ARCHAEOLOGICAL DISCOVERY WITH
THE AUCILLA RIVER PREHISTORY PROJECT

Aucilla River TIMES

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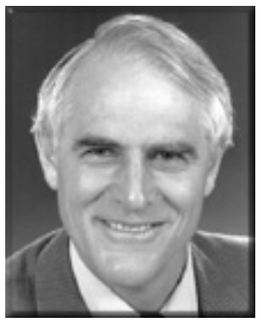
INSIDE

The view from the bridge

By Dr. S. David Webb



Looking Back with Pride

As we wrap up ARPP field operations in time for the millennium, we can share a sense of pride in our many accomplishments. There will be scientific reports and repercussions for years to come. Certainly the ARPP has proven that Florida's submerged resources really can support good paleontology and archaeology. And our field teams have devised the definitive package of portable, practical devices and methods that produce the records and specimens that the museum must hold as vouchers for the future. We also proudly hold up our safety record – 15 years and all is well.

Dr. Webb presenting appreciation award to ARPP main camp host Jack Satterwhite.

In looking back over these years I realize that the ARPP experience operates at many levels. This column usually addressed science and safety. But there is a third, more elusive current that runs strong. It is the shared camaraderie and sense of achievement that runs subliminally through our collective memories. It can only be captured - if at all - in stories, tales, and songs. We have created our own folk culture that lends color and texture to our commonly shared experiences, perhaps not so unlike the Paleoindian culture we strive to see. As scientists, we write about "Hypothermia", but we also remember it at a more personal level when we tell stories of "the big shakes" (hypothermia) and how Joe Latvis spilled half a cup of coffee down his hand shivering from the cold following a particularly "bracing" February dive.

Giving Thanks to Many Friends

During our last full field season this past October we held our final Open House. It was a fine Saturday afternoon barbecue down at the Taylor County Boat Ramp. It's odd to refer to that place as the county boat ramp, since, by the time of our gathering, Hurricane Earl had removed the two floating docks that seemed so permanently part of the ramp. Many of us still call it Williams Fish Camp, but that was also removed by powerful forces about a decade ago. Anyhow we had a wonderful day at the downstream picnic ground on the Taylor county side. And it is a great tribute to our stalwart friends that they came at all, considering how uncertain the weather was all last year, truly an El Niño year.

Dr. Webb presenting appreciation award to open house host J.R. Walker.

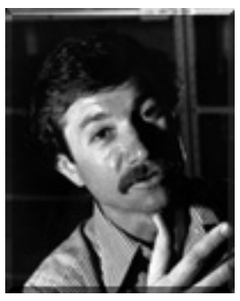
As I sat there looking out across the full estuarine breadth of the Aucilla, I began to make a thank-you list. I wanted to acknowledge all the people who have befriended our project. That's when it hit me how steeply the number of friends and supporters has added up over the years (and decades). I tried grouping the list of friends in various ways, by geography and also by chronology. I soon realized what a daunting task I had undertaken. We have enthusiasts that have stayed with us forever, and yet we make fine new friends every year. By the time I stood up at the barbecue I realized that my intended thank-you list would be far too long. More appropriately, I thanked our three most vital recent supporters, namely Jack Satterwhite, J.R. Walker and Mrs. Francis Rollins from Perry.

Since the barbecue I have continued to shake down my memory banks and add up the numbers of valued family, friends, and supporters. And the fond memories and thank-you lists just keep unfurling. If I pick just one person to thank explicitly for keeping this project afloat for all these 15 years it is Joe Latvis. Another special thanks is stirred by recalling an earlier open house, certainly our most stately one, in May, 1995. That is when Governor Lawton Chiles came, a most charming guest, and he truly enjoyed the whole operation at the Latvis/Simpson site. We wondered later whether his visit influenced his support, a month later, of the Florida Legislature's Special Category Budget for Heritage Preservation. To the late Governor Chiles and our many other friends we of the ARPP thank you from the bottom of our hearts for all of your support over these many wonderful years.

Dr. Webb presenting appreciation award to ARPP "high ground" hostess Mrs. Francis Rollins.

Early archaeology in Florida

By Dr. Jerald T. Milanich



Maps of important archaeological sites in the southeastern United States always include Mt. Royal on the St. Johns River and Crystal River on the Gulf coast. Both were first excavated nearly a century or more ago, and the extraordinary collections from each have drawn attention ever since.

The significance of these sites certainly rests in large part on the array of artifacts recovered. In addition, the first excavations at each were carried out at a time when American archaeology was still in its infancy, and major excavations made major impacts. Just as important is that the artifacts and data regarding the contexts of those collections have been preserved. Fleeting archaeological fame derives from discoveries; everlasting fame is awarded only those discoveries that are published and curated.

