct Pleistocene *Equus*. If this is indeed the case it puts a very early date on hook and line fishing in North America. Many measurements of deer and horse toes will have to be made before this can be said with much certainty.

All of these forms have been found in the Aucilla River, and many have been found in Sloth Hole during ARPP operations. In 1995 Terry McKibben found a J-shaped long bone hook that had a broken head (Fig. 2a). This hook was pictured in the 1996 *Aucilla River Times*. Also in 1995 we recovered a complete composite hook shank and a complete bipointed gorge with a faint hafting groove at the center (Fig. 1). During the 1996 field season Alyssa McManus found a complete J-shaped long bone hook in the screen from the upper leaf/peat stratum (above Level 2B). See Figure 2c and please note that the ball shaped head is very unusual. This hook was not found *in situ*, but a date on the strata containing it will be useful nevertheless. In 1997 we found



A. Hemmings

Figure 2: J-shaped hooks, collected in a. 1995,

a 7cm long J-shaped fishhook in Unit 41. This hook is broken at the bottom of the shank as it started to curve into the arm (Fig. 2b).

A. Hemmings

Figure 2: J-shaped hooks, collected in a. 1995, b. 1997, c. 1996.

The total sample of Bone fishhooks known to archaeologists in Florida is very small. I have been working on a typology that tries to account for as much variation as possible. As more hooks are donated or loaned to the Florida Museum of Natural History for measurements and casting this typology can be refined and grow. If you have prehistoric fishhooks of any material I would very much like to talk with you. If you would be willing to give us access to them please contact me through the ARPP or at the Florida Museum of Natural History in Gainesville.

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Paleoindian tool from a horse tibia

By Dr. S. David Webb and James S. Dunbar

In our recent chapter entitled “Bone and Ivory Tools from submerged Paleoindian Sites in Florida” Jim Dunbar and I de-scribed, figured, and interpreted a number of Paleoindian tools. Since most Paleoindian sites yield only lithic tools, most of these items were either rare or unique. Some items were comparable to tools known only from Old World Paleolithic sites. The one item that strikes me as most unusual is made from a horse tibia. This is one of the very few pieces of evidence in all of North America that demonstrates that Paleoindians utilized the horse. This does not prove that humans butchered the horse, but it certainly indicates that they knew the animal well enough to utilize freshly recovered parts of its skeleton. Furthermore there is strong evidence of prior knowledge in the Old World. The ancestors of these Paleoindians knew *Equus* intimately, rendering its likeness exquisitely on cave walls, and New World peoples continually encountered horses as their range extended into Florida. For this reason the tibia described here seems to close the circle of evidence that late Pleistocene people continued to track and use the horse as they entered the New World. The tibia is a stout, triangular element from the lower part of the hind limb. Its distal articular end feels good in the grip of one’s hand. We are pleased to place this important piece from late Pleistocene sediments in the Waccasassa River on record.

***Equus* left tibia**

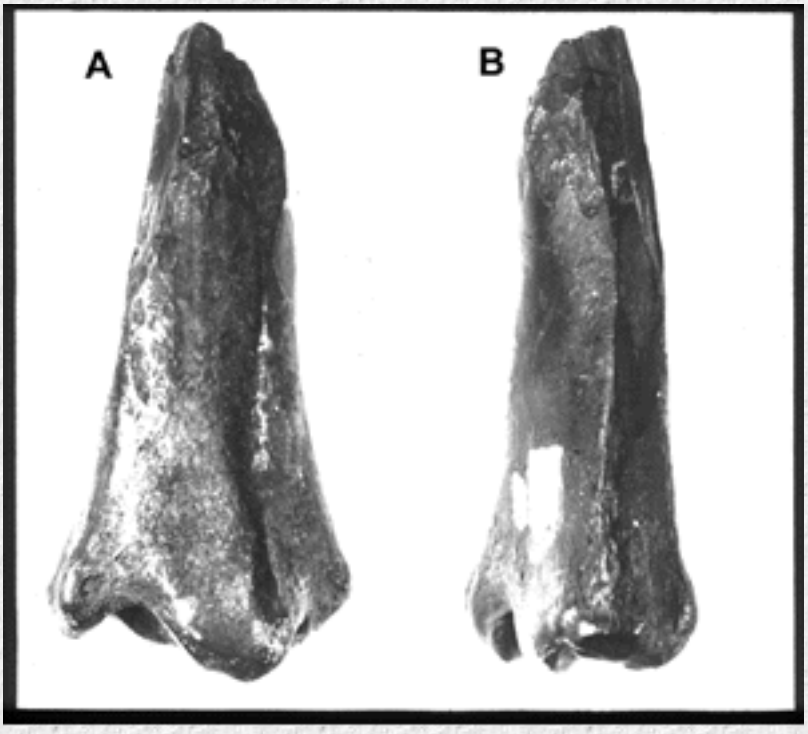


Figure 1: Distal left half of tibia of Equus, UF 16822, used as an awl handle, distal end downward, midshaft elaborately beveled: (a) anterior face; (b) mediolateral face.

Site and context: This specimen was recovered from 2 meters of water in the Waccasassa River, locality 9, Levy County, Florida. Collected by Robert Armistead and donated to the Florida Museum of Natural History in 1966, it was associated with abundant Late Pleistocene megafauna.

Description of specimen: Specimen UF 16822 (Fig. 1) represents the distal half of a mature left tibia of a medium-sized *Equus* (horse) species. It is nearly black, strongly mineralized, and quite dense. Its overall length is about 140 millimeters, with the break at about the narrowest part of the bone near the middle of its shaft. Two large chips of bone were broken from the lateral side of the shaft; these breakage scars, one about 80 millimeters and the other about 60 millimeters long, are coarse and occurred as brittle breaks after the bone had become fossilized.

The most interesting features of the tibia occur near the midshaft break, where the natural diameter of the shaft narrowed to about 40 x 30 millimeters. That area is dominated by a set of at least two dozen conchoidal flake scars, each about 10 millimeters long and directed from the broken end of the tibia. The major removal scars were modified by innumerable smaller pecks. All of these features evidently were produced while the bone was still fresh. One must conclude therefore that the midshaft break that they modified also took place while the tibia was green. The effect of this elaborate flaking and pecking was to produce a gently roughened and beveled zone extending 30 to 40 millimeters toward the narrowest part of the tibia (top of Fig. 1).

Other interesting features appear inside the marrow cavity of this tibia. That cavity was smoothed and somewhat enlarged toward the beveled end of the specimen. Its maximum cross section is ovate with a mediolateral diameter of 14.1 millimeters and a transverse diameter of 10.2 millimeters. About 54 millimeters toward the distal (intact) end of the tibia, the marrow cavity ends as a smooth pocket.

At its distal end, the tibia is nearly 70 millimeters wide and made of very dense bone. It was nearly twice as wide as the midshaft area. A number of fine striations at various oblique and transverse angles occupy the anterior and posterior faces of the tibia in a middle zone between the beveled region and the distal expansion of the tibia. Presumably, these were scratches acquired incidentally during use of this Equus tibia tool.

Comparison: A number of researchers have recovered prehistoric flaked bone specimens. Some subsequently conducted bone-knapping experiments in order to replicate raw bone manipulation (e.g., Morlan and Cinq-Mars 1982; Stanford et al. 1981). The oldest previous example of a Florida flaked bone tool is an awl-and-scraper combination from an Early Archaic stratum (about 10,000 years old) at Warm Mineral Springs (Cockrell and Murphy 1978). Socketed antler handles of Early Archaic age were recovered from that spring and also from numerous rivers, including sites in the Ichetucknee, Aucilla, and Santa Fe rivers. Such examples show that the use of knapped and socketed bones (and antlers) as handles was well established by the Early Archaic in Florida. We now offer older but similar evidence from an extinct *Equus* tibia. Evidently, the broad tradition of fashioning socketed handles from heavy bones had Paleoindian roots.

Proposed function: When one grasps the tibia by the broad and dense distal end, it is immediately evident that it provides an excellent handle, which could be grasped in the center of the palm and surrounded by all five fingers. The elaborately beveled surface surrounding an enlarged marrow cavity must be for holding some additional part of the tool, possibly an awl, probe, or dagger.

Editor's note: Most of this article is reprinted from "The Paleoindian and Early Archaeic Southeast", eds. D. G. Anderson and K.E. Sassman, University of Alabama Press, Tuscaloosa. 526pp.

PREVIOUS CONTENTS NEXT

Underwater archaeology, Paleoindian origins, and histories of settlement

By Dr. Michael K. Faught

These are exciting times we live in, at least for those of us curious about how people came into the Americas. Last year, American Antiquity — the premier publication of the American archaeological community— published an article by a group of distinguished scholars that accepted Monte Verde as the earliest Early Man site in the New World (Meltzer et al. 1997). This is to say that they accepted the artifacts found there as unequivocally man-made, that the stratigraphic position of the artifacts was not disturbed, and that the radiocarbon dates were associated with the artifacts and not contaminated by natural factors. Other early sites have been proposed and argued about over the years, but Monte Verde holds a rare distinction, along with the Folsom site in New Mexico in 1926, of being a watershed event.

It is intriguing, however, that Monte Verde is in Chile, at the wrong end of the world from where such an early site would be expected. This questions older models of migration pathways and chronological estimates. The fact is that the story of migrating Paleoindians coming through an inland corridor between lobes of glacial ice—what we call the Ice-Free Corridor Model—has not held up to accumulating evidence for Paleoindian site distributions and radiocarbon control. We don't have an array of earlier sites in the north, with younger sites spreading out progressively to the south.

So what does all this have to do with underwater archaeology? Well, several researchers have noted the possibilities of a coastal pathway for migrating Paleoindians, a concept first made palatable to the archaeological community by Knut R Fladmark in the late 1970s. This coastal pathway is appealing now, because a coastal migration route may explain why Paleoindian sites are so dispersed early on. The idea is that Paleoindians would have migrated down the western coast of North America and come into the continent from various places, coming across the isthmus of Panama, and down into South America, very early. Adding to the appeal of this concept is the fact that most of the land masses where this coastal pathway would have taken place—the continental shelves—are now submerged and we don't know very much about what's out there. Therefore, prehistoric underwater archaeology sits in a unique position to address the early history of Paleoindian settlement.

Another interesting problem raised by the Monte Verde site, and of Paleoindian studies in other areas, is the realization that there may be more than one kind of Paleoindian on the scene at the end of the Pleistocene. Many readers of the *Aucilla River Times* are probably familiar with "Clovis" and other varieties of fluted points that are distinctive markers of early people in the New World. As it turns out, however, there are other early sites in the Western United States, and in Middle and South America, that have different kinds of chipped stone tools, and suggest to some researchers that there were separate groups of people. Examples of these other tool assemblages include Western Stemmed Point assemblages in the western United States, Lerma in Middle America and El Jobo in South America.

Monte Verde is one of these other kinds of sites, probably a representative of El Jobo, which strengthens the concept of people with technical and cultural backgrounds different than those of fluted point groups, as Meltzer et al. brought out in their important article. But let's ignore these other kinds of sites for the moment, and concentrate on the origins of Clovis (fluted point) Culture, and its relationship with underwater archaeology.

In the last issue of the *Aucilla River Times*, I presented a map showing the distribution of Fluted points in North America. The map showed several areas of the United States having dense clusters of Fluted points, and other areas having very few. Most of these diagnostic points are known from, or at least recorded from, the Eastern portions of the United States, even though there are significant clusters of points known from the Southern Plains and California. Many of us equate these points with a group, or a Culture, of Paleoindians that spoke dialects of the same language stock, and resembled each other biologically. But the point distribution map combines about a thousand years of evolution, and doesn't really tell us where these people came in first, or when that was, or how the pattern of their settlement evolved and expanded over time.

So, what is the evidence for the timing and progress of fluted point entry in the continent? There are many Paleoindian sites that have been radiocarbon dated, and I believe they offer a sample for modeling this trajectory. In my dissertation research I compiled radiocarbon data from 72 sites in North, Middle and South America. Of these, forty represented "well dated" sites, that is sites with more than one radiocarbon date associated with the fluted points. Having multiple radiocarbon assessments means that the dates can be averaged, and offer more confidence. These "well dated" sites are in the High Plains, the Southern Plains, and in the Far Northeast.

These data show that the earliest fluted point sites are in the Southern Plains. Four sites (Aubrey and Lubbock Lake, in Texas, Blackwater Draw, in New Mexico, and Domebo, in Oklahoma) span the period from 11,500 years ago to 11,000 radiocarbon years ago. Aubrey is at the early end of this range (11, 565 +/- 95), and the others cluster between 11,200 to 11,000 BP. Fluted point sites in the desert Southwest, the High Plains, and possibly the Great Lakes return dates of 10,900 to 10,800 BP. In the East and far Northeast the earliest dates accumulate after 10,600 radiocarbon years ago. Fluted point sites known from South America date after 10,800, while those known from Alaska, and the Ice Free Corridor appear to date sometime after 10,500. The hypothesis that I am proposing is that the earliest fluted point sites are in the Southern Plains of North America, and later sites radiate away from this center.

In the last *Aucilla River Times* article I pointed out that the gaps in dating fluted points were in the Northwest and California, the Great Lakes, the confluences of the Mississippi / Tennessee / Ohio drainages and in the Florida karst regions. You can see better now why it is important to know the radiocarbon data from these places. Even though there are four early sites in the Southern Plains, one well dated site in the High Plains is also an early fluted point site (Colby in Wyoming at 11,032). Nevertheless, Aubrey in Texas, is comfortably in the lead for earliest fluted point site, and so there is a simple problem to solve. Did fluted point Paleoindians come in through the Ice Free Corridor and spread out south, somehow ending up in the Southern Plains early on, or did they come in from the Gulf of Mexico, and spread north?

If the current evidence for the earliest fluted point sites crudely approximates the actual dispersal of fluted point groups, then their dispersal pattern is not what we expected. Can it be true that people were out at the coastline back then, and that their sites were submerged by sea level rise? Were they traveling along these coastlines using boats? Did they procure fish, shell fish, birds and other coastal resources along the way? Is it possible that our vision of the past is veiled because the Clovis Shoreline is currently submerged?

There are places where clusters of fluted points occur near coastlines with continental shelves, places where we might expect to find evidence offshore. These include Northeastern Alaska, Southern California, the Gulf of California, the east coast of Texas, virtually the entire Eastern Seaboard, and right here in Northwestern Florida. There are early sites known from the offshore in Florida, a result of my field research there. But, so far, these sites are later Paleoindian and Early Archaic of age. We still have a lot to do to discover and excavate these important offshore sites. Florida is probably the area with greatest likelihood for Paleoindian discoveries underwater because of its unique set of regional features: high density of early sites onshore, not much sediment cover to deal with offshore, a relatively gentle marine environment, and institutional infrastructures for research diving at the Florida State University, the University of Florida, and other institutions (see "Universities Share Commitment to Underwater Archaeology").

In addition to the continental shelves, there are other places where water is now deeper than it was at the end of the Pleistocene, where people could have left evidence on landscapes that are now inundated. Various natural lakes hold great potential for submerged sites. For example, the Great Lakes had lower levels at the end of the Pleistocene and high densities of Paleoindian sites, therefore sites may be found underwater there. Man-made lakes are also potential for discoveries of early sites, particularly in the Southeast and Middle America. Lake Alajuela (formerly Lake Madden) in Panama is a great example of a fluted point site submerged by the manmade lake. Al Goodyear's underwater research at Big Pine Tree in South Carolina is also a fine example of managing an early archaeological record submerged by a manmade lake.

Rivers which contain submerged evidence are mostly in the Southeast, in the karst geology here. It has been known for many years now that Florida's sinkholes, rivers, and lakes contain Paleoindian and Early Archaic sites. John Gifford's University of Miami work in the cenote-like sinkhole at Little Salt Spring in Sarasota County is another example of research in these submerged settings. Of course, our own Aucilla River Prehistory Project conducts research in these submerged sites as well, and you can see why the project has spent so much effort in the elusive task of dating Clovis fluted point occupation. I don't mean to imply that all the answers for Paleoindian migration, settlement, and subsistence activities can be resolved with data from underwater sites. Nevertheless, is should also be clear that important, new data might be obtained underwater. It is also true that these sites are difficult to find, excavate, and interpret. The ocean is a big place, and sites were altered by the rising sea levels, by wave and current action, and by thousands of years in a marine environment. Much time needs to be spent out at sea, and the methods and principles by which this is done need more development. We have a real opportunity in

Florida to contribute to this nascent subdiscipline of underwater archaeology.