Mt. Royal and Crystal River both were first investigated by Philadelphia archaeologist Clarence B. Moore, who promptly published what he found, providing excellent illustrations (he also paid publication costs!). The artifacts he collected as well as his original field notes still exist today, providing modern researchers informed access to the collections and their intrinsic data. At the Huntington Free Library in the Bronx, New York, one can read Moore's field journals. One also can visit the Smithsonian Institution's National Museum of the American Indian to study his excavated collections.

A Weeden Island incised bird effigy vessel (ca. A.D. 300-600) excavated by Clarence B. Moore in 1902 from a site on the Aucilla River. (Maximum height approximately 8 and 3/4 inches.)

Born in Philadelphia in 1852 and educated at Harvard (B.A. 1873), Moore was never formally trained as an archaeologist. During the 1870s and 1880s he lived the life of a *bon vivant*, funded by family money. He traveled widely in Central and South America and Europe, made an around-the-world trip, and went on an African safari. In 1879 Moore returned to Philadelphia to take up the presidency of a paper company; 20 years later at age 47 he retired to devote full time to archaeology.

Perhaps his global excursions had piqued his interest in archaeology. In 1891, then near 40, he had first traveled up the St. Johns River, excavating shell middens. Two years later he began excavation of mounds on the same river, an enterprise that eventually took him to hundreds of other mounds in Florida and throughout the Southeast.

During his nearly three decades in archaeology Moore's field procedures remained much the same. Prior to each season contacts were made with local people to locate suitable mounds for investigation and secure permissions to excavate. When necessary, land owners were paid. A steamboat—one of which was the *Gopher*—would precede Moore to the field and anchor in the river next to the mound to be excavated. When Moore arrived from Philadelphia in January, the start of the yearly field season, he took up residence on the boat, a crew of local laborers was hired, and excavations commenced. When one mound was demolished the boat and crew moved to the next. Each field season continued well into spring, sometimes into early summer, when Moore would head back to Philadelphia to analyze his collections, write and publish reports, and prepare for the next season.

In reading Moore's field notebooks I found no great secrets or new information, though I developed more respect for him as an archaeologist. In the field he coped with many of the same problems and phenomena that we do today, especially bad weather and the unforeseen. His daily logs meticulously record time, temperature, and, later, barometric pressure. A typical entry, this one from 1893 at Mt. Royal, reads: "Wed April 12. 6 am. 65° clear, 11:30 am 82° brighter—6 p.m. 80° clear. Lay all day [anchored] at Mt. Royal." At the onset of his second season of work (1906) at Crystal River, his January 25th entry reads, "Reached Crystal River this evening from the north and went aboard the *Gopher* which lay a short distance below the town." The field season was set to start, but the next day he ran up against the unexpected: "Spent all day at anchor near Crystal River having decided it was impossible to secure labor for the mound on a day when the circus was in town."

Like modern archaeologists, Moore kept a tally of expenses. In 1894, for working a six-day week, each of 12 crewmembers received $5.10.

Archaeologists have a peculiar love-hate relationship with Moore. We love him for all the information he left us, but we hate him for digging all those sites before the modern era of archaeology brought new field methods that would have greatly enhanced his reports. Even so, Moore did do many of the same things we do today. He was aware of the work of other archaeologists, and he did not hesitate to call on those colleagues and other specialists for information or analyses beyond his own abilities. He read the literature and sought similarities between his sites and artifacts and those investigated by others, freely sharing his information. Moore also understood principles of stratigraphy and he looked for depositional patterns within sites.

But he was not perfect. He worked too fast and tried to do too much. His three field seasons at Crystal River (March 11-23, 1903; January 29-February 14, 1906; and April 9-12, 1918) spanned 34 days. Because he did not work on Sundays probably only 25 days total were spent excavating. During that short time he and his field crews recovered the skeletal remains of at least 429 individuals and hundreds of pottery vessels and other artifacts. Doing so much with a crew of twelve (or even one twice that size) in so short a time would be impossible utilizing modern standards of excavation. Moore's crews must have literally ripped things out of the ground. No grid system was used and valuable vertical and horizontal measurements were not recorded. Nor were field drawings made.

Would we have been better off if Moore had not dug Mt. Royal, Crystal River, and other sites? Certainly it would have been better if the sites were excavated by today's exacting standards. But the hard reality is that had Moore not dug the sites and recorded what he did, much information would have been lost. Vandals seeking artifacts for their mantle places would probably have destroyed many of the sites, forever losing the data they represent.

That is why long-term projects like the ARPP are so important. They produce new information and they assure the collected data is available forever.

Editor's Note: This article is excerpted from* Famous Florida Sites: Mt. Royal and Crystal River *, by Jerald T. Milanich, published by University Press of Florida, Gainesville, 1999.