As I said, these are exciting times we live in. Acceptance of Monte Verde has called into question old models of migration, timing, and adaptation. Previous models of inland routes have not held up to accumulating evidence, and several researchers have noted the possibilities of now submerged coastal pathways for migrating Paleoindians. Prehistoric underwater archaeology has the potential to access and investigate sites that may contain clues regarding Paleoindian origins, and a better understanding of the history of their settlement.

PREVIOUS CONTENTS NEXT

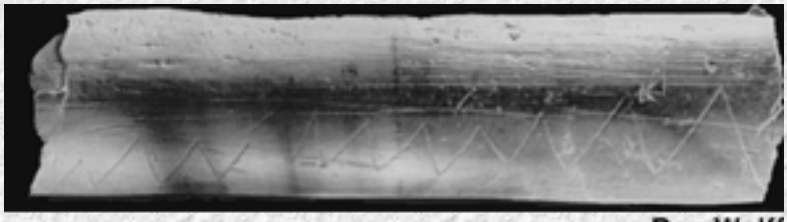
Ecological implications of ivory foreshafts from underwater sites in Florida

By Dr. S. David Webb, James S. Dunbar, and Benjamin I. Waller

Study of several dozen ivory foreshafts (IF's) from late Pleis-tocene underwater sites in Florida sheds new light on their usage and ecology. A Florida IF is typically about 300 mm long, 12 mm at the maximum diameter, with anterior end flatly bevelled and roughened for about 60 mm (presumably for hafting to a lithic spear point), smoothed along its length, with posterior end tapered (presumably for engaging in a wooden spear). An IF was made by cutting and husking outer ivory lamellae in four segments around and many segments along a fresh tusk of a mature *Mammuthus columbi*.

Ron Wolff

Distal half of decorated ivory foreshaft from the Ohmes collection at Sloth Hole.



Ron Wolff

Incised (zig-zag) artwork, enlarged.

Florida IF's are best known from two sites each in the Aucilla River and the Ichetucknee River, and also from a few other submerged sites. This distribution is quite localized within the broader range of abundant Paleoindian lithic sites in Florida. It does not appear to reflect either distinct age or preservational bias, but probably reflects specialized usage of a particular favorable ecological setting. The common feature shared by IF sites in the late Pleistocene of Florida may have been shallow watering sites surrounded by open grazing systems. Such settings probably resembled present "Florida prairies" and were the very sites where mammoths were ambushed with spears incorporating IF's.

Editor's note: This article is reprinted from the program of the Sixth International Conference for Archaeozoology which met May 21-25, 1990 at the U.S. National Museum of Natural History (Smithsonian Institution), Washington, D.C.

Page/Ladson site update

By Dr. S. David Webb and James S. Dunbar

They say that “all good things must come to an end”, and that aphorism certainly applies to Page/Ladson, the ARPP’s primary site in the Half-Mile Rise section of the Aucilla River. Many of us affectionately call this productive place “the center of the universe”, and that’s no great exaggeration within the purview of the ARPP. Page/Ladson packs a powerful punch both scientifically and sentimentally. Its location, where the clear waters of the Wacissa River’s eastern branch spill over a resistant chert race into the widest and deepest expanse of the Aucilla, is breathtakingly beautiful. One senses intuitively that this is truly a noble place, and probably has been so for eons. And so to those who knew the region, it came as no surprise that this underwater site, which SCUBA divers of the Cousteau era had dubbed “Booger Hole”, would play a special role in illuminating the prehistory of the eastern Gulf of Mexico.

At the end of our inaugural 1983 season the first team of ARPP explorers visited this site with Buddy Page, a former U.S. Navy SEAL and our lead diver. The paleontological and archaeological returns drew us back for our second season. And that is when the true potential of Page/Ladson began to dawn on us. Continuous deposits of sediments stood five meters (ca. 15 feet) vertically along the lower (submerged) reaches of the river bank. Upon our return for the third season we thrilled at the sight of these orderly stacks of ancient sediments still standing in the walls of the previous year’s excavation. By then we had some preliminary carbon dates demonstrating that the Page/Ladson site spanned the five critical millennia of the waning Ice Ages from latest Pleistocene into early Holocene. We had a detailed sedimentary record (about a millimeter per year) spanning the time when seas rose dramatically (as ice sheets shrank), when mammoths and other megafauna went extinct, and when the first humans colonized the New World. During most of the ARPP’s next 11 seasons we excavated a number of test pits at the Page/Ladson complex, until finally this past year we determined to complete our work. After all, we had a book contract with Plenum Press for our multidisciplinary team to report its work (The First Floridians is to be released in late 1999). As befits this very special site, Page/Ladson gave us another fabulous season.

W. Gifford/A. Hemmings

We dedicated the end of May and the first week of June, 1997 to removing nearly 12 feet of leaf litter and relocating old test pits along the west bank, including our most important long trench, dubbed “the stairway into the past”. Its foot lay in 35 feet of water when we reached it on June second. We laid out new excavations to the north and east of the old ones and emplaced upon them our two-by-three-meter rail-track grid-frame. We were

W. Gifford/A. Hemmings

Figure 1: Llama maxilla with three molars intact.

intent on getting to the deeper parts of the section, as we already had made a huge haul from the Bolen layer in 1995 (see "Underwater site..." and "Page/Ladson Faunal Remains..."). The older beds obliged us by dipping upward, and soon we saw familiar sandy sediments mingled with "straw mat" (yellowish peaty material that we had learned five years earlier represents mastodon digesta, see "Latvis/Simpson site update"). On June 7 this eastern promontory produced both a flint flake and the right maxillary of an extinct llama bearing three molars (Fig. 1). The screen operators also collected a piece of fresh proboscidean tusk sent up the dredge from the same deposit. As another week passed we exposed a large volume of productive sediments and a very outstanding sample of mastodon bones (pelvis, scapula, vertebrae and ribs) in deep, approximately 12,000-year-old, sandy sediments. On June 13th we had to quit at noon out of respect for the first ferocious thunderstorm of the season.

The final excavation of the '97 season is recorded in our field logs as "97-2 northeast extension". It reached out to the center of the river with the sediment top in 20 feet of water. Among our first discoveries was a magnificent mastodon maxillary bearing all three molars (Fig. 2), the upper edges of the cheek region slowly eroding in the water column. This mid-river section is surely the source of the wealth withdrawn by early amateur collectors. We spent the final ten days making detailed maps and recording 202 field specimens of archaeological and paleontological material. The pile of sediments in mid-river looked familiar to us veterans of the west bank, but we carefully measured new stratigraphic sections and gathered numerous samples for carbon dating. At this writing (February 1998) we anxiously await the results of our new series of carbon dates. We anticipate that they will mirror those from the west bank. If so our 1997 season will have corroborated the supreme value of the Page/Ladson Site as the richest and most detailed prehistoric time capsule in the eastern Gulf of Mexico.

W. Gifford/A. Hemmings

Figure 2: Mastodon maxilla with three molars intact.

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Sloth Hole site update

By Andy Hemmings

The October 1997 field season at Sloth Hole proved to be the most productive and archaeologically rewarding to date. 35 square meters were excavated, mapped and collected. The entire season was spent recovering data from the deepest part of the site. The 35 meters we excavated this year complete a block of 53 square meters of stratified and mixed layers of fluvial deposits in a U-shaped recess. This recess was protected upstream and to the east and west by vertical bedrock limestone walls.

In August, a brief survey of the lower West Run of the Aucilla included some surface collecting from exposed areas south and north of our large excavation area in Sloth Hole. A distal phalanx of a monk seal was our most unanticipated discovery. It is possible this animal really was alive at Sloth Hole, as they have only recently become extinct in the Gulf of Mexico. Another possibility is that the seal skin was a prehistoric piece of clothing that had the flippers intact (the distal finger bones would have been very difficult to remove). This last speculation would probably be impossible to prove but does offer a reasonable explanation for the presence of a monk seal in Sloth Hole.

Figure 2: Ivory foreshaft fragment.

The August survey also turned up several stone and bone tools of note. An unstained 10cm Paleoindian bifacial knife was found (Fig. 1) a few meters from a white Bolen Beveled point, while a river stained Bolen Beveled was found in a concentration of artifacts with an archaic stemmed knife and several bone pins. One complete bone pin was 21cm long.

Remains of at least two moderately articulated mastodons constitute the bulk of the faunal material recovered in October. One of the mastodons is a juvenile that may have been butchered on the edge of a Pleistocene pond prior to being inundated as the water table rose. Trampling scars or cut marks are visible on numerous bones and await microscopic examination to make solid determinations regarding the possibility of human agency being their cause.

Another line of evidence tends to support the butchery scenario, namely the lithic artifacts of this area. The 12cm biface and large hammerstone in close proximity to the fibula with good cut marks were described last year. The 1997 work added many worked and utilized flakes as well as several Paleoindian and Early Archaic unifacial and bifacial tools. These various tool forms are dominated by cutting, chopping and scraping forms.

One diagnostic unifacial tool that is not thought to be involved in butchering activities is becoming common at Sloth Hole, the Aucilla Adze. This year we recovered three of them in Sloth Hole and an Aucilla Adze Preform was found downstream in August during survey work. The total at Sloth Hole is now seven. This type of adze has been dated only from a Page/Ladson specimen to 9450+/-100 RCYBP. The Aucilla Adze is a relatively rare artifact with probably fewer than 200 known, less than 10 are in the Florida Museum of Natural History collections. This tool is thought to be a hafted woodworking tool from the Late Paleoindian or Early Archaic period in Florida. Our finding seven of them at Sloth Hole seems to indicate an occupation of the site after the mastodon butchery that is related to tool manufacture, or at least tool discard, at a habitation site. The discard theory seems unlikely because only one adze appears to be exhausted, whereas another appears to be virtually unused. The majority have some use wear visible but remain functional. We have plans to replicate and use Aucilla Adzes on several materials such as bone and wood to help understand what they were used for.

We recovered an 11.5cm long Aucilla Adze from a well stratified unit while Joe Latvis and Tim Barber were respectively videoing and photographing procedural activities. Needless to say we are overjoyed to have the discovery documented in two media. Tim Barber is to be credited with sighting this artifact first. The other two adzes recovered this year were from units that have had the intact organic sediments above them disturbed, either by erosion or collector activity. These latter adzes were found by William Owen Gifford and myself.

The area of greatest sediment disturbance was right down the middle of our 53 meter block in the deepest area that we have worked since 1995. Concerns regarding stratigraphic integrity of this area are mitigated by the fact that the same sequence of strata has been encountered on each side of the disturbed area. Also, the mastodon bones are roughly in anatomical order and related to two discrete individuals all the way across this area. These two features may indicate spacial integrity, even when the overlaying strata are disturbed.

Several more stone tools discovered in October merit discussion. The broken concave base of a lanceolate Paleoindian point or preform and two lanceolate Bolen Beveled points with pressure flaked edges broken from impact were found in the course of our work. Unfortunately all three came from disturbed units. We unearthed a 7cm teardrop shaped biface that had been split at the round end and evidently used as a hafted end scraper. This tool may have affinities with Paleoindian tools in the Northern United States but is really unlike anything in the literature. T

he August survey recovered nine bone tools, and the October season located 41 bone tools. In October we averaged better than one bone tool per unit. This brings the total to over 200 bone tools from Sloth

Hole in our collections since 1994 and the material donated by Dick Ohmes in 1993. For our third year running we found a bone fishhook. This one is 7cm long and unfortunately is broken at the bottom of the shank (see "Bone fishhooks").

The best artifact discovery, of course, has been saved for last. In a well stratified fluvially deposited level an 8cm long fragment of an ivory foreshaft was found (Fig. 2). This level is well above a 4500 year old sediment and probably only dates to 2000 years ago. This late date of deposition is disappointing, and surely indicates redeposition. Having an XYZ coordinate on any location for a worked ivory artifact is very rare. In fact, this may be the first found east of the Mississippi with precise provenience, albeit redeposited.

Figure 1: Bifacial knife.

The possible mastodon butchery discussed above lacks most tools normally associated with killing proboscideans, the ivory foreshaft notwithstanding. It is possible we are seeing remains of scavenging activities of an individual that was naturally trapped at a waterhole, not unlike the Latvis/Simpson situation discussed in Milhbachler's article (see "Latvis/Simpson site update"). This line of inquiry will be pursued in the future along with detailed analysis of the bone, stone, antler and ivory tools of Sloth Hole.

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Little River Rapids site update

By Mark Muniz

Research on the Little River Rapids site (8Je603) has been progressing on two fronts over the past year. The first half of the year saw a coring project and 17 days of excavation during the May/June field season. The second half of the year was spent looking at data (cores, sediment samples, faunal remains, artifacts, stratigraphic profiles, carbon dates, etc.) from Little River Rapids in the lab. So now it's newsmagazine time again, and while I feel a sense of incompleteness in reporting my activities, at least I can present what we have so far.

In the May field season, our primary focus at Little River Rapids was on unit 2' (2 prime), which was a 2x2 m extension of unit 2 (excavated in 1996). Excavation of this unit proved to be difficult and time consuming as the conglomerate mass of clay, sand and limestone cobbles often sloughed into the unit and forced us to erect plexiglass barriers to maintain site integrity and to protect divers. The unit was placed on the submerged bank of the northern side of the river at about a 45 degree slope, and while encompassing unit 2, extended another one meter both upstream and toward the bank (hence the 2' designation).

The excavations uncovered eight main stratigraphic units (Fig. 1), which we were happy to discover represented the Pleistocene/Holocene transition. We proceeded to remove what was considered modern detritus and designated zone one (loosely consolidated leaves and twigs) until we encountered a hard, brittle, green clay (zone two). This sediment was almost entirely clay and occasionally contained aquatic faunal remains. Continuing downward, we uncovered zone three. Zone three was a soft, light gray clay/silt, also containing aquatic fauna in the upper portions, yet picking up some mammal remains and limestone pebbles in the lower portions. Finally, we uncovered zone four, which consisted of a gray sandy clay, with pebble to cobble size limestone, as well as gastropod and bivalve fragments throughout.

Zone four lay directly above an intact paleosol, which contained terrestrial faunal remains such as tapir, horse, camel, muskrat, sloth, and mammoth embedded in its surface. This paleosol was designated zone seven (as zones five and six designated sand and peat beds overlying the paleosol to the south) and all faunal remains were mapped in place. Several carbon samples were collected from the unit, as well as bulk sediment samples that could be used for dating (Fig. 1).