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PaleoAucilla Prehistory -- "Clovis Underwater '98"

By Dr. Michael K. Faught

Many of you have heard that the PaleoAucilla Prehistory Project will carry on the Aucilla River Prehistory Project's tradition of educational and multi-disciplinary scientific research offshore, in portions of the Aucilla that are now submerged on the continental shelf. This research has been conducted since 1986 under a variety of project names, including Offshore Archaeology 1989, Clovis Underwater 1992, and Clovis Underwater 1998. "Clovis Underwater" was coined for my EarthWatch project, and I continued it in 1998 for the inaugural field research under FSU's Program in Underwater Archaeology. But now we have a project title that will endure many seasons of research out on the continental shelf looking for prehistoric sites submerged by Pleistocene sea level rise. The new name focuses on the fact that we are exploring the Aucilla River offshore.

FSU's research this past summer focused on the J&J Hunt Site, located about 3 miles offshore, on the margins of what we think are remnants of the Aucilla. Previous research has shown that this location became submerged about 6,800 radiocarbon years before present. We also looked for additional sites at a place we call Locus T, further offshore, but we were turned back by poor weather before any new sites were found. As part of FSU's commitment to training students in both submerged prehistoric sites and historic shipwrecks, work was also undertaken in the St. Marks River, on an early 19th Century vessel sunk near the confluence of the St. Marks and the Wakulla Rivers. Chuck Meide, Program Assistant for the Program in Underwater Archaeology at FSU, directed that exciting research project, ably assisted by Melanie Damour. James McClean acted as field staff for offshore portions of the research operation.

Clovis Underwater '98 expedition diver Greg Fisher displaying a chert tool recovered from the paleoAucilla river basin at the J&J Hunt site 3 miles offshore in the Gulf of Mexico.

There were 10 students and eight staff at Clovis Underwater1998. These included: Joe Latvis and William O. Gifford of the ARPP; Dr. Lynette Norr, her daughter Jenni, Pat Gensler, and Eric Wilson from the University of Florida. Krister Efverstrom from Sweden, Susanne Finney from the University of Hawaii, Gregg Fisher from Ohio, Doug Blash from Boston University, and Daria Merwin from Stony Brook, New York. Jadah Rauchwerk, a high school student, came in from New Orleans. FSU students included Bobby Francis, Ben Tanner, and Michael Lavender. Then-Representative Carl Littlefield (now Developmental Disabilities Coordinator and Assistant Secretary for Developmental Services with the Bush administration), also participated in the survey cruise offshore (see "State Rep. Carl Littlefield...").

FSU Marine Lab's 50-ft "R/V Seminole" (foreground) and Florida Institute of Oceanography's 70-ft "R/V Bellows" supporting diving operations at the J&J Hunt site during the Clovis Underwater '98 field season.

Work at the J&J Hunt site produced eight test pits, several new transect collections, sidescan sonar images, and a significant amount of mapping. In addition to numerous pieces of chipping debris and some tools, a diagnostic Bolen point was found on the surface of this site, confirming it as the location of an Early Archaic occupation. In addition, there were several Middle Archaic diagnostics located this year, indicating that the site was occupied by more than one group. This next summer we will put major effort into additional mapping and survey of the areas surrounding the J&J Hunt site, and concentrate on surveying for new sites further offshore. Chuck Meide will continue our focus on historic shipwrecks with his Dog Island Shipwreck Survey. Students and qualified volunteers will both participate in this cutting edge research. Those interested in participating, or supporting this in other ways, can find more information about it on our web site (http://www.anthro.fsu.edu/research/uw/).

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

Golden age of the Aucilla

By William O. Gifford

During the four years that Joe Latvis and I have worked together on the Aucilla River Prehistory Project, it has always been our habit to end our typical 16-20 hour day in the field with one final meeting. Because Joe and I provide overnight security at the excavation site our day necessarily ends onboard the operations support barge in the middle of the remote Aucilla swamp. The midnight isolation of this venue provides refreshing "decompression" from the fast-paced daylight operations, while also affording us an opportunity to discuss confidential aspects of field operations management (topics like who compromised a particular safety protocol yesterday, who is too exhausted to safely continue diving two dives per day tomorrow, who's worsening ear infection will require hospital treatment, who cannot be assigned screendeck duty because they are now taking antibiotics which prohibit sun exposure, or who requires a day offsite for psychological renewal). It was during one of these discussions that I told Joe of my imminent marriage and the severe curtailing of my role in the project. The ever practical Joe hit upon the idea of me writing an Aucilla River Times article about my reflections on experiences of the last four years.

In 1994, I had been working as a volunteer for the Palm Beach County Reef Research Team and teaching SCUBA diving at DeLeon Springs. When I heard about a Nautical Archaeology Society class and subsequent survey of the spring by Gulf Archaeological Research Institute, I thought that this would be a good opportunity for former SCUBA students and interested local divers to expand upon their skills and to learn more about the history of the spring area. Led by Dr. Robin Denson, we mapped and recorded data over 26% of the spring area in nine days. It was my first chance to work as a divemaster in this type of situation, and I have to admit I enjoyed the challenge enormously.

At the behest of Robin, who in a short period of time had become a close friend, several of us applied to and were accepted with the ARPP. When I received the dive plan, I was truly impressed with the scope of this document. It seemed to cover all contingencies, and gave one an idea of what would be encountered in the field. Of course this was not entirely the case, but as the project evolved so did the dive plan, and over the years it has expanded to cover new and previously unforeseen problems. I know that over time everyone has heard Joe and me refer to it ad nauseum, but the answer to most of your safety and operational questions are contained in it (see "ARPP: scientific diving to national standards").

The backbone of the ARPP over the nine field seasons that I have been involved was the volunteers. With funding provided by the State of Florida through the Department of State and the Bureau of Historic Preservation, the ARPP was able to provide for the care and feeding of volunteers who were eagerly applying in ever-greater numbers from throughout Florida, the nation, and the world. Our increased ability to accommodate more workers not only increased research output but brought in divers and screen deck personnel from widely divergent backgrounds. The trio that eventually became known as the 'Volusians' (from Volusia County) was such a group.

The Volusians consisted of Mike Nolan, a broker and grower of foliage greens, Steve Glover, a retired ad exec and myself. Mike brought with him the common sense of a farmer and the skills needed to keep practically any piece of machinery running. Steve came with a passion for learning and an understanding of the bureaucratic maze that envelopes funding such as ours. His skill as a musician provided relief from the tension encountered in the stressful environment in which we worked. One of my fondest memories is the night the Volusians had stayed at the Nutall Rise base camp to catch up on some repairs that needed to be done while everyone else had gone out to dinner. After finishing our work and dinner we played some music and relaxed. Upon the return of the rest of the crew, Steve and I found ourselves accompanied by Dr. Webb in an *a cappella* version of "Ain't Necessarily So" that the residents of Nutall Rise will never forget. The mere mention of this song probably puts their teeth on edge. Steve and Mike recognized the growing need for additional divemasters in the organization and enrolled in a class with me as their instructor. They both excelled in the class and became even more valuable members of the ARPP as fully certified divemasters.

Another noteworthy group of volunteers was the students attracted to the project from FSU. FSU has an excellent dive program and their addition helped fill out our operational assignment roles. Along with the divers from FSU came many excellent screen deck personnel as well.

Screen deck people are a breed unto themselves. As divers, we don't understand them, but that doesn't mean they go unappreciated. Led by long time participants such as legendary dredge guru Ed Green, Mary Hudson and Dawn Pinder, the addition of Alyssa Mc Manus, Hank Kratt, Tanya Peres, Tammy Montes and Joann Suggs gave us a crew that was able to determine when an artifact, faunal or botanical remain of consequence came up on the screen. Ed knows the different strata that divers excavate into so well that he can tell what layer you are in by the color of the dredge discharge. These people work in the blazing sun and freezing cold, facing dangers ranging from snake attacks to dehydration. They are a primary component of every successful ARPP field operation. With the departure of Ed Green, we were lucky enough to have John Eveland arrive on the scene. A gentleman of unflagging good humor, John has always been there when we needed him. Whether single-handedly repairing dredges in the offseason or lobbying for funding in Tallahassee, he has always been glad to help in any capacity.

The scientific group was led by Co-Chief scientists Dr. S. David Webb and Dr. Jerald Milanich. Dr. Webb, a paleontologist, has been cofounder (with Jim Dunbar) and director of the project since the beginning in 1983. Dr. Milanich joined us later when the need for a degreed anthropologist became apparent. They have lent guidance and support to the various field scientific directors at the many diverse sites we have excavated on the Aucilla River. The field scientific directors, with the exception of Dr. Michael Faught, have been graduate students from the University of Florida. Their ranks since 1995 include Brinnen Carter, Andy Hemmings, Mark Muniz and Matt Mihlbachler.

Dr. Faught came to us in the fall of 1994 from the University of Arizona where he had studied under Dr. Vance Haynes, one of the leaders in the study of the peopling of the Americas. This was actually his second coming, as he had trained with the ARPP in 1987 and worked the Florida offshore in the late 80's. His arrival at the Page /Ladson site brought a wave of enthusiasm that inflamed us all for the arduous task that lay ahead. Armed with a new, red-hot Ph.D. he added spark to a weary group of divers. On the flight from Arizona Michael came up with a new and innovative idea for digging through the nearly 20 feet of extremely hard packed clay on the bottom of the river. After a series of less-than-successful field trials, redesigns, and modifications to Michael's PVC brainstorm, it was ignominiously dubbed "the Faught-o-lator". In fact he swears that he could still make it work if we were just to give it back to him. Michael has been a good friend to me and the project over the years and now heads the Program in Underwater Archaeology at FSU. With the end of the ARPP looming he will carry our work to the natural extension of offshore exploration (see "PaleoAucilla Prehistory...").