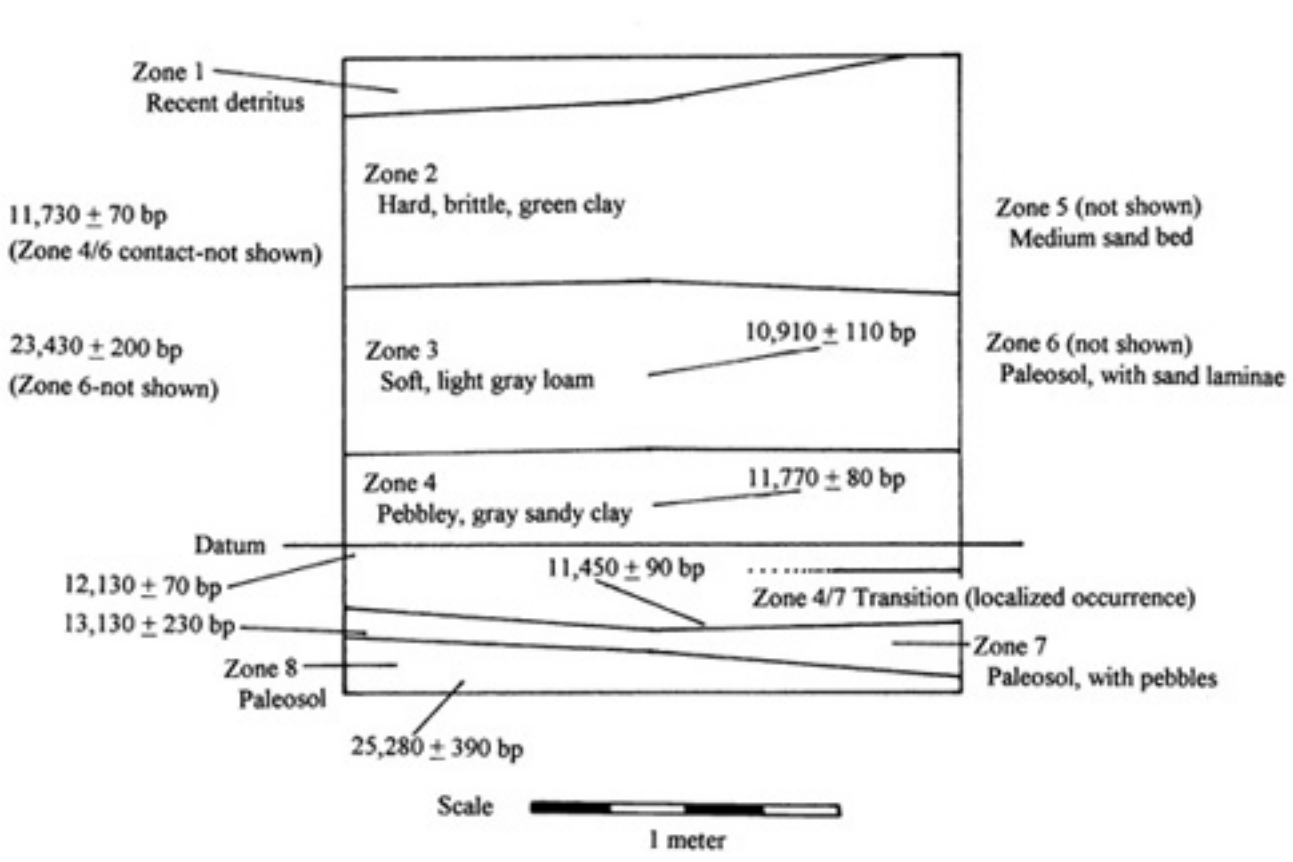

Figure 1. 8Je603, unit 2', West wall stratigraphic profile (all dates uncalibrated)

As can be seen from the carbon dates and the extinct faunal assemblage, the paleosol encountered in unit 2' predates the paleosol occurring at Page/Ladson (8Je591) on which Bolen style artifacts have been dated at 10,000 bp. As of yet the relationship between the two sites is not fully understood, however, the presence of an intact paleosol, similar to, yet older than the "Bolen soil" implies a high potential for there to be human activity preserved on its surface. Although we did not encounter any unequivocal artifacts within unit 2', diagnostic artifacts of Clovis through Bolen aged cultures are present at the site, and thus are likely to show up on this paleosol, if any are left in situ.

The second major area I have been concentrating on has been a reanalysis of the artifact assemblage collected during the 1987 Palenotological and Archaeological Research Team (P.A.R.T.) survey. While the survey did a wonderful job in describing the formal artifact types, little attention was paid to the debitage and informal tools. Thus I have been analyzing the debitage using a Sullivan and Rozen (1985) approach, as well as Ahler's (1989) mass analysis method. Informal and formal tools are undergoing analyses related to Southeastern U.S. typologies. A study of thermal alteration (heat treatment) will also be included. The goal of the analysis is to test the hypothesis that the artifact clusters documented by Willis (1987) are in fact representative of real activity areas, and not products of the fluvial erosion caused by the Aucilla River over the past 11,000 years. If the artifact clusters do represent real activity areas, then the debitage, informal and formal tools should all be in agreement. If the artifact analysis reveals incongruity between activities and artifact clusters, then these same clusters are more probably the result of site formation processes.

Results of the excavation and analyses from this site will appear in a paper at the 1998 S.A.A. conference, as well as a chapter in the upcoming book, The First Floridians, and hopefully at the 1998 F. A.S. meetings in Gainesville (May 22-24), before the final picture is presented as my M.A. thesis.

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Latvis/Simpson site update

By Matthew Mihlbachler

While the focal point of the ARPP is to investigate the earliest humans in Florida, we often make numer-ous unintentional discoveries along the way that are very important contributions to our endeavor to reconstruct the past. A case in point is the Latvis/Simpson site, located at the lower end of the Little River section of the Aucilla.

In 1995, a preliminary field investigation took place at this site. Like the Page/Ladson site, Latvis/Simpson is a sinkhole that contained a rich layer of bones and artifacts at the surface. The bottom of the hole is filled by a stratigraphic deposit of mastodon dung composed of coarsely masticated sticks, twigs, bark fragments and an occasional seed. Originally, we hoped that Latvis/Simpson was roughly the same age as Page/Ladson (between 12,000 and 10,000 years old) and that the dung layer contained more evidence about early Americans and their interactions with the extinct megafauna.

In typical fashion, the site did not turn out to be what we had hoped for. Collecting the exposed artifacts and bones was a fulfilling endeavor, but unfortunately they were a mixed accumulation, and there was no direct evidence that the artifacts were in any way associated with the faunal remains. Additionally, the carbon dates from plant material contained in the dung layer turned out to be considerably older than we had expected. In fact, they were about three times older than Page/Ladson! (between 32,000 and 31,000 years old). The Latvis/Simpson deposits were laid down long before the arrival of any humans.

Despite our unfulfilled expectations, Latvis/Simpson contains a number of surprises that are excellent avenues of research. Most importantly, it is providing us with clues about the ecology and behavior of proboscideans that utilized Florida sinkholes and springs. For instance, we can now compare the contents of the gut remains and look for differences in the diet, health and nutrition of the mastodons that lived before and during the arrival of humans. Differences may lead us to clues about how environmental changes and, possibly, humans influenced these beasts at the time of their demise. Sorting through dung is a lengthy, mind-numbing process, and as a result, this research is still in its earliest stages.

The remains of a single semi-articulated mastodon were found embedded within the dung deposit at Latvis/Simpson. During the 1995 field season, the ARPP team excavated two 1X1 meter units into the dung matrix and

E. Rowe

Figure 1: Distal end of mastodon tusk embedded in dung deposit at Latvis/Simpson

recovered the distal ends of both tusks, a limb bone and a rib of a subadult mastodon. The excellent preservation of the bones and the surrounding dung deposit gives us an excellent chance to understand the significance of the springs and sinkholes of North Florida on the paleoecology and behavior of the proboscideans that utilized them.

The seeds (e.g. grape and gourd) found in the dung indicate a summer deposition. This was probably a dry season, and most proboscidean activity probably occurred around the springs and sinkholes at this time of scarce water when hordes of animals thronged to the remaining sources of standing water.

The positions of the recovered bones have allowed us to roughly reconstruct the scenario of the death and deposition of this animal.

1. While the skull was completely destroyed, the tips of the tusks jutted down into the matrix in anatomical position (Fig. 1). Apparently the animal died in or very near the sinkhole and eventually ended up lying face down in the bottom of the hole.

2. The recovered long bones and limbs were positioned vertically and jutted deeply into the dung deposit. It is possible that the animal, weakened by thirst or starvation, ventured into the sinkhole to bathe or wallow, became mired and died trying to free itself from the perilous glue-like sucking grasp of the bog.

3. Many of the mastodon bones contain deep grooves and scratches, indicating that the bones were trampled and stomped into the mire by other proboscideans which depended on the use of the water source. The trampling may also be responsible for the vertical orientation of the bones.

Most of the potentially butchered mastodon material recovered from the archeological sites at the Aucilla, such as Page/Ladson and Sloth Hole are remains of subadults. The question remains whether or not Paleoindians selectively hunted subadult individuals for some reason. The Latvis/Simpson site reinforces the notion that large numbers of proboscideans and other potential game animals annually congregated around the sinkholes and springs during late summer and early spring. The preserved juvenile mastodon indicates that the annual die-off of younger or weaker individuals in these areas was a natural phenomenon occurring during the most stressful time of the year. Possibly, ancient hunters simply took advantage of this natural phenomenon when they arrived in this region.

As of yet, none of these conclusions are definite, and more Latvis/Simpson fieldwork is needed. The

goal is to excavate more units into the dung layer to collect fresh dung samples and to remove the rest of the juvenile mastodon material. We are ever in search of better evidence and better theories. For the ARPP, Latvis/Simpson will be invaluable in interpreting what the Late Pleistocene of North Florida was like before humans appeared. It will be invaluable in providing a framework for understanding what changes take place when humans enter into the scenario.

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Underwater archaeological techniques

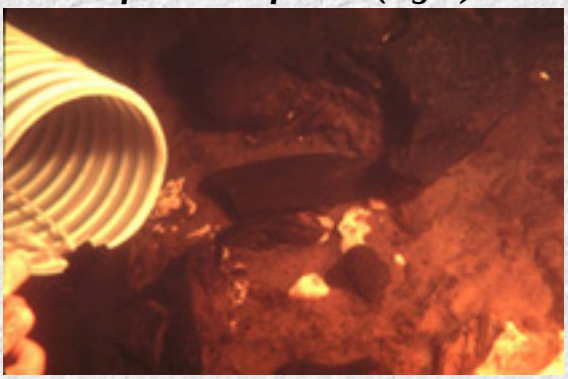
By Tim Barber and Joe Latvis

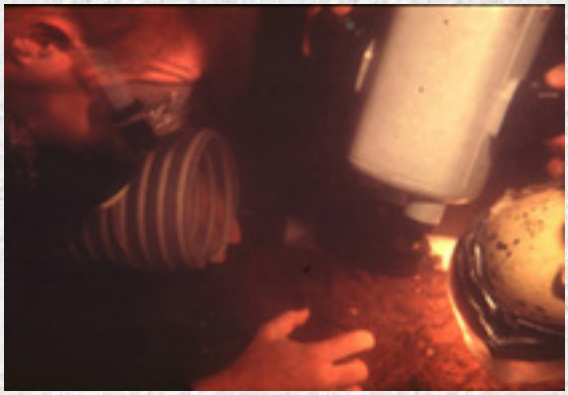
Storyboard documenting all* in situ *photography.

The October 1997 field season greeted the field crew with the best underwater visibility we have ever experienced at Sloth Hole since our initial survey in 1994. Veterans of previous Sloth Hole campaigns surfaced from their initial October ’97 dive ebullient at the very real prospect of actually seeing the layout of this complex 3-dimensional site in more than the three-foot vignettes attainable under normal Aucilla River tannic conditions.

Tim Barber

Andy Hemmings excavates with fingers. Note the transparent coretube preserving stratified sediment column (left). Megafaunal bones and Aucilla Adze exposed* in situ *(below). Bill Gifford records three-dimensional coordinants of* in situ *artifacts and fossils (right).





Close quarters close-up videography of artifacts and fossils.

Resolving to exploit these rare hydrologic conditions before one Big Bend downpour reversed our good fortune we began documenting the underwater archaeological techniques that we have developed throughout our 14 years of collective diving experience under blackwater conditions. We present this photoessay to illuminate some of these heretofore “unvisible” techniques whereby fossils, artifacts, sediments, radiocarbon samples, paleobotanical samples and bathymetric features are discovered, excavated, and spatially mapped in three dimensions, documenting *in situ* measurements with copious written observations, still photography and videography.

Joe Latvis

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Coring is not boring

By Dr. S. David Webb

The Aucilla River Prehistory Project (ARPP) committed the first two months of 1997 to recov-ering sediment cores from three key research areas on the river. The purpose of coring was to get a broad overview of the sedimentary types, ages and distributions in areas targeted for excavation during our summer field season. This gave ARPP scientists a huge headstart in knowing where to excavate. We estimate that each well-placed core saved, on average, a week of exploratory excavation. There are two reasons for doing our coring in the winter months: first, because we have relatively few other commitments during that time of year; and secondly, because that gives sufficient lead time to get laboratory results back in time for the major summer field season. The biggest drawback to this schedule is that the water is at its coldest, but as we discovered, divers can be fairly efficient under such circumstances.

T. Barber

From left: Bob Millott, Matt Mihlbachler, Bill Gifford, Mark Muniz, and Ed Green driving a coretube into the riverbottom.

The ARPP is deeply indebted to Dr. Joe Donoghue of the Geology Department at Florida State University for loaning us his vibracoring rig and to Jim Hunt of Perry, Florida for providing his large block and tackle for retrieving the cores. We began by modifying the project's 21-foot aluminum pontoon boat by cutting a six-inch hole in the deck amidships. This allowed ample working room for the tripod frame, the vibracore engine and at least three crew-members to drive the core at a balanced entry point. We spent one long weekend on each of the three research areas. For each area the scientific field director selected and prioritized up to six core sites. We purchased enough thin-walled four-inch aluminum coring tube in 30-foot lengths. The first weekend was scrubbed due to a stripped gear in the vibracore rig. Subsequently we succeeded in each of the target areas, with three cores at Nutall Rise, six in the upper end of Little River, and seven cores down-river in the West Run.

Divers were employed first to spot the precise river bottom locations for the cores. They were needed again after the core was driven and partly retrieved, to cap the bottom of the aluminum tube. This was

essential to prevent loss of sediments that were not well consolidated. Some cores encountered hard bottom prematurely and therefore required relocation to an adjacent location. Such cases required divers to remobilize on an unpredictable schedule. Survey and depth data were recorded for each core.

When the cores were returned to the ARPP's field headquarters at the river, they were placed horizontally on a wooden rack designed by Ed Green and then cut in half longitudinally with a metal-cutting circular saw. The core sediments were then photographed while freshly exposed. Next, they were measured and described. From one half of the core, samples were bagged and wood fragments or other carbon-datable samples were taken. For most cores, at least the bottom carbon sample was sent off for dating. As the dates came back and the core logs were compared, a general three-dimensional view of the sediment stacks in each research area were developed.

We are pleased that the coring season was so successful. For a total of four long weekends of coring, and an almost equal time doing analyses, we obtained very valuable advance knowledge of the field areas to be excavated that summer. For Matt Mihlbachler and Lance Carlson at Nutall Rise, for Mark Muniz at Little River Rapids, and for Andy Hemmings in the West Run, the coring results offered a sophisticated perspective on where to focus their scientific excavation plans. Ultimately the core data will be integrated into the fabric of the entire research area. One feature of good science is learning how to develop testable hypotheses from limited data. ARPP's winter 1997 coring operations on the Aucilla River exemplify the early stages of developing a sound prehistoric framework on which to base more detailed work.

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Ground Penetrating Radar on the Aucilla River

By Mark Muniz

In case anyone was wondering why that big red box was being dragged all over the river during the May/June field season, and what it had to do with archaeology, let me explain. And who were those strange people in the blue Suburban anyway? First of all, the box was actually sealing an antenna, and this antenna served as the ears for a type of remote sensing device called Ground-Penetrating Radar (GPR). And believe it or not, radar can be just as useful to archaeologists as to air traffic controllers (or pretty close anyway). And those people in the Suburban were a team of environmental pedologists (soil scientists) led by Dr. Mary E. Collins of the Soil and Water Science Department at the University of Florida, who graciously agreed to come out and give the Page/Ladson and Little River Rapids sites the once over with their GPR.

Remote sensing in archaeology can take many forms. From satellite imagery with heat sensitive film to bosing (where a huge hammer strikes the earth to produce sound waves), there are many different techniques available, often, each most suited to a particular application depending on what information the archaeologist requires. The greatest benefits of remote sensing are the large amount of area that can be covered in a comparatively short amount of time, as well as the low impact these techniques have on the extremely limited archaeological record.