Brinnen Carter was field scientific director of the Bolen component at the Page/Ladson site. A Ph.D. candidate at UF he had worked on the project as an undergrad with Dr. Denson. Brinnen has taught at FSU as an adjunct professor and now works for SEAC in Tallahassee.

Andy Hemmings came to us from the University of Arizona when Dr. Faught came here to run offshore excavations in the late 80's and early 90's. He is finishing his graduate work at UF. Andy has headed our excavations at Sloth Hole, a site on the west run of the Aucilla River. Sloth Hole has been a treasure trove of artifacts (see "Sloth Hole site update"). They include points, knives, tools, bone pins, ivory foreshafts, fishhooks and extinct megafaunal remains. Clearly it will take years to assimilate all the data collected here.

Mark Muniz now has his masters degree from UF and is continuing his studies at the University of Colorado. His area of study while he was with us was the section of the Aucilla known as Little River. Completely enclosed by the Ladson property, it provided great amounts of megafaunal remains in its one-mile run before going underground. Mark was one of our best divers, and some of the best dives I had were with him. During a filming session at Sloth Hole, he and Joe and I made a four-hour dive that netted us 15 minutes of film. Filming under these conditions is difficult at best, but without a diver of Mark's caliber it would have been impossible to get the results that we wanted. The ability to remain motionless in such close quarters and still get good shots is indeed a special talent.

Matt Mihlbachler came to us by way of Southern Illinois University. While there he was a student of renowned paleobotanist Dr. Lee Newsom. His work with her gave us a great deal of help in studying the mastodon digesta found at both the Page/Ladson and Latvis/Simpson sites. I have worked with him extensively on this and have learned quite a bit from him. Matt is now a zoology graduate student at UF, and when you see the fire in his eyes while discussing his field you'll understand why we all think of him as an asset to the project.

Besides the roster participants there are many people who have helped us. David Janet and the late Wilmer Bassett provided us with guidance through the intricacies and pitfalls inherent in politics and legislative funding. Dr. Hoyt Horne, a true southern gentleman, volunteered as the project's field physician and was kind enough to invite us into his home for an occasional home cooked meal. J.R. Walker, whose local Aucilla River store was an oasis in a remote area of the world, provided us with a place to establish a base camp when our former camping and equipment storage areas became inaccessible. When the cabin J.R. donated for our use in 1997 became unavailable the following year up sprang another good friend, Jack Satterwhite, who offered us yet another campsite through the last two field seasons in 1998. Martha Wiggins, owner of Yarbrough Tires of Perry donated tires for our boat trailers that were of such an obscure size we probably never would have found them anywhere else. Jim Hunt of Zaney Foods, a longtime supporter, fed us when we had no cooking facilities. Buster Hancock donated the six inch dredge and Snooper light that have served us so well. Bubber Bailey pledged CSX railroad funds for equipment and ARPP scholarship needs. Tom Vereen generously donated his beautiful blue 20-foot aluminum Duracraft boat to the project just when we needed it most.

Legislative support came from then-representative Alan Boyd, Janegale Boyd, Marjorie Turnbull, and then-representative Carl Littlefield. Marjorie was our first legislator who dove on the site. Then last year, Carl Littlefield became so interested that he dove with us for a week (see "State Rep. Carl Littlefield dives with ARPP"). Senatorial support was generously provided by Sen. Pat Thomas, Charles Bronson, and then-senator Patricia Harris (now Secretary of State). Then-governor Lawton Chiles demonstrated executive concurrence by signing the budgets that contained Division of Historical Resources funding for the ARPP.

Of all the people I've mentioned here, the two most important in my eyes have been Dr. Webb and Joe Latvis. With the project since its inception, they have been the driving force behind everything that we have accomplished. Dave has maintained control of the science, yet given everyone the chance to deal in their own field of expertise. It was his international reputation that gave us respect in the scientific community long enough to have our say. When it came time to fire up a student, he was there with the torch. Working with him in the museum has been one of the true pleasures of my life. Joe Latvis has become one my best 'comrades-in-arms' as successive weeks in the field season became months of cumulative deprivation and fatigue. His dive plan was one of the major draws for me with this project. We are both very safety oriented, and his engineering background gave him the vision to make this a world class project. Working so closely together we have become almost telepathic in our communications. All divers work in a world of silence and use sign language to speak, but we have been of such a similar mindset that it has gone beyond that with us.

There will be many of the participants on this project that have not been mentioned here: Rhonda Brewer, Thadra Palmer and Melanie Damour, divers from FSU who gave their all in a male dominated field and never complained when I asked them to dive a double. Dr. Joan Herrera, with whom I made my first dive on the project. Jody Barker, a welder from Orlando who rebuilt our boat trailers from the ground up. The list goes on, but if I missed you it was not because I didn't appreciate all of your contributions. I am limited here by constraints of time and space. My only suggestion at this point is that you contact my editor, Joe Latvis. It was surely his fault.

Editor's Note: **mea culpa.**

Endgame...and beyond...

By Joseph M. Latvis

After a spectacular fifteen year run the Aucilla River Prehistory Project is beginning its endgame in 1999. This does not mean that the great archaeological, paleontological, paleoenvironmental, geological and hydrologic questions of the age have been resolved. To the contrary, the ARPP has explored some of the many significant archaeological sites currently expanding the envelope of human antiquity in the New World. The time and tide of this large scale, longterm and far ranging cooperative endeavor have carried us all to a pregnant pause, and a new point of departure.

For instance, this is the final issue of the *Aucilla River Times*. (That is why no subscription request form appears on the back cover.) However the ARPP website (which contains all recent issues of the newsmagazine, as well as a "virtual museum" of fossils and artifacts) will remain active at http://www.flmnh.ufl.edu/natsci/vertpaleo/arpp.htm. Kudos belong to all the authors, photographers and production volunteers throughout the years whose manifest talent made the yearly issues so informative and well presented.

The final ARPP field season will be conducted May 4th through 31st 1999. However, because all field roster positions have been filled by returning veterans, no "Call for Volunteers" or "Volunteer Application Form" appears at the end of the "Life in the Field" section of this magazine. Field crew volunteers have been a renewable resource of skill and enthusiasm from the very first field season in November 1983. (All volunteers since 1995 can expect to receive a "Volunteer Appreciation Package" as the ARPP's parting acknowledgment of their outstanding avocational contribution.) Opportunities for students and volunteers to participate in similar underwater archaeological research programs remain available via the ARPP's sister project sponsored by Florida State University's Program in Underwater Archaeology. Information regarding the PaleoAucilla Prehistory Project's 1999 summer field season (June 28th through August 6th) can be accessed at http://www.anthro.fsu.edu/research/uw/.

Once the May '99 ARPP field season is completed the fifteen yearlong windfall of Aucilla River fossils. artifacts. sediments and paleoenvironmental samples accessioned into the FLMNH collections will cease. However these field specimens will remain available for research in perpetuity, and interpretive exhibits for public display and education will continue to be assembled for years to come. Photo and video documentation accumulated throughout the seasons of field operations will incorporate the moment of discovery into these exhibits also. The definitive written document of the project's research, currently being assembled into *First Floridians and Last Mastodons* will live on in the literature of scientific discourse.

As I navigate my own personal passage from the Aucilla River Prehistory Project to the PaleoAucilla Prehistory Project I celebrate four relationships (one institutional and three personal) that are my considerable inheritance from this tumultuous Florida experience in underwater archaeology. In 1981, after eight years and eight overseas engineering assignments, I established my newly chosen stateside residence in Florida, where I continued lifelong avocational interests in fossils and artifacts. Having discovered the Florida State Museum (now FLMNH) soon thereafter, I volunteered for the first (1982) Thomas Farm fossil dig open to amateurs. What an enlightened institution, to be so productively harnessing the latent energy and talent of volunteers in such worthy causes. The Museum has also been the support platform from which fifteen years of ARPP field expeditions were planned and launched, as well as the repository for the tens of thousands of fossils and artifacts that were recovered from the Aucilla.

Having met Dr. S. David Webb at Thomas Farm (and having made no secret of my passion for combining paleontology and archaeology with SCUBA diving) I was delighted at his subsequent invitation to participate in the newly constituted "Half-Mile Rise Project" on the Aucilla River in 1983. What an adventure that was, as I grew to appreciate the scientific value represented by the sedimentary context in which fossils and artifacts are discovered. Although there was no prescient grandiose design for this project to span any more than one season, by 1987 I found myself once again back at Half-Mile Rise, diving alongside a graduate student from the University of Arizona who proposed looking for archaeological sites offshore in Apalachee Bay. After five subsequent field seasons out on the submerged continental shelf with Dr. Michael Faught, I remain forever indebted to him for planting the seed back in 1987 that the relict karst river channels offshore of northwest Florida are indeed very promising places to explore for intact Pleistocene sediments that survived the marine transgression.