So why choose GPR for our setting on the Aucilla? To quote G.L. Barr (1993):

"Ground-penetrating radar (GPR) is a useful surface geophysical method for exploring geology and subsurface features in karst settings. In GPR surveys, a radio-frequency electromagnetic signal is transmitted into the ground, and the signal reflected from subsurface lithologic and hydrologic features and boundaries can be interpreted to identify sediment thicknesses, depths to the water table and to clay beds, breaches in confining beds, karst development, buried objects, and lake-bottom structure."

As the limestone bottom of the Aucilla River reminds every diver who visits it, we are definitely dealing with a karst environment. However, since the time frame we are interested in is generally older than 10,000 years ago, we can not rely on what we see exposed at the surface to always accurately indicate what is buried below. Thus one can immediately see the advantages of remote sensing to try and locate sediment "signatures" that represent buried paleosols (e.g. "Bolen soil" and Little River Rapids paleosol), sand beds that seem to occur near the Pleistocene/Holocene transition, or even limestone bedrock that may thwart our plans at excavation. As we will see, however, these "signatures" are not nearly as clean as the proverbial "John Hancock."

As the radar passes through the ground, different types of sediment will either allow the signal to pass through (thus providing conductivity) or will in essence adsorb the signal (thus providing resistivity). The signal itself (in MHz) can be altered to produce different wavelengths that travel at different speeds

(in nanoseconds). A long wavelength (e.g. 100 MHz) will penetrate deeper, but produce a coarser resolution than a shorter wavelength (e.g. 500 MHz). Unfortunately for the ARPP, much of the banks of the Aucilla River are clays, which resist radar flow and tend to attenuate the signal. As if this is not bad enough, when GPR was used on the water surface within the channels of the river, the signal was so adsorbed that there was barely any return to the antenna at all. While GPR is often used in freshwater settings with success, salts can have an adverse affect on the signal. However, the Page/Ladson site (where this was attempted) has little to no salt content in the water. Thus the resistance seems to have derived from, what at this point, is an unknown source.

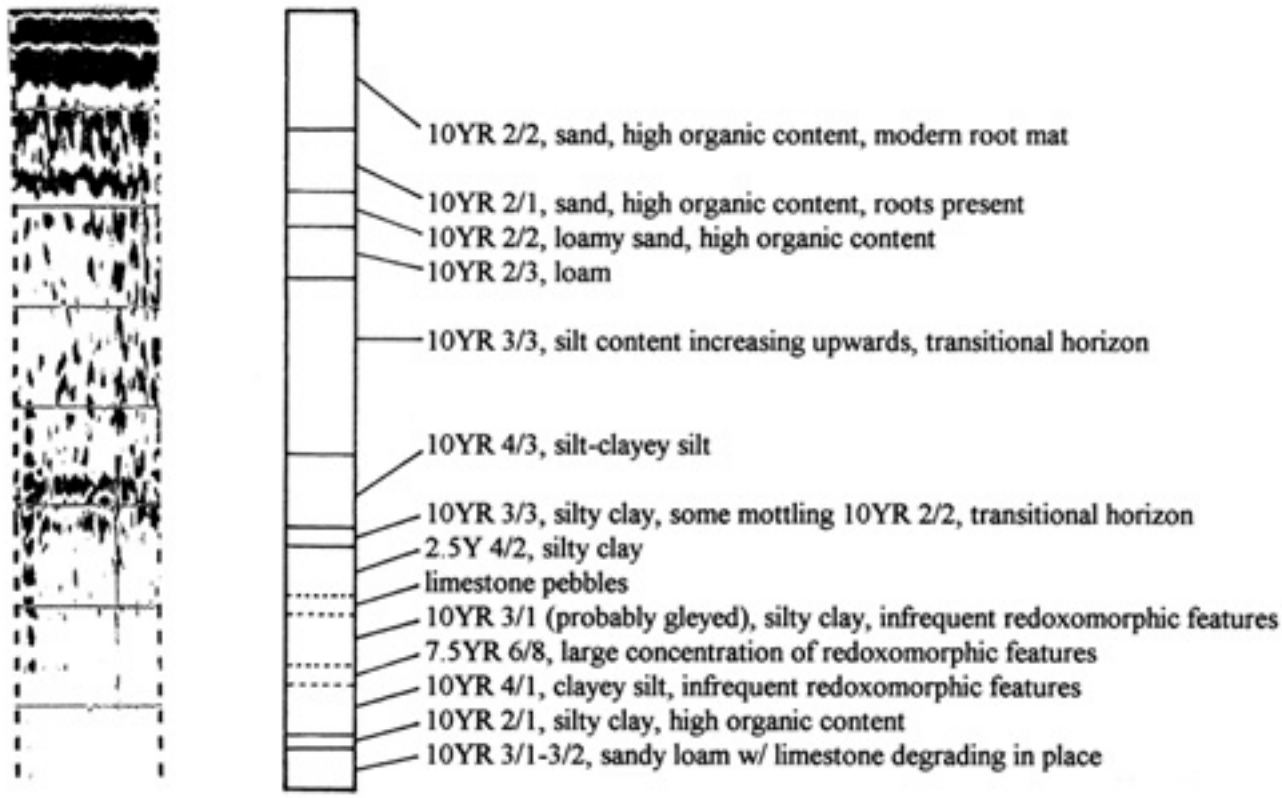

Figure 1. GPR readout at 500 MHz, 40ns (left) of Core 3, 1.13m total length (right) at 8Je603

To interpret the results of a typical GPR readout, the archaeologist must ground truth the signal. This is accomplished by either coring or excavating near the path of the GPR transect in order to record what the different “shades of gray” are referring to. As we can see in the example from Little River Rapids (Fig. 1), it takes a very experienced eye to accurately decipher which bumps and lines are resultant from buried limestone, for example, or which are really invasive tree roots. In situations like these, we need to call out the experts like Dr. Collins. However, when archaeologists have a good ground truth, we can generally venture an interpretation that will at least point out major stratigraphic units and obvious features such as boulders or water pipes. While remote sensing will never replace excavation, it is a valuable contribution to the characterization of an archaeological site that can not only save time and effort under the right conditions, but expose features that may never have been seen using more traditional survey techniques.

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Removing iron from artifacts and fossils

By Russ McCarty

Those of you who collect in Florida's northern and central rivers have frequently encountered specimens that would be perfect except for the disfiguring hematitic (iron) stains and encrustations on them. In fact, in some rivers in the Florida Panhandle, this is the norm. Attempts to remove these stubborn deposits by physical methods, such as grinding or using air abrasive tools, most often results in permanent damage to the specimens regardless of their composition.

In 1974, Francis Howie, of the British Museum described a method for removing hematitic matrices from vertebrate fossils by using a dilute aqueous solution of thioglycollic acid. Howie first coated all exposed surfaces of the bone with the resin, polystyrene, to provide a protective barrier. After the resin had cured for six hours, he immersed his specimen in a 5% aqueous solution of thioglycollic acid (19 parts distilled water to 1 part thioglycollic acid). To this solution was added 0.9% calcium orthophosphate by weight. The addition of the calcium orthophosphate is to prevent the thioglycollic acid from scavenging phosphate from the bone. Howie left his specimens in acid for 24 hours. They were then removed, allowed to drain, and then immersed in a 5% ammonium hydroxide (ammonia) solution to neutralize the acid. The specimens were then washed in several changes of water for four days. He then used gentle brushing, and air abrasive to finish removing the deposits.

Artifacts before (left) and after (right) thioglycollic acid treatment.

As you can see, even this "easy" method is fairly time consuming and meticulous. But for an important specimen, the time spent in chemical development would be repaid. My first experiment on removing iron deposits with thioglycollic acid was on a chert tool from the Aucilla River. The chert specimen was so heavily encrusted with iron deposits that it was hard to discern the true nature or shape of the tool.

I placed the tool in a 5% solution of thioglycollic acid made up as above—except that I left out the

calcium orthophosphate. I felt that this was an unnecessary buffer since there was no bone involved. The specimen was left in the acid solution for 48 hours. It was then removed, rinsed in water, and placed in a 5% ammonium hydroxide solution for a few minutes to neutralize the acid. At this point the specimen was placed in a water bath for several hours. The iron deposits had turned to a soft, powdery film that brushed away easily with a soft toothbrush. All traces of the iron deposit were gone.

Thioglycollic acid is available from Fisher Scientific supplies at a cost of about $25 dollars per 100 ml bottle. That would make about 2000 ml of 5% solution. When working with any chemicals, one should always read the materials safety data sheets which the suppliers provide and follow all rules for safe usage. Thioglycollic acid produces hydrogen sulfide as it digests the iron compounds. Hydrogen sulfide is a poisonous gas, but familiar to everyone as the smell of rotten eggs and sewer gas. In the small quantities used for removing iron from flint tools, the use of this acid should present few problems, especially if the process is performed in a fumehood or in a covered container placed in a well ventilated room.

Howie's method (Howie, F.M.P. 1974. Introduction of thioglycollic acid in preparation of vertebrate fossils. *Curator* 17:159-166) has proven successful for many applications and should be reviewed before attempting to remove iron from fossil specimens. Using thioglycollic acid, while applicable to many situations, does have a few drawbacks such as the foul odor produced by the acid. An alternative noncorrosive method which uses no acid was developed by Rob Waller, a Canadian conservationist, and adapted to vertebrate fossils by Blum, Maisey, and Rutzky (Blum, S.D., J.G. Maisey, and I.S. Rutzky. 1989. A method for chemical reduction and removal of ferric iron applied to vertebrate fossils. *Journal of Vertebrate Paleontology*. 9(1):119-121. This method is a bit more complicated than Howie's method.

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"A Naturalist in Florida": an update

By Joan Herrera

In April of 1996, several members of the Aucilla River Prehistory Project crew assisted WUFT filmmakers Dennis Gaston and Dennis Ogle in reenacting scenes from the life of local and international naturalist, and author, Dr. Archie Carr. This television documentary, produced by Letitia Langord, based on Dr. Carr's literary work "A Naturalist in Florida: A Celebration of Eden", aired in November, and during WUFT's funding drive in December, of 1997 on UF's channel five. The film is reported to have done very well during this drive to support public programming on this station. Additional prints of the film are in production and will be made available to other PBS and APS stations in the state of Florida and around the southeast. Watch for it to air on your local station.

Archie Carr was a Professor of Zoology at the University of Florida and headed the Archie Carr Center for Sea Turtle Research. He was also a world renowned naturalist and the author of many scholarly articles and popular books. The Archie Carr National Wildlife Refuge is located just south of Melbourne. Many of Dr. Carr's popular works are available in local bookstores. His work, "A Naturalist in Florida: A Celebration of Eden" is the basis of the documentary and tells of his experiences of over 60 years of roaming through natural Florida. Filming for the special was conducted at various wild areas around the state, including the Everglades, Cork Screw Swamp, Melbourne Beach, the Rainbow River, and Ichetucknee Springs.

Aucilla River Prehistory Project members participating in this project included Dr. S. David Webb, Joe Latvis, Andy Hemmings, Lance Carlson, and Joan Herrera. Dr. Webb portrayed Dr. Carr skindiving in local spring runs, discovering mammoth and mastodon teeth, and other fossils, among shoals of waving rivergrass. Joe Latvis filmed underwater sequences, while Andy, Lance, and I provided dive support.

A preview of the film was presented during events surrounding the awarding of the Archie Carr medal on November 12, 1997. Cast and crew members were invited to the preview reception. Dr. Webb, Joe, and I attended and enjoyed viewing the completed documentary and expressing our congratulations to the filmmakers. We were pleased to learn that Marjorie Carr, Archie's wife and his life's partner, was able to view the documentary prior to her death last year. Through his writing and teaching Dr. Carr inspired an entire generation of naturalists.

FAS video features ARPP

The Florida Anthropological Society has commissioned Chaos Productions of Fort Myers to produce a thirty minute video on Florida prehistory titled "Shadows & Reflections On The Past". The theme of this video is the qeust for knowledge and understanding of the past cultures of Florida. The cultures and sites chosen to represent the five time periods examined are:

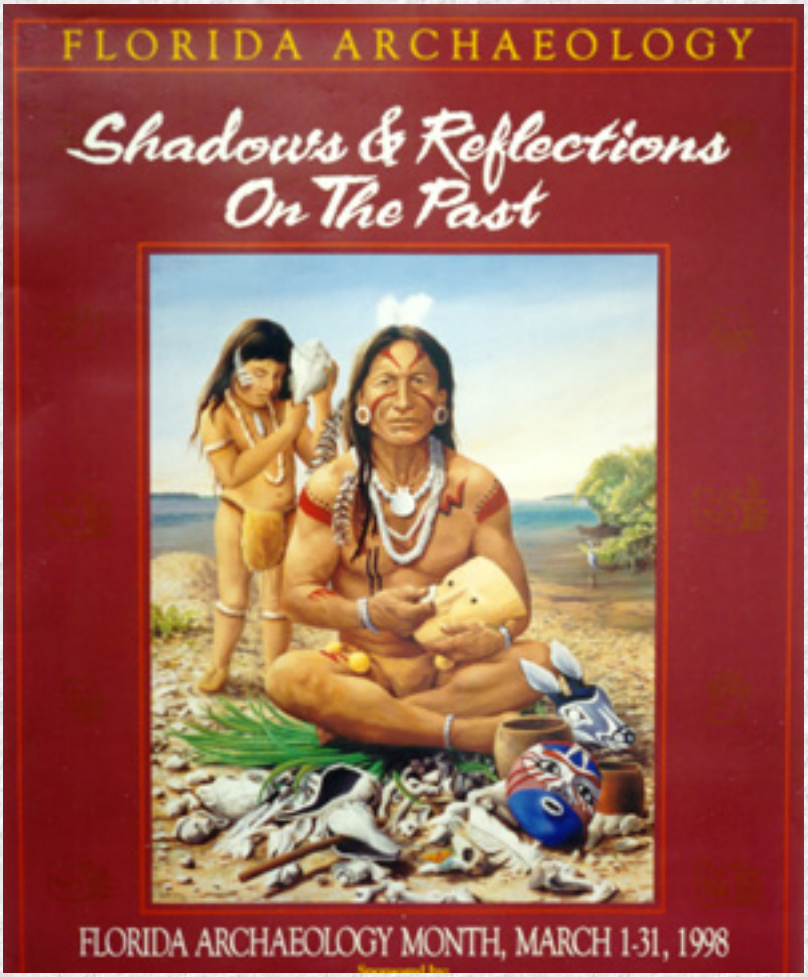
Paleoindians - The Aucilla River

Tequesta - Cutler Ridge Mound

Apalachee - Lake Jackson Mounds

Timucua - Fort Caroline National Monument

Calusa - Mound Key



Artwork by Theodore Morris
Photographed by M. Muniz

Opening scenes feature the natural environment of the Aucilla, as well as underwater excavation footage by the Aucilla River Prehistory Project, and narration by ARPP Director Dr. Webb.

The FAS plans to make the documentary available to PBS television stations, but perhaps more important will be its educational use in the school system. The video is currently in production, and the premier showing is scheduled for Saturday May 23rd during the 1998 Annual FAS meeing in Gainesville (see "1998 FAS annual meeting").

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River diver meeting and workshop

Field work on the 1997 Santa Fe River Survey conducted by the Florida Bureau of Archaeological Research culminated in an informal meeting and workshop with river divers to share the results of the survey and to discuss implementation of the Bureau's policy on isolated river finds. Announcements about the workshop were circulated through local dive shops and river concessions, as well as by word of mouth throughout the river diving community. The function took place on Saturday, August 2, at Fanning Springs State Recreational Area, and was attended by approximately 35 persons, including veteran collectors, avocational archaeologists, and local river residents. Also in attendance were staff of the Suwannee River Water Management District, the Florida Division of Forestry, and the Florida Museum of Natural History, as well as officers of the Game and Freshwater Fish Commission, and the Florida Marine Patrol.

The meeting began with a cook-out hosted by the survey team to allow participants to become acquainted with one another, and to thank several volunteers and informants who had provided assistance and input to the survey. Afterwards, the gathering adjourned to a meeting room overlooking the Springs for the informal workshop. The survey team had assembled visual materials, such as aerial photographs, sidescan sonar images, and computer-generated maps and diagrams of the Santa Fe River, as well as handout materials, including Isolated Finds brochures and reporting forms.