By 1995 the ARPP was growing into its destiny, conducting cutting edge research that attracted dozens of student and avocational adventurers each field season. Diving instructor Bill Gifford came to the project with a no-nonsense attitude toward field operations safety and efficiency, as well as a commitment to helping each diver grow to his or her fullest potential. (Bill was also the only staff member willing to tolerate longterm close quarters confinement and primitive camping conditions onboard the operations vessels with me, as we provided overnight security at the site camp every subsequent field season.) I wouldn't have missed even one of those hundreds of hour-long, midnight, flashlight, white knuckle, shoot the rapids, bump in the night canoe passages we made between base camp and site camp.

And finally, it has been my distinct privilege and pleasure to have been associated with so celebrated a scientist, educator and humanitarian as Dr. Webb for these past fifteen years. Never have I more thoroughly enjoyed working so intensely on so many creative, diverse and simultaneous assignments with such demanding deadlines for such a marathon endeavor. Thank you for the opportunity and the friendship of a lifetime.

Latvis/Simpson site update

By Matthew C. Mihlbachler

The Latvis/Simpson site (8Je1500) richly records a time that predates human occupation in Florida. It is filled with a detailed record of a biotic community that dates from well before the last glacial advance at the end of the Pleistocene epoch. Like Page/Ladson and many other locales along the Aucilla river, Latvis/Simpson is a sinkhole, once filled in by sediment that is now partially scoured out by the current river channel. A cross section of intact sediments remains on the west bank, cut by the river channel to form a sloping wall of clays and peats recording the last 32,000 years of environmental conditions in North Florida. In 1995, the ARPP dug a giant stairway down the west bank, from the youngest strata to the oldest, where we sampled sediments of various ages, filling in chronological gaps and environmental information for a much longer time period than previously known from the other, much younger Paleoindian sites we have excavated.

Our final season at the Latvis/Simpson site ended this past summer in late May 1998 after two and one half weeks of extra-hard work by the entire field crew. This time we concentrated on the bottom of the sinkhole, excavating a large deposit of once deeply buried, finely chopped plant remains lining the bottom of the sinkhole. Although protected for centuries by 10 meters of overburden, it is now exposed to the erosional forces of the Aucilla current, and is slowly being eaten away by this current. From dung samples collected in 1995, we knew that this unique plant layer consisted mostly of the dung remains of mastodons that had used the Latvis/Simpson sinkhole as a drinking hole and wallow 32,000 years ago. At that time, water levels were much lower, and the sinkhole was probably an isolated pool of water. The main objective of our excavations was to collect a series of mastodon digesta samples for reconstructing the diet of these extinct megaherbivores, and to compare them to the much younger mastodon digesta samples from Page/Ladson. Our efforts were fruitful and we achieved ample samples of digesta. Bill Gifford and I are painstakingly sorting through these samples (see “Wonderful Life in a petri dish”), while Lee Newsom, a botanist and anthropologist from Southern Illinois University in Carbondale, is helping us identify the plant fragments. Our preliminary view of these samples indicates that the mainstay of the mastodon diet in this region was the twigs and leaves of cypress and buttonbush. A healthy array of other species was present in the diet as well, including plums, grapes, elderberries, creeping cucumber and gourds.

As you can imagine from the size of mastodons and the large amount of plant materials that they consumed, the rate of deposition of the dung layer was quite rapid. The dung layer turned out to be about 60 cm deep and probably accounted for just a few years of mastodon activity at this sinkhole. The rapid rate of deposition caused fish, turtles and mammals that died in the sinkhole to be buried and beautifully preserved. In most cases the bones were not even fossilized but retained their original calcium phosphate and collagen matrix. As we uncovered these plant and animal remains, we realized that this site contained a singular snapshot in time of an animal community specifically adapted to cool and damp forest conditions dominated by mastodons, ground sloths, tapirs, deer, muskrats and beavers.

Our most exciting osteological find was a partial skeleton of a young female mastodon lying in the bottom of the sinkhole, buried in the digesta. The recovered material includes a pair of tusks, a complete mandible with a complete set of dentition, a pair of scapulae, a humerus, a tibia, numerous vertebrae, foot bones and ribs. Unfortunately, most of the skeleton appears to have eroded away long ago, but enough was recovered to really understand the age and health status of this animal. Paleontologists are well aware that fossil proboscideans are “filled with biology”. The slow growth rates and long life spans of proboscideans allow the skeletal elements, especially the tusks, to accumulate a wealth of information about the lives of these animals and the environments they lived in. Various aspects of the Latvis/Simpson mastodon are under study by numerous scientists for purposes of reconstructing the lives of Florida mastodons and the environments in which they lived. As part of a larger study of Florida mastodons and mammoths, scientists from the University of California at Santa Cruz sampled the enamel of the mastodon’s molars to determine the oxygen, carbon and strontium isotope signatures. Isotopic signatures provide information about diet, migration patterns and annual temperature changes in the environments that the proboscideans occupied.