Dr. Roger Smith convened the workshop by introducing the Bureau's program of underwater archaeology, and its mission to identify, inventory, assess, and interpret Florida's submerged cultural resources. He discussed the program's partnerships with other state and county agencies, state and local museums, universities and other educational institutions, and stressed the contributions of volunteers, as exemplified by the Santa Fe River survey project. After an overview of the Bureau's policy regarding isolated river finds, Jim Dunbar explained the procedures and forms for reporting discoveries and encouraged attendees to pass along information about the policy to other river divers. There followed a general discussion about the benefits of reporting river finds, the Bureau's concern for the accumulation of data rather than additional artifacts, the prospects for conducting inventories of some of the larger private collections from Florida's rivers, and the desire for continued communication and cooperation. Joe Latvis spoke about the Aucilla River Prehistory Project and the diversity of participants of all ages and backgrounds as an example of a successful endeavor that combines academic research with avocational interests. Dr. Michael Faught discussed the prehistory of Florida as reflected by artifacts found in rivers, and stressed that accurate reporting of past finds can help to provide information about early sites that previously has been unavailable to scholars.

Many workshop participants expressed their appreciation for the opportunity to meet and to explore ways in which to share knowledge about relics found in Florida's rivers. The gathering concluded on an optimistic note, with expectations of increased communication and cooperation.

For more information on the Isolated Finds Program see "Discovering Artifacts in Florida Rivers"

available from :

Isolated Finds
Division of Historical Research
Bureau of Archaeological Research
R. A. Gray Building, Room 312
500 South Bronough Street
Tallahassee, FL 32399-0250 P
hone (850) 487-2299

Editor's note: This article excerpted from An Underwater Archaeological Survey in the Santa Fe River, Florida, July 1997 by Roger C. Smith, James S. Dunbar, and Michael Faught with assistance from Grayal Farr and William O. Gifford, December 1997.

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Archaeology in depth

Global warming may bring the water-front to many Floridians' doorsteps. But considering that the Sunshine State's Gulf of Mexico shoreline has shifted north and eastward over the past 10,000 years, forcing prehistoric populations to move several hundreds of miles inland, this phenomenon should not come as a surprise.

If approval goes through next spring as anticipated, students will be able to sign up for a specialty certificate in underwater archaeology, which will make FSU one of only three institutions in the U.S. to offer degrees with a particular emphasis on underwater archaeological research. The preliminary program was launched this fall within FSU's Department of Anthropology.

The program aims to focus study on many of these inundated prehistoric archaeological sites, some of which date back to 12,000 years. FSU's close proximity to numerous underwater sites in the Aucilla River, Gulf of Mexico and other rivers attracted Dr. Michael Faught, the new program's director.

An FSU research diver examines a mastodon bone on the bottom of North Florida's Aucilla River.

The former field director of Bay County Shipwreck Survey, and an archaeological consultant for the Aucilla River Prehistory Project, both located in Florida, Faught says the program is being established in conjunction with the university's Academic Diving Program and the FSU Marine Laboratory on the shores of Apalachicola Bay. "Our goal," says Faught, "is to focus on both historic and prehistoric underwater research themes."

The better-known historic shipwreck sites, located in salt as well as fresh water, may soon be eclipsed by research on freshwater sites located within the Gulf of Mexico, says Faught. Sinkholes, numerous freshwater springs, and ancient riverbeds where humans might have lived before the seawater level began to rise at the end of the last Ice Age, are covered by water today, and a number of such sites are within easy striking distance of FSU's marine lab.

FSU has conducted underwater archaeological fieldwork since the 1960s, longer than any other

academic institution. Collaborating with the Florida Bureau of Archaeological Research and the National Park Service's Southeast Archaeological Center (SEAC), the new specialty certification promises students a rich experience in both shipwreck and prehistoric underwater archaeology. See the program's web site at http://www.anthro.fsu.edu/research/uw/.

Editor's note: This article appeared in the Fall/Winter 1997 issue of Florida State University, Research in Review.

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Good times and good friends: ARPP open house

By Alyssa McManus and Tammy Montes

Alyssa McManus

Tammy Montes

Near the end of each field season, the Aucilla River Prehistory Project welcomes its crew and the public to journey down to Nutall Rise for an open house. It is a time for unity and community, when the staff and volunteers who work endless hours underwater, on the screen deck, and in the lab can share with the public, among them respected colleagues and supporters, the story that is constantly unfolding each season we are there. For crewmembers, who do not weather out the entire season on the river, and for those not able to participate in a hands-on manner, it is a wonderful opportunity to congregate, and fit the pieces of the puzzle together. As a result, we all develop a greater understanding of Florida's first people and their natural history. That's a good enough reason to travel to the event.

In 1997, the ARPP hosted two open houses, attended by many crewmembers, supporters, friends, and family. One could meet naturalists, archaeologists, paleontologists, anthropologists, flint knappers, divers, enthusiasts, and students all in the same group. Somehow, we all unite in our desire to know what happened at this place THOUSANDS of years ago. It's a bit like going to a "Paleofest"—complete with atlatl throwing, and displays of artifacts and fossils. We had site tours in the spring, where visitors could see underwater archaeologists at work, and the operation that supports them. The highlight of the fall open house was a wonderful slide and video presentation narrated by Andy Hemmings that really brought the big picture into view. These events are fun, and great for informing people just what it is that we do, and why we do it.

At every open house, the ARPP acknowledges those whose efforts have helped the project. During the spring field season's open house, the crew presented a fabulous cake to Alyssa and Al McManus, in honor of their recent marriage (Thanks guys!!!). The dedicated and long-standing support of Dr. Hoyt Horne, Jim Hunt, David Janet, and J.R. Walker was acknowledged during the fall field season open house with presentations of Ken Kirkpatrick's "The Past Made Present" artwork (featured on the cover of the 1997 *Aucilla River Times*.

National Geographic Society patches were presented to each crew member.

T. Barber

Operations manager Joe Latvis (right) presents J.R. Walker with a print of Ken Kirkpatrick;s compelling artwork "The Past Made Present" at the October '97 open house.

If you have never been to an open house, you should make the drive next field season. Although veteran ARPP volunteer Ken Kirkpatrick II was unable to join us for the fall open house (due to a previous job commitment in Saudi Arabia), his family's friend Cass McKown-Heavener, her daughter Calli, and Ken's father, Ken Sr. drove 8 hours from their homes in South Carolina to join in the festivities. The drive alone is like a natural history field trip through the wilderness preserves of Florida's coastal lowlands - deer, bear, and herons are often sighted. And there is always a grand feast. We had a great cookout in May, and this past fall a delicious barbecue dinner was provided by Jim Hunt's Zaney Foods catering. A good time is always had by all down at the rise.

Special thanks go out to all those who make our open houses so memorable and fun. It is great to get together with fellow crewmembers and people in the community to share such a special project. Everyone contributes to the success and good spirit of our endeavor to tell the story of Florida's distant past.

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ARPP Live Presentations

1997-1998	Place	Presenter	Type of Talk	Attendance
1997-- January 14	Wakulla Hist'l Society - Wakulla, FL	Dunbar	Popular	36
February 15	Seattle, WA - American Association for Advancement of Science, Archaeology Symposium	Dunbar	Professional	300
February 20	FSU Academic Dive Progm. - Tallahassee, FL	Dunbar	Academic	28
February 21	FMNH - Powell Hall - Gainesville, FL	Muniz, Hemmings, Mihlbachler, Webb	Dedication	75-100
March 1	Tampa Bay Fossil Club - Tampa, FL	Dunbar	Popular	50
March 4	FSU - Tallahassee, FL	Dunbar	Academic	25
March 6	Explorer Scouts Post 909 - Wakulla, FL	Dunbar	Academic	30
March 9	Archaeology Week, FMNH - Gainesville, FL	Dunbar	Popular	150
March 19	Rotary Club (Heritage Club) - Gainesville, FL	Webb	Popular	35
March 24	Kissimmee Valley Arch'cal & Histo'cal Conservancy	Dunbar	Academic	40
April 5	Soc. American Arch. - Nashville, TN	Carter	Professional	75-100
May 21	Airlie Conference Center - Arlington, VA	Webb	Academic	30
June 17	Perry Rotary Club - Perry, FL	Latvis	Popular	40

July 2	Kiwanis Club - Perry, FL	Latvis	Popular	40
August 2	First Annual Meeting of River Divers	Latvis	Popular	35
August 14	Let's Get Wet Scuba Club - Largo, FL	Barber	Popular	25
October 5	FMNH - Dickinson Hall - Gainesville, FL	Muniz, Carter, Webb	OpenHouse	150-200
October 22	FMNH - Powell Hall - Gainesville, FL	Webb	Legislative Weekend	25
October 29	Taylor Cnty Hist'l Soc. - Perry, FL	Latvis	Popular	140
November 12	St. Patrick's Elem. School - Gainesville, FL	Gramig, Jr., Gramic, III	Academic	80
November 19	Adams Middle School - Tampa, FL	Barber	Academic	10
November 20	Hidden Oak Elem. School - Gainesville, FL	Gramig, Jr.	Academic	120
November 25	Soil & Water Science, UF - Gainesville, FL	Webb	Academic	32
1998-- January 2	No. Am. Arch. Class, UF - Gainesville, FL	Hemmings	Academic	35
February 16	Anthropology Class, UF - Gainesville, FL	Muniz	Academic	15
February 20	Belle Terre Middle School - Flagler County, FL	Peres	Academic	100-120
March 27	Soc. American Arch. - Seattle, WA	Muniz	Professional	75-100
May 18	S.C. Institute of Arch/ Anth - Big Pine Tree Excava. Crew	Hemmings	Academic	20
May 23	FAS Annual Meeting - Gainesville, FL	ARPP	Professional	300

The Class of '97

By Dawn Pinder

The Aucilla River Prehistory Project draws an amazingly diverse group of volunteers each year. The project draws energy from those who lend their expertise, personalities and enthusiasm to the project. The "Class of '97" is no exception. Here is a brief look at this multi-talented group of individuals.

BOB ACKER, of Salem, South Carolina worked on quality control and research at U.S. Gypsum for 40 years. Bob has participated in four projects with the Center for American Archaeology in Kampville, Illinois and five Earth Watch Expeditions from Maine to Chile. He finds the Aucilla Project "fascinating."

TIM BARBER, a divemaster and underwater photographer in Tampa, joined the project to learn more about paleontology, but says he has found "the greatest benefit to be the wonderful friendships formed while working together toward some very important goals." Tim also worked on the 1997 Santa Fe River Survey.

CINDY BISHOP.

JAN BLUE, of Tallahassee is an attorney with the Florida Legislature. She spends vacations backpacking in the West and in Alaska and enjoys kayaking the rivers of North Florida. Jan says she is "very impressed by the dedication and level of experience of the staff and volunteers."

RHONDA BREWER, 31, of Jacksonville is a graduate student of anthropology at Florida State University and works at the Southeast Archaeological Center in Tallahassee. During 1997 Rhonda also assisted on the Allendale Paleoindian Project in Allendale, South Carolina.

LANCE CARLSON, 22 of Gainesville is a graduate student at the University of Florida. He has been involved with other projects including the Cornell University underwater archaeology field school in Portsmouth, Maine.

BOB COUGHTER, 23, of Tequesta graduated with a Bachelor of Arts in Anthropology from the University of Florida. He has also been involved in a project in Panama and a survey in southwest Florida. Bob states "the project (ARPP) continues to prove its importance as a source for gaining insight

into the life ways of the earliest Floridians."

MELANIE DAMOUR, 21 of Tallahassee, Florida is currently an undergraduate student in underwater archaeology at Florida State University. She also worked on other projects including the O'Connell Mission site in Tallahassee and the Jefferson II site in New Hampshire. The Aucilla River Project was "a fun and educational experience," for Melanie.

JOHN DAVIDSON, 33, of Melbourne, has a B.A. in Anthropology from the University of Florida. He has worked on the project for the last two years.

ALEX DELLAGROTTA.

KENNETH DWYER.

JOHN EVELAND, 62, of Monticello is a retired operating Engineer. He has been looking for fossils and artifacts for 25 years. John hopes to someday see a museum in Monticello to exhibit a representative collection of fossils and artifacts from the Aucilla River Project.

CHRIS GILLAM.

WILLIAM GIFFORD, 48, of DeLeon Springs is a dive instructor. He has participated on over 25 natural science projects, most recently on the 1997 Santa Fe River Survey.

STEVE GLOVER, 49, has a B.A. degree in English. He is retired from an advertising and graphic arts career. After spending time on the project Steve comments "I now have a notion of the magnitude of the work we have to do."

JERRY GRAMIG, JR., 35, of Gainesville, FL, holds a B.S. from the University of Florida and works as a senior portfolio analyst. The avocation of archaeology is shared by his wife, son and father, who have volunteered on various projects around Florida. " To be among such a diverse group of fun people, collectively caught up in the sheer excitement and sense of wonder about what mysteries unfold here daily, makes life rich for us."

EDWARD GREEN, of Spring Hill, FL is retired from Ford Motor Company. He's a 37 year member of the Michigan Archaeological Society. Ed has trained dozens of screen crew volunteers on the Aucilla Project.

ANDY HEMMINGS, holds a B.A. in Anthropology from the University of Arizona in Tucson and is currently working on his Master's featuring the archaeology and paleontology of Sloth Hole. He has worked at Paleoindian sites in AZ, NH, NM, SC, and, of course, Florida.

JOAN HERRERA, from Gainesville, has an M.Ed. in Science Education from the University of Florida.

She is currently a doctoral candidate in the Department of Zoology at UF. She has been a divemaster with the ARPP for 7 years, and has worked on several underwater zoological and archaeological research projects.

CASEY HOLLIDAY.

MARY HUDSON, 39, is a Radiation Therapist in Gainesville. She is currently enrolled at Santa Fe Community College as an Anthropology major and plans to continue studies at University of Florida. Mary says an opportunity to be a part of this project is “a privilege and a blessing.”

TOM KELLEY, 47, of Miami, currently lives in Tallahassee where he is a residential contractor. When not pursuing his interest in archaeology, Tom loves to fish.

BIRGITTA KIMURA, 46, is currently working toward a Ph.D. in anthropology at the University of Florida. She has also done field work in Ethiopia, Panama and Sweden. She is currently analyzing DNA from stone scrapers collected in Ethiopia. She said her time at the Aucilla was “very interesting and fun.”

One of the many field crews from 1997. Standing from left: Melanie Damour, Mark Muniz, Bill Gifford, Andy Hemmings, John Davidson, Matt Mihlbachler. Kneeling: Thadra Palmer, Joe Latvis, Birgitta Kimura, Jerry Smith, Tim Barber, Bob Coughter, and Lance Carlson.

HANK KRATT, 35, of Tallahassee is a first year graduate student majoring in anthropology at Florida State University. Hank believes “the project will continue to add to our knowledge of Florida’s past.” He has also participated in FSU’s Field School excavation of the O’Connell Mission Site.

BILLY MAY, 71, works as a dentist in Richmond, VA. He has been involved with many projects all over the world including the Dry Tortugas, Bermuda, Ethiopia, Kenya, Belize, Turks and Caicos, of this project he says it’s the “greatest experience of my life.”

ALYSSA MCMANUS, 27, has a Bachelor of Arts Degree in anthropology from Florida State University. “The research is important and should continue for many seasons to come. Project participants have become some of my closest friends.”

CHUCK MEIDE, 26, is a graduate student at Florida State University studying underwater archaeology. He also teaches underwater field research classes at FSU. Chuck has participated in a number of

underwater research projects from Florida to the Dry Tortugas.

MATTHEW MIHLBACHLER, 25, of Sigel, IL has a B.A. degree in Anthropology and is currently working toward a Master's degree in Zoology at the University of Florida. He has been involved with various projects in Florida, Illinois and Maboko Island in Kenya. Matt says "it's the 'accidental' discoveries that we make along the way that are the most fun."

TAMMY MONTES.

MARK MUNIZ, 25, of Gainesville, is seeking a Master's Degree in Archaeology from the University of Florida. Mark has participated in numerous archaeological projects in Florida, South Carolina, and New Mexico. He has also made several public presentations on behalf of the ARPP.

DON MUNROE, 47, holds a degree in Nuclear Engineering and works at the University of Florida as a radiation safety officer. This is Don's third year working on the project.

MICHAEL NOLAN, 35, of Pierson, FL is a broker and grower of decorative foliage. He has also volunteered with the DeLeon Springs Survey.

JEREMY OGLE, 24, is an undergraduate student at the University of Florida working towards a B.A. in Anthropology. He says "this project is the most exciting project I have been involved with." Jeremy also spent time this summer in the Yucatan studying Maya sites.

HOLT OLIVER, of Eatonton, Georgia works as a paramedic with a special interest and specialty in rescue diving. This season was his first experience as a volunteer and he says he "has a whole new hobby now."

THADRA PALMER, 22, is a fulltime student at Florida State University working towards a B.A. in Anthropology. She has been involved in a variety of other projects while at FSU including Little Salt Springs and Marathon wrecks.

TANYA M. PERES, 25, from Flagler Beach, holds a B.A. and an M. A. in Anthropology from Florida State University. She is currently working on her Ph. D. in Anthropology at the University of Florida. She analyzed faunal material from the Page/Ladson site for her thesis. She has been with the ARPP since 1996, and has worked on a number of archaeological projects in Florida and the Southeastern United States.

ROBERTO QUINONEZ, 16, from Gainesville, is a student at Gainesville High School. He is a member of Key Club. Roberto was new to the ARPP this year, working the screen deck during the 1997 fall season. He plans to dive with us this spring. He has been diving since 1992.

EUGENE ROWE, 68, a retired veterinarian from Richmond, VA has been on close to 50 scientific

projects worldwide, most with Earthwatch of Watertown, MA. The ARPP is one of his favorites because of the “good science and methods.” Gene thinks “we are near some important revelations.”

MICHAEL SIMPSON is a Metro Dade Fire Department Haz-Mat Paramedic. He is also working on a Bachelor of Arts Degree in Public Administration. This was Michael’s first season with the project.

JERRY SMITH.

JO ANN SUGGS, of Brandon, FL, is a fulltime housewife who raises turkeys and is “big on flowers.” She and her husband Melvin have a second home on the Aucilla where they plan to retire. Jo Ann showed quick reflexes during the summer when she dodged a snake that came up through the dredge and onto the screen.

MELVIN SUGGS, of Brandon, FL, works as a technician (mechanic) with Reynolds Metal Company. He loves to fish and turkey hunt, and raises turkeys to gain insight into their behavior in the wild. Melvin and his wife Jo Ann plan to retire to the Aucilla River. Melvin says while at the ARPP, he “didn’t meet anybody he didn’t like.”

DAVID THULMAN, 42, is an environmental attorney with the Florida Department of Environmental Protection in Tallahassee. He has always been interested in paleontology and prehistoric archaeology, and this project is a perfect mix of both. “The people are terrific and the science is great, and except for the bugs, the setting is beautiful.” He hopes to participate for years to come.

BINION WILLIAMS, 55, of Jacksonville is a Production Controller at Jacksonville Naval Air Station. He holds a B.S. in Business Administration. Bin likes to spend his free time outdoors hunting, boating, fishing and camping. The ARPP gives him one more excuse to pitch his tent.

BRIAN WOODS, 30, of Northern Ireland now lives in Minneapolis, MN, where he works in the banking industry. He holds a B.A. in history from the University of Minnesota and an M.B.A. from the University of St.Thomas in Minneapolis.

JIM WYNN, JR., see “A new volunteer’s ARPP experience”.

Volunteer Spotlight - Mary Gouchnour Hudson: "Indiana Jones She Isn't; An Archaeologist She Is."

By Dr. Jerald T. Milanich

For every university-trained archaeolgist engaged in research in Florida there are hundreds of people who make significant contributions to our knowledge of Florida's precolumbian Indians. Often these avocational archaeologists contribute their time, money, and expertise to work on projects conceived and led by those of us who work in Florida's museums and universities. The reality is that archaeology in North America depends on the contributions of volunteers, avocational archaeologists like Mary Gouchnour Hudson.

What makes an avocational archaeologist? By day Mary, a native of Florida, is a Radiation Therapist and CPR instructor in Gainesville and a student majoring in anthropology at Santa Fe Community College. But on weekends, vacations, and evenings she does all those things archaeologists do: read professional journals, participate in field investigations, co-manage the field office, work to raise funding for research, and undertake public education initiatives.

Most recently she has written articles for the *Aucilla River Times*, the Florida Museum of Natural History's Aucilla River Prehistory Project (ARPP) newsmagazine, on 'Understanding Radiocarbon Dating' and 'Water Moccasins and the ARPP.' The latter recounts close encounters of the third kind experienced by ARPP personnel and what to do if bitten. About her participation in the ARPP, Mary writes:

> "Why do I return season after season, spending my vacations freezing in October or fighting off swarms of bugs in May? Many of my friends say this is a sickness—digging through dirt and river sludge looking for some old bones and artifacts, living in `primitive' camping conditions out in the middle of nowhere, keeping company with a bunch of scuba divers and science cowboys. Hopelessly afflicted with the same sickness, we all...rise before the dawn, shiver and shudder as we step into those cold wet suits, and work hard until dusk, exhausted and starving. At the Aucilla, like the Eagles' `Hotel California,' `You can check out any time you like, but you can never leave.'... As we toil together in search of man and mastodon..., we share more than a common interest in an exciting scientific expedition. We share enthusiasm, dedication, and the intensity for a great quest.... The interaction of various professional scientists,

T. Barber

avocational volunteers, students, and financial and political supporters all have their place of importance in the success of this project.... Newcomers as well as veterans are actively involved in teaching and learning.... This initiates motivation and interaction and...promotes much enthusiasm and gratification" (*Aucilla River Times*, 1996, p. 15).

Mary Gouchnour Hudson

Editor's note: This article is excerpted with permission from "The Ancient Floridians" chapter of Florida's Indians from Ancient Times to the Present by Jerald T. Milanich, published by University Press of Florida in 1998.

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Role of the Safety Diver

By John Davidson

There are many jobs on the Aucilla River Prehistory Project which are vital to the safe and smooth conduct of dive operations. The most important of these is that of the Safety Diver. The Safety Diver is responsible for the safety of the all the divers on that dive rotation. This person must be able to don their SCUBA equipment and enter the water in one minute once an emergency situation has been declared by the divemaster in charge.

The duties of the Safety Diver include helping divers into their gear and then assisting them into the water. While doing this, the Safety Diver will check air pressures and make sure the diver's scuba rig has been turned on. Once the diver enters the water the Safety Diver will call out "Diver in the water" loud enough for everyone to hear. The Safety Diver will also ensure that the diver is OK by the use of hand signals. Hand signals become necessary because the number of internal combustion engines used during daily operations makes verbal communication difficult. The Safety Diver will then pay out the surface air supply lines, being careful to remove any kinks that could hinder air flow.

Once the divers are ready to descend they will communicate this through hand signals to the Safety Diver who will return the hand signal back. Once the divers begin their decent the Safety Diver will call out "Divers down". While the divers are down the Safety Diver will constantly monitor their bubbles. The Safety Diver will also keep an eye on the weather, watch for other boats and be on the lookout for any wildlife that may pose a threat to the divers.

T. Barber

Safety Diver, Thadra Palmer checks Andy Hemmingss SCUBA gear.

Because the Safety Diver must focus her/his senses of sight and hearing on constantly monitoring as many as six divers, as well as the open water environment they operate within, the social conversation usually engaged in by off duty divers and screendeck operators is ignored by the vigilant Safety Diver. She/he reserves their audio channel for monitoring real-time events which may bear on the safety of their charges.

During conversation which does have bearing on the status of the divers being monitored, the Safety Diver also exempts her/himself from the social convention of establishing eye contact while conversing, in order not to interrupt the more relevant visual data stream. To minimize distractive pressures on the Safety Diver's ability to concentrate on her/his primary responsibility the diving operations barge is specifically declared off limits to all personnel besides the Safety Diver, Divemaster and on-deck dive teams.

When the dive is over and divers come to the surface, the Safety Diver will call out "divers up" and get an OK from them using hand signals. The Safety Diver will then assist the divers out of the water and neatly coil the air lines so they can be easily deployed on the next dive rotation.

While the Safety Diver is not the most glamorous job on the ARPP it is one of the most important. The Safety Diver could be called on to enter the water at any time during her/his watch to lend assistance to a diver in distress. Therefore the Safety Diver must be mentally and physically alert at all times because her/his actions could literally mean the difference between life and death for divers in the water.

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Field Health Beat: Hyperthermia

By Mary Gouchnour Hudson

ARPP field crew are often subjected to extreme environmental conditions during field operations. Wide fluc-tuations between hot and cold temperatures can be exacerbated by brutal humidity, wind, and rain. In addition to exposure to these factors, field crew endure long hours of heavy, physical exertion either in the elements on the screendeck, or underwater for two-hour long-and-hard dive rotations. When not working the screen or diving, those remaining topside are engaged in other, sometimes strenuous activities vital to the project. No shelter is readily available, and operations are suspended only for storms accompanied by lightning, hail, or high winds. (We actually enjoy this.)

It is extremely important that field crew understand the nature of sudden illness caused by exposure to the above environmental conditions. Knowing what to do and what not to do in case of emergency will aid in the successful recovery of a victim, and prevent further injury or even death.

The normal temperature of the human body is 98.6 degrees Fahrenheit (F). Using complicated mechanisms, the body normally regulates and maintains this temperature, regardless of the temperature of the environment. Illness results when these regulating mechanisms are overwhelmed.

The following is Part One of a two part series. Part Two (addressing Cold Exposure) will appear in the 1999 issue of the *Aucilla River Times*.

Heat Exposure

Sweating, evaporation of sweat, and dilation of surface blood vessels allow the body to rid itself of excess heat. Since sweating depletes the body of fluids and electrolytes (salts), it is important to maintain adequate fluid levels by drinking at least 8 ounces of water or electrolyte beverage (i.e. Gatorade, etc.) about every 30 minutes. Do not take salt tablets. Also, wearing either clothing that breathes, like cotton, or wearing layers of clothing that can be peeled off allows for proper evaporation of sweat. Humidity interferes with evaporation, so excessive sweating can be a problem, especially when wearing layers. Wearing a full wetsuit is great for insulation against the cold or underwater; however, that same insulation prevents heat from escaping and prevents sweat from evaporating. Everyone should keep an eye on the safety diver who stays fully suited up when it’s hot. Keep a watch on crew who push themselves too hard without adequate rest (you know who you are!). Last, but not least, we should all watch each other, remember to take occasional breaks, and hydrate, hydrate, hydrate!

When sudden illness does occur, it takes one of three forms : heat cramps, heat exhaustion, or heat stroke. **Heat cramps** present as painful muscle spasms in the extremities during or just after vigorous exercise. To treat, move the victim to a shaded, cooler area, rest the cramps by having him/her lie down,

and give water or Gatorade like beverage. **Heat exhaustion** presents with the following signs and symptoms: cold and clammy skin, gray face, dizziness or weakness, nausea, headache, sometimes a rapid pulse, and usually normal to slightly elevated temperature. High temps around 104 degrees are serious, and imply the victim may be progressing towards heat stroke (watch carefully). To treat, immediately move the victim to a shaded, cooler area, loosen clothing, remove excess layers, and urge him/her to lie down. Give water or Gatorade only if the victim is fully alert (up to a liter if possible). If symptoms do not clear within about 30 minutes, the victim's level of consciousness decreases, or the temperature remains elevated or continues to rise, the victim should be transported to the hospital promptly, for proper monitoring and IV fluid therapy. **Heat Stroke** is a life threatening illness which, if left untreated, will always result in death. Victims present with hot, dry, flushed skin, although some heat exhaustion victims who progress to heat stroke may still retain some moisture (sweaty clammy skin). Sweating does not occur because the sweating mechanism has been overwhelmed. As the body temp rises rapidly (up to 106 degrees), the level of consciousness decreases to an unresponsive state. The pulse progressively becomes weaker, and the blood pressure falls rapidly. Recovery depends on the speed and vigor of treatment. The senior most qualified medical crew member will decide whether to call 911, activate helicopter transport, or proceed by surface evacuation immediately to the nearest medical facility. In the meantime, in the field, the victim must be cooled by any means necessary. Remove clothing, place wet towels, etc., on the victim, even place ice packs in the groin areas, arm pits, neck and wrists. The hospital, by receiving prior notice, can have ice water baths and other medical interventions available for immediate treatment. Remember, heat stroke, left untreated, will always result in death, and time is of the essence!

The ARPP's commitment to safety through education, policy, and procedure enforcement continues to provide staff, volunteers, and visitors with the best security possible in a potentially hazardous environment. Good science, combined with dedication to safety first, allows us all to experience and enjoy the wonders of the Aucilla River.

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Too old to dive? Not at 75!

By Bob Acker

Professionally I had a Bachelor's degree in Chemical Engineering from the University of Minnesota. I was employed by the U.S. Gypsum Co. from 1948 to retirement in 1987. I started work at a plant in Ohio. After a few years, I was transferred to the Corporate office in Chicago. The rest of the time I spent in the Chicago area either in the Corporate Quality Control Dept or the Research Laboratory. My chief physical activity has always been swimming. It was the only athletic sport I was ever any good at. I swam in college and incidentally was a finalist in the Big 10, and was on relay teams that made the finals in the NCAA national championships. Our best finish was a 4th or 5th.

After college I swam fairly regularly for exercise. About 1972, Masters swimming (which is like kids age group swimming, except it starts with 19-25 age group and goes up) was started as an organized program, and I've participated in it ever since.

I've never won a National championship or set an individual record in the normal swimming events. In the 1970's I was on several relay teams that set National records.

Nearly every year since about 1972 I've had one or more swims that rank in the top 10 nationally. The highest I've ever finished in a National Championship was in 1991 when I was second in the 200 yard and 400 yard individual medleys. (The competition thins out as you get older). I have won a couple of 2 mile open water swims that were considered National Championships, but those events don't draw all the better swimmers. This year (1997) I swam in three 5K (3.1-mile) races and one 2-mile race in this area. Overall, I finished last twice and next to last twice but the next oldest competitor was in the 60-65 year age group.

During the last 10 to 15 years of my professional career my exercise regimen consisted of hour-long 2500 meter interval swimming sessions every weekday. I have maintained this workout on a 3-5 days per week basis since my retirement.

B. Parton

Bob Acker conducting an Earthwatch archaeological survey in Bermuda, 1986.

I'd always had a reading interest in archaeology, and in the 1970's I heard about a program in Southern Illinois that offered adult field schools where you could participate in archaeological projects. The group started with the excavation of the Koster site near Kampsville, Illinois. Koster was a famous site first investigated by Stewart Struerer of Northwestern University. There are hundreds or maybe thousands of sites in Southern Illinois ranging from Paleo to Mississippian. Koster had over 10,000 years of good stratigraphy and superimposed village sites.

I eventually went to four of their field schools. The organization is now known as the Center for American Archaeology and is headed by Jane Buikstra. In the four trips down there I worked on a Mississipian village, a middle woodland occupation of some sort (salvage archaeology, the river was eroding it away), and the last two times (last 1984 or 85) on the Elizabeth mound group. The last one I'd worked up to the point where they let me work on removing a burial.

My son did some high school and college swimming and in 1978 or 79 decided he'd like to learn SCUBA diving. Once he was certified I decided to take the course so I could take him on some dive trips. I got my first certification in 1979, and we went on a dive trip to a resort in Jamaica in March, 1980. A depressing note was that we had a bag stolen while we were snorkelling and lost all our ID's (including C cards) some money and other valuables.

In 1983 I took the Open Water dive course to get recertified. Son Jim took his down in Florida and we dove together on a trip around Florida. I did some local diving in Wisconsin and a SCUBA safety course about that time.

1. In August 1986 I went on my first Earthwatch expedition. This was to Bermuda and included land archaeology and underwater surveys around the old British Marval Base. Over the next few years I went on the following Earthwatch trips.

2. Summer 1987 Isle of Shoals Maine/New Hampshire Historical Archaeology. This was supposed to include underwater work, but the dive master cancelled at the last minute. No diving.

3. November, 1988 Easter Island , Chile. No diving but a chance to visit a fabulous site.

4. November 2-11, 1990 Wildlife Shenandoah National Park, Virginia. I had set up an expedition fund with Earthwatch, and the main object of this trip was to use up the balance before it reverted to

Earthwatch. Also I was in the process of moving from Illinois to South Carolina.

5. July 7-15, 1992. The Clovis Underwater Project (directed by Michael Faught) focused on exploring archaeological sites inundated by the Florida Gulf of Mexico's Apalachee Bay.

Between 1986 and 1990, I did some local diving in Wisconsin and had one great Coral Reef trip to Cozumel, Mexico with our local dive club. Between my two trips to the Aucilla I made just one dive in our local lake in So. Carolina. Counting this last trip with the ARPP in October '97 I have about 64 logged dives. Not much when you think about it.

Now that I have resumed SCUBA diving, I think I'd like to continue at least on an occasional basis. My research dives with various veteran ARPP partners at Sloth Hole last October gave me valuable experience with black water archaeology in a remote site.

Editor's note: Bob Acker, from South Carolina, rose to the occasion of every physical exam, swimming and SCUBA skills test, and written exam required of all ARPP divers under the rigorous standards set by the University of Florida's Diving Science and Safety Program and the American Academy of Underwater Sciences. We could not let Bob's accomplishment pass without soliciting this amazing story from our most senior volunteer diver ever.

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A new volunteer's ARPP experience

By Jim Wynn, Jr.

Being a lifelong avocational archaeologist, I had always dreamed of some day participating in an archaeological research expedition! When I first met Dr Webb at the Florida Museum of Natural History, I had no idea that he could make those dreams come true. I was elated when he invited me to the Aucilla River Prehistory Project's open house, thinking I would at least come close to my dream. But that was just the beginning.

Thanks to encouragement from Dr. Webb, Jim Dunbar, Jack Simpson, and Joe Latvis, I submitted the ARPP Volunteer Application Form for the project's upcoming (Spring '97) field season. I assumed that, if accepted, I would be assigned some menial task away from the actual site so as not to interrupt the experts. Instead, after an instructive orientation program by veteran team members, I was put right into the middle of things. I had also assumed that I would have to be on my best behavior and not ask too many questions, interrupting these great minds as they unraveled the mysteries of the past. Wrong again! I was encouraged to ask questions, and even asked for my opinions on some of the developments! I was shocked!

Later I found myself to be wrong yet again in assuming that the dig was the major focus of the project's work. I found out that it was probably less than 20%. Andy Hemmings, Mark Muniz, and Matt Mihlbachler encouraged me to participate in some of the lab work back at the museum. I soon realized that an overwhelming amount of painstaking work goes on for years after a few scant weeks of digging. I hope to be a part of the whole process, following those bits of bone, rock, and vegetation that I separated on the screen deck (with the help of Alyssa McManus, Jo Ann Suggs, and Dawn Pinder) all the way to their final destination as documented components of Florida's archaeological heritage, conserved in perpetuity at the Florida Museum of Natural History.

Once again, thanks to each of you on the Aucilla River Prehistory Project. Staff and volunteers all made me feel like a part of the ARPP family, and it has been a rich and fulfilling experience that I hope to continue for a long time to come.

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Call for Volunteers

To: Prospective archaeological research volunteers
From: Aucilla River Prehistory Project
Date: March 1998

We are frequently contacted by individuals from all walks of life (See “The Class of ‘97") interested in participating in the Aucilla River Prehistory Project. Although our primary focus in the field requires scuba divers, there are positions for non-divers as well. The following is designed to help prospective volunteers evaluate their level of interest in applying for a position on the team.

We are currently organizing the volunteer roster to staff field operations at the Tallahassee-area site for the two major expeditions scheduled in 1998 (May 4 through June 14 and October 5 through 31). If you think you can qualify, and are interested in volunteering four consecutive days (or more) of your time and talent to advance the scientific understanding of the peopling of the New World, read on.

The Aucilla River Prehistory Project is sponsored by the Florida Museum of Natural History, and has been funded annually since 1987 by the National Geographic Society. Substantial grants from the Florida Department of State, Division of Historical Resources, assures our ability to continue expanded field campaigns through 1998. All field activities are organized and supervised by professional archaeologists and paleontologists from the University of Florida and/or their designees.

These expeditions are conducted in remote reaches of the Aucilla River basin, consisting of pristine gulf coastal lowland swamps and wilderness preserves.

The work environment can be taxing (heat/cold, long hours, humidity, insects), with occasional periods of heavy physical exertion. No one is expected to perform beyond their capabilities, but applicants should be in good physical condition.

Because the project is so remotely sited, emergency medical evacuation procedures are in place throughout the term of the expedition with Lifeflight Helicopter Service of Tallahassee Memorial Hospital and Shandscair Helicopter Service of Shands Hospital, University of Florida, Gainesville.

Basic medical equipment and emergency medical personnel are on-site whenever field operations are in progress. Divers and non-divers alike must present proof of a current CPR and First Aid certification prior to their tour of duty with the project. The First Aid requirement can be waived for nurses, EMT's, M.D.s, etc.

These are scientific research expeditions. All fossils and artifacts recovered become part of the permanent collection of the Florida Museum of Natural History.

The preparation of field notes documenting activities and observations is a daily obligation for all team members. Participants will be required to sign liability releases and photo/publication agreements restricting uses of any recorded images or written accounts of the project.

Main camp tents will be pitched in a mowed field in the village of Nutall Rise, the nearest outpost of civilization to our sites. Bathing takes place in Nutall Rise spring. A smaller, more primitive site camp will be established in the swamp on the riverbank nearby the excavation for logistical and creature support during the work day. Sanitation is by portolet at the main camp, and pit latrine at the site camp.

Each team member must provide their own camping equipment, with the exception of cooking gear. Prepared meals will be delivered daily to the main camp cabin at Nutall Rise. All meals are provided by the project. Meal setup and cleanup duties are shared equally by all team members.

All dive operations are conducted in accordance with University of Florida's Diving Science and Safety Program (DSSP), and the American Academy of Underwater Sciences (AAUS). All dive participants must certify to DSSP's entry level of Diver-In-Training, however candidates should certify to the highest level (Research Diver, Divemaster or Instructor) for which they are qualified. AAUS standards now require current Oxygen Provider certification of <u>all research divers</u>.

Proof of a current nationally recognized open water scuba certification is a prerequisite to DSSP certification. The longest lead-time DSSP requirements are the CPR, First Aid and Oxygen Provider certifications.

The most expensive requirement is the dive physical. For out-of-state volunteers DSSP's written exam, as well as the pool and open water tests, can be scheduled immediately prior to the participant's tour of duty at the project.

Expedition divers must provide a complete set of standard, well-maintained recreational dive gear for their own personal use. Three two-hour dives are scheduled each day. Team members rotate throughout other duty stations (screen deck operator, safety diver, equipment maintenance, activity documentation,

etc.) when not diving on the excavation.

Flexibility in scheduling can be an asset for applicants. The project requires a relatively constant volunteer staff throughout the duration of its field operations. Hence, an applicant who wishes to participate for a period of one week, but can permit the dates for that week to be designated by project management (via prior consultation with you), improves their chance of acceptance over someone similarly qualified, but restricted to one specific week which may already be oversubscribed.

All veteran team members as well as first-time volunteers must apply for positions on the 1998 field roster(s) using the application form.

There will be no separate invitation to apply, as there has been in the past. Due to operational logistics four consecutive days is the minimum commitment permissible. Project activities are conducted six days per week.

1998 Site Schedules, (Field Scientific Director):

May 4 - 18, Latvis/Simpson (M. Mihlbachler)
May 19 - June 14*, Sloth Hole (A. Hemmings) *May 21 - 24 FAS Annual Meeting break
October 5 - 31, West Run (A. Hemmings).

Now, if you would like to be considered for a position on the team, here's how to proceed:

Fill out the ARPP volunteer application form (or photocopy thereof), and return it postmarked not later than April 1st for the spring field season or September 1st for the fall season.

Your application will be evaluated confidentially by a panel consisting of the project co-chief scientists and principal investigators, project operations manager, project operations supervisor, and field scientific directors.

You will receive a response to your application within one week following the application deadlines.

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Aucilla River Prehistory Project
Volunteer Application Form

Applicant's Name:
_____

Mailing Address:
_____
_____
_____

Telephone Days:_____Evenings:_____
Date of Birth:_____Social Security Number:_____
Occupation:_____

Professional archaeologist/paleontologist/geologist?_____Institution:_____
___Researcher
Field of Specialty:_____Institution:_____
___Graduate Student
Course Specialty:_____Institution:_____
___Undergraduate student
Course Specialty:_____Institution:_____
___High School Student
Course Specialty:_____Institution:_____
___Avocational archaeologist, Amateur group affiliation?_____
___Avocational paleontologist, Amateur group affiliation?_____
Previous experience on other field research projects? (please list briefly.)

Dates

Spring `98 Field Season (<u>April 1 deadline</u>)

I would like to volunteer for _____ consecutive days during the **May 4 through June 14** expedition.
My first choice dates are from _____through_____
My second choice dates are from _____through_____
I can permit project management to schedule my participation any time within the following dates;

Skills
___SCUBA diver
Certifying Agency_____
Highest level certification:
_____
___I am applying for a position on the dive team.
___I am applying for a position on the land team.
Special related skills
___Land Surveying ___Writing
___Equipment repair ___Drawing
___Boat handling ___Computer apps.
___Photography ___Healthcare
Other:_____

between _____and_____

I will be consulted by project management before a final assignment is made

Fall `98 Field Season (September 1 deadline)

I would like to volunteer for _____ consecutive days during the **October 5 - 31** expedition.

My first choice dates are from _____through_____

My second choice dates are from _____through_____

I can permit project management to schedule my participation any time within the following dates; between _____and_____

I will be consulted by project management before a final assignment is made.

_____

Mail this application to:
Aucilla River Prehistory Project
Attn: Joe Latvis
5364 Cyril Dr., Dade City, FL 33523
If you have any questions, call us at
(352) 583-4749

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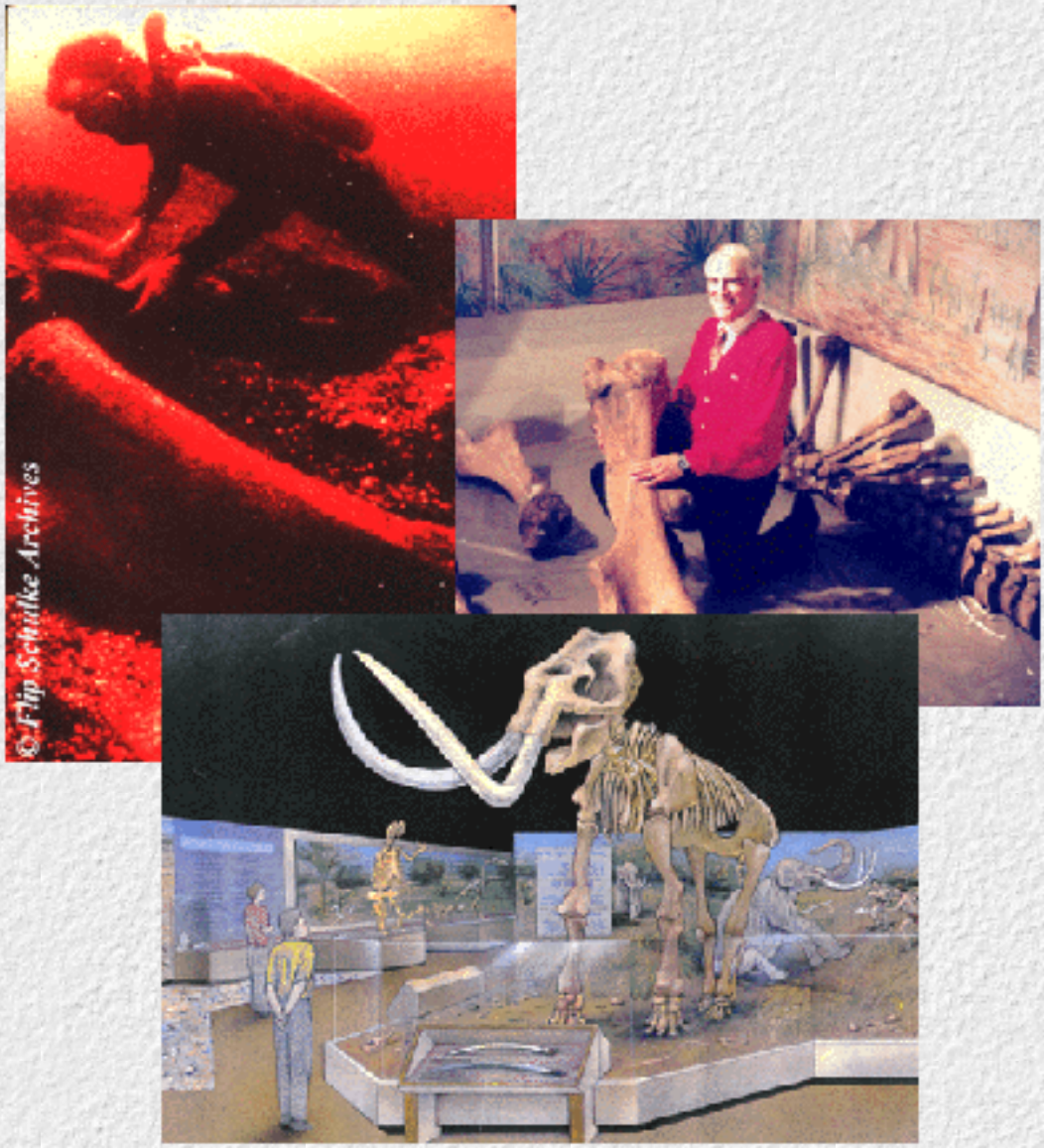
Aucilla mammoth: past - present - future

By Dr. S. David Webb



Important new developments at the Florida Museum of Natural History in Gainesville bring the Aucilla River mammoth one giant step closer to its ultimate destiny. On January 29th when Powell Hall, the Florida Museum's new Exhibition and Education Center, opened its doors to the public, Bruce MacFadden, Associate Director for Exhibits, announced that the Aucilla River Mammoth was to occupy the signature site in the central gallery and also that articulation of the skeleton was going out immediately for bid. In earlier plans the construction date was indefinite and its place would have been in the Florida Fossil Hall with first Floridians and other extinct megafauna. The paleontology staff have reviewed and fully tallied every bone that will go into the magnificent mounted mammoth. The skeleton will be the first real mammoth exhibited in the southeastern United States. (Elsewhere in the region there are a handful of mastodons and one mammoth cast).

The story of this mammoth began thirty years ago when Dr. Richard Ohmes guided me down Half-Mile Rise and showed me a wealth of mastodon and mammoth bones, several of which appeared to be articulated sets each representing a single individual. Within the year we had a museum team in the rise supported by a grant from the National Geographic Society. We collected three fairly complete skeletons, but this was by far the best. It was illustrated (in its river bottom repose) in the February 1969 issue of National Geographic Magazine. It came from a freshwater marl deposit in the upper part of Half-Mile Rise and was carbon-dated at about 16,000 years old. This mature male skeleton, which will stand over 12 feet high at the shoulder, is 90 percent complete, with its tan to dark chocolate-colored bones exquisitely preserved in every detail. Erection of the articulated skeleton in its ultimate place of honor will take place by 1999, a mere moment from now in the ageless perspective of the Aucilla Mammoth.

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Dr. Webb appointment to Distinguished Research Curator

On March 20,1997 U/F President Dr. John Lombardi announced, upon the recommendation of the Florida Museum of Natural History, the appointment of Dr. S. David Webb to the rank of Distinguished Research Curator. Senate criteria used for determining this rank require that:

“Those selected should have truly distinguished themselves in teaching and/or service while at the University of Florida....they should have gained a reputation on this campus among undergraduate, professional and/or graduate students and among the alumni for being a superior and highly influential teacher....their undergraduate and graduate programs have turned out leaders in their field: their service on regular University and ad hoc University committees has resulted in truly beneficial contributions to the university: their service to the state and nation has brought distinction, honor and fame to the university.”

Dr. Webb’s service as cofounder and 14-year Director of the Aucilla River Prehistory Project certainly confirms the Senate’s lofty criteria.

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ARPP OnLine

The Aucilla River Prehistory Project has expanded its website! The site, including back issues of the *Aucilla River Times* (1996 - 1997), can be viewed at http://www.flmnh.ufl.edu/natsci/vertpaleo/arpp.htm. Thanks go to Joan Herrera for formatting the 1997 *Aucilla River Times* onto our website. The 1998 issue will be online soon. This year's issue will feature color graphics. So keep checking back at the above URL.

Aucilla River Prehistory Project "Virtual Museum Exhibit"

A "virtual museum exhibit" of some of the highlights of the ARPP is now online at URL: http://www.flmnh.ufl.edu/natsci/vertpaleo/aucilla/arpp01.htm.

Designed as a "slide show", the exhibit includes graphic representations of many aspects of the project. The exhibit is designed to give the viewer background information on the geological/hydrological history of the Aucilla River area. Modules on the flora and fauna of the area during the Pleistocene, human artifacts recovered by the project, and the personnel and equipment that make the project such a success, are included with a special section on highlights of the project's major accomplishments since its inception in 1983.

Congratulations to Joan Herrera and Dr. S. David Webb for designing the Aucilla River Prehistory Project's "Virtual Museum Exhibit", and to Joan Herrera and Dr. Wayne King for site design and html programming of the exhibit. Special thanks go to Dean Quigley, Marisa Renz, Chris Kreider, and Jim Dunbar for allowing us to use their artwork on the site.

FLMNH Web site wins gold, again!

NetGuide selected the Florida Museum of Natural History's website as a GoldSite — one of the BEST ON THE WEB— again this year. The Gold Award recognizes websites that meet very stringent criteria for overall excellence.

NetGuide screens over 100,000 URLs and their Gold Award goes to only 15,000 of the Web's best sites. The museum will continue to display the Gold Award logo on its site, again this year.

The ARPP would like to congratulate Dr. Wayne King, office of museum technology supervisor, and webmaster Dick Ruble on their continued success.

Visit NetGuide at: http://www.netguide.com

Office of Museum Technology Florida Museum of Natural History Gainesville, FL 32611 Tel. (352) 392-8085 Fax (352) 846-0287

Building has potential to become museum
Aucilla River Project lends museum purpose

By Ray Cichon

The celebrated Building A, built in 1852 by slave labor and the oldest brick school building in Florida, located on the Jefferson County High School campus, may well be on the way to becoming a unique museum, if all goes according to plan.

Speaking at the School Board meeting Monday, David Janet, Dr. John Ward and Lou Waldmann outlined how this can be done if the board approves the project.

“There are a plethora of grants available from the state, the federal government, and from the State Department of Education that can be accessed,” Janet said in his presentation.

Laz Aleman

Jefferson County High School, Building A

Because of the archaeological treasures that continue to be unearthed in the Aucilla River, one of the most recent which establishes the Paleoindians lived on Florida’s plains some 12,000 years ago, the fact has been established that people were living in Florida 1,000 years earlier than previously thought.

This makes the Aucilla River site older than the oldest known Paleoindian sites in the western United States, David Webb of the University of Florida reported at the time.

In his presentation, Janet said that curators of the museum at the University of Florida offered to loan exhibits on a rotating basis, if the museum here becomes a reality.

Ward in his comments said that a collection of Winchester guns, might also be part of the museum’s exhibit, since a number of these were collected here and the collection might be supplemented by the manufacturer.

In addition, other possible exhibits include a local hall of fame for professional ball players from the area, such as Clemon Johnson and Jack Youngblood, Janet said.

Waldmann, president of the Committee of 99, said that the group has made some inquiries along the lines of establishing a museum in Building A, and would be happy to work with others on this project.

Principal Kelly Kilpatrick of JCHS said “I’ll do all I can to support the project. That building is a real treasure.”

Janet said that estimates to restore Building A run in the neighborhood of $1.5 million and noted that this was a project that had to be funded by major grants because of the dollar amount.

Should a museum come to pass in the building, advertisements on the interstate and elsewhere would draw tourists and their dollars to the community, presenters believe.

The uniqueness of the findings of the Aucilla River Project, make the location ripe for a historical museum and for grant funding which favors unusual projects, they believe.

The School Board, under whose domain the building lies, told the group to come back to the board for a decision when they have a task force formed and a project manager named.

Editor’s note: This article appeared in the September 12, 1997 issue of the Monticello News. Monticello is the county seat of Jefferson County, which borders the west side of the Aucilla River. The author, Ray Cichon is managing editor of the Monticello News.

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Taylor County Historical Society open house

By Angela Fulford

The Taylor County Historical Society hosted an Open House for the newly renovated second floor of its 118 East Main Street building on October 29, 1997. Vintage W.A.V.E. uniforms, a “permanent wave” haridresser’s chair and a hand-cranked Victrola were just a few of the new displays unveiled. Glass cases hold a variety of local memorabilia--from a sword dating back to the Civil War to faded photos of turpentine fields and letters from foreign shores. The Aucilla River Prehistory Project displayed fossils and artifacts freshly recovered from the fall field season concurrently underway at the Sloth Hole site.

A gallery of faces greet visitors, among them Cary Hardee, a native Taylor Countian and one-time Florida governor and W.T. Cash, Florida’s first state librarian and noted Taylor County historian.

Perry Newspapers

Taylor county Historical Society Museum

The society’s building was formerly the Bank of Perry (1903), First National Bank (1906-1930); and was used as office space for various county agencies until 1967.

The late Claude Pepper established his first law office in the building, working with Perry attorney W.B. Davis in the 1920’s.

Doomed for demolition, the building was “rescued” by the society in 1971. Its restoration process has been an on-going project for members ever since...

Projects currently underway: The society is working on a 50-year time capsule, publication of a "History of Taylor County", publishing Vol. 10 in their "They Were Here" series which details notables of the county who have passed, and a display of fossils and artifacts from Taylor County's world famous river sites by the Aucilla River Prehistory Project.

Of interest: Founder Alton H. Wentworth, long-time educator and noted local historian, will celebrate his 101st birthday in March of this year.

In a nutshell: The Taylor County Historical Society is dedicated to records keeping and preserving the history of Taylor County and its people. Meetings are held the third Monday of each month. Annual dues are $5. The Historical Society Building is located on the downtown square at 118 East Main Street, Perry, FL 32347.

About the renovations: An estimated $20,000 worth of renovations were completed on the upstairs. Pigeons had been the most notable residents of the rooms for the past 30 years. Ceilings were replaced, carpet laid and walls painted. Funding was provided by a matching grant from the state and help from the county commission as well as private contributions. Volunteers carried the bulk of the work with help from inmate labor crews from the local jail.

Editor's note: Angela Fulford is President of the Taylor County Historical Society.

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1998 FAS Annual Meeting

The 1998 Annual Meeting of the Florida Anthropological Society will be held in Gainesville at the Matheson Historical Center on May 22-24. Papers will focus on Florida archaeology and related topics. A student prize will be awarded for the best undergraduate or graduate student paper. The meeting will feature a Saturday Night barbecue at Austin-Cary Forest, guided tours of the Florida Museum of Natural History, and a special archaeological tour of Paynes Prairie.

Two workshops will also be conducted on a reserved-space basis:

Friday morning Barbara Mattick of the Florida Bureau of Historic Preservation will conduct a workshop on nominating archaeological sites to the National Register of Historic Places.

Friday morning a 4-hour workshop on archaeological monitoring at Florida State Parks will be held at the Florida Museum of Natural History.

Friday night at 6:00pm a reception will be hosted by the Florida Archaeological Council at Powell Hall, the new exhibit center of the Florida Museum of Natural History.

Saturday from 8:00am to 5:00pm presentation of papers on all topics of Florida archaeology (including research by the Aucilla River Prehistory Project) will take place at the Matheson Historical Center.

Two optional field trips have been scheduled for Friday afternoon and Sunday morning. Conference attendees must preregister for these as space is limited - participation will be on a first-come, first-serve basis.

Friday afternoon behind-the-scenes tours of the Florida Museum of Natural History will be conducted by museum staff and highlight some of the research currently underway, including displays featuring Aucilla River Prehistory Project discoveries.

Sunday morning a tour of the La Chua Ranch site at Paynes Prairie State Preserve will be led by archaeologist Henry Baker and will feature the 17th century Spanish cattle ranch that has lent its name to modern-day Alachua County.

Early registration for the conference will be available until April 15,1998 at $25.00 per person. After that date registration will be $30.00.

If you have any questions please contact:

Ryan J. Wheeler
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Gainesville, FL 32653
(352) 372-0778
rwheeler@mail.dos.state.fl.us

FAS Membership Information

FAS is open to people interested in anthropology, archaeology, preservation of cultural resources, and community education. FAS members receive the journal The Florida Anthropologist and the FAS Newsletter. For information or address changes write to:

Terry Simpson
FAS Membership Secretary
P.O. Box 82255
Tampa, FL 33682
(813) 991-4643
tsimpson@luna.cas.usf.edu

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Florida Archaeology Month
March 1998

Walk in the footsteps of a Calusa King, watch historians and archaeologists re-create tools, ceramics and weapons of times past, visit a Confederate garrison and hear about the first 11 months of the Civil War, or hear some of Florida's preeminent archaeologists, anthropologists and historians present reflections on Florida's colorful past. You can do all this and more during Florida Archaeology Month 1998.

Florida Archaeology Month is a statewide event held to encourage Floridians and visitors to learn more about the archaeology and history of our state, and to preserve these important parts of Florida's rich cultural heritage. This statewide observance is sponsored by the Division of Historical Resources; Florida Dept. of State; Secretary of State, Sandra B. Mortham; Florida Anthropological Society; Florida Archaeological Council; and Florida State Parks.

Shadows and Reflections on the Past is the theme for Archaeology Month 1988. Special events, exhibits, lectures and programs will be held statewide during the month of March 1998. For information on events in your area, contact Nancy E. Olson, Collier County Museum, 3301 Tamiami Trail East, Naples, Florida 34112, or call (941) 774-8476.

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Donor Acknowledgment

The Aucilla River Prehistory Project gratefully acknowledges support by the State of Florida Division of Historical Resources, Florida Department of State, Tallahassee, Florida. During 1997 the ARPP received its third major grant for its archaeological research on First Floridians and Last Megafauna.

The ARPP also received major funding from National Geographic Society, Committee on Research and Exploration. Neither of these funding organizations was liable for injury or property damage that might have resulted from ARPP activities. Nor are they responsible for opinions or interpretations derived from the archaeological and paleontological research conducted under these grants.

The Aucilla River Prehistory Project also acknowledges vital support from several dozen volunteer scuba divers from Florida and beyond, who freely dedicate their time, energies and personal dive gear to participate in this important research. The University of Florida also provides fundamental offices, labs, collections, equipment, vehicles and personnel to carry forward this project.

We especially thank the Ladson family for their continuing hospitality, encouragement and support of this project's activities on their land.

Finally we are deeply indebted to many individual friends of the project who have contributed both emotional energy and material gifts to its success. We offer our heartfelt thanks to the following list of private and corporate boosters.

Supporting Boosters $1,000-4,999	**Contributing Boosters $100-999**	**Contributing Boosters $100-999**
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John Eveland	J.R. Walker (for J.R.'s Aucilla River Store)	David Thulman
Bill Gifford	Bin Williams	Yarbrough Tire Company

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The Mammoth Trumpeteer

Music provided by
"The Mammoth Trumpeteer"

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About the *Aucilla River Times*

Editorial Staff

- **Editor: Joseph Latvis**
- **Text and Graphical Layout: Joan Herrera**
- **Layout Assistant: Dawn Pinder**
- **Website Formatting: Joan Herrera**
- **Printer Liaison: Bill Gifford**

Editorial Board

The Cover

A curious freshwater Coastal Shiner (*Noptropis petersoni*) interlopes between the camera and a corner-notched Bolen projectile point lying *in situ* on a 10,000 RCYBP paleosol submerged in 15 feet of Aucilla River water at the Page/Ladson site. Original image was captured on Hi 8 mm videotape in 1995 by Joe Latvis. Lighting by Bill Gifford. Frame grabbing by Brinnen Carter. Image enhancement by Joan Herrera. (See "Underwater site opens window on big environmental change").

The *Aucilla River Times* is published on an annual basis to update a readership interested in the status of the Aucilla River Prehistory Project. This ongoing archaeological/paleontological research is sponsored by the Florida Musuem of Natural History. This newsletter is published by the project management based at:

The Florida Museum of Natural History
Attention: Dr. S. David Webb
University of Florida
Gainesville, Florida 32611-7800

Subscription to the *Aucilla River Times* is FREE. Address changes or new subscriptions may be requested by writing to the address above.

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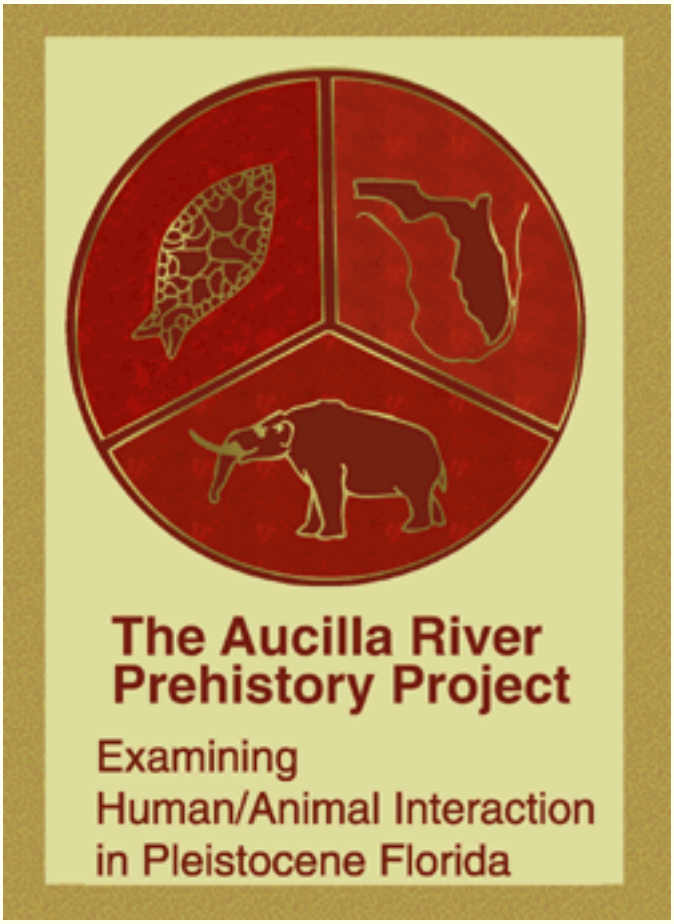

AUCILLA RIVER PREHISTORY PROJECT

Aucilla River Times Newsletter

ARPP Virtual Museum Exhibit

Links in Archaeology

The View From the Bridge

More than a decade after it began, the Aucilla River Prehistory Project (ARPP) is recognized nationally and internationally for its contributions towards a greater understanding of human and animal interaction in late Pleistocene Florida. Each year the ARPP team produces substantial new evidence of human, animal, and plant life spanning the past 30,000 years. The Aucilla River has proven to be a unique treasure trove of stratified prehistoric records yielding lithics, wood, and other plant remains, bones, teeth, hair, even hormones. This wonderful river has become our time machine, from which we report our adventures. S. DAVID WEBB