At the Florida Museum of Natural History we are in the process of interpreting and reconstructing the life of the Latvis/Simpson mastodon. The first clue about its life came when we noticed that most of the bones of this mastodon are unusually porous, and a few of the ribs have pathological growths indicating that this animal may have died from some yet unidentified disease. I looked into the life history of this mastodon by analyzing the growth rings in the tusks. Tusks of proboscideans continually grow throughout life and preserve a record of each individual’s life history and its environment. Like growth rings of a tree, annually alternating dark and light bands are visible when the tusk is sliced in cross section. These growth lines record the age of the individual, the alternation of the seasons, and the growth rate and health status of the mastodon throughout its life history. With the help of a saw from the Department of Agricultural Engineering and a couple of willing hands we bravely sectioned one of the Latvis/Simpson mastodon tusks in the hope of retrieving this information. As it turns out, I counted 12-13 alternating light and dark bands (summer and winter bands), and if we add the missing two years that this animal would have had its deciduous “baby” tusks we can calculate that our mastodon was 14 to 15 years of age when it died. Although not fully grown, this mastodon was just past the age when living elephants give birth to their first offspring. Ironically, a few small, very porous, incompletely formed bones were found associated with the mastodon material that appear to be from a late stage fetus. It is likely that our unfortunate young mastodon would have been a new mother if it had not died at such a young age.

Sloth Hole site update

By C. Andrew Hemmings

Two field seasons at Sloth Hole (8JE121) in 1998 gave us our most detailed look at the site yet. If you can wade through the detailed description below you will be rewarded with news of our amazing finds from 1998. Major excavation activities are nearing completion in the areas containing intact strata. Intact stratified sediments have been excavated well into Pleistocene deposits everywhere we have encountered them. Exposed surface material remains in some portions of the site but we have aggressively collected that material as well. Additional terrestrial and bathymetric mapping will be combined with some final surveying this summer.

In 1998 one of our major goals was to construct a continuous stratigraphic column of stepped Pleistocene/Holocene sediments. From the greater than 41,980 year old (Beta # 83379) compacted slick peat in the bottom we traced the sediment 10ft vertically to the 34,760 +/-1600 year old in situ palm stump (Beta #95342). We wanted to connect this sequence with the terminal Pleistocene (12,300 year old) sediments encountered to the east. The eastern sediments contained a detailed but discontinuous sequence of terminal Pleistocene to modern material.

We were able to track the strata from 34,760 to 12,300 radiocarbon years ago. This period is contained in a homogeneous highly compacted layer of gray silt/clay, fine white sand, limestone pebbles, wood and animal bones nearly 160cm thick. 60cm above the 34,000 year old layer we submitted wood that returned a radiocarbon date of 28,470+/-170 years old (Beta #119349). This lower portion of the sequence seems to preserve continuous slow deposition of material.

The 12,300 +/-50 year old date on wood (Beta #95341) represents the top of the 160cm stepped sediment sequence discussed so far. However, this date is at the bottom of a 183cm vertical column of continuous terminal Pleistocene fine silts and clays. Seemingly these represent quiet water backfilling of a pond environment. Numerous flaked stone artifacts were found above this layer but unfortunately no tools were recovered. We hope to excavate more of this material this summer.

The 1998 seasons represent the end of concentrated generation of field data from Sloth Hole. Incremental growth of the data set is proceeding by contact with river divers who have collected material from Sloth Hole. I am very interested in talking with anyone who has material or data about Sloth Hole. If you have artifacts or fossils from the lower West Run of the Aucilla please contact me at the Florida Museum of Natural History.

Outreach with numerous collectors has yielded casts, images and detailed information regarding great quantities of worked ivory tools, six Clovis points and numerous other bone, stone and ivory tools.

The most dramatic find we have documented is a weakly stained fluted Clovis point (see Figure 1) found by Kurt Cox. The morphology of this Clovis point is distinct from the one in the Ohmes collection on the cover of this issue. Whether the different shapes are separated chronologically or simply represent different contemporaneous knappers' work is virtually impossible to say.

The density of the Clovis occupation at Sloth Hole is further demonstrated by the large amount of worked ivory recovered (2 complete points and 58 fragments, some of which are nearly complete). In the earlier work of the ARPP we had recovered only four slivers of ivory tools, including the 8.3cm piece described in the last *Aucilla River Times*. 1998 was our bonanza year. 15 pieces of ivory were found across the site. Five pieces were refitted and glued together. This unusually slender ivory point (see Figure 2) is 33.3cm long. The hafting end and a portion of the shaft are missing, so it probably was 40cm when complete. The 33.3cm section is the longest piece in the FLMNH collections and is noticably longer than worked bone and ivory shafts reported anywhere else in North America. The slender diameter and great length seem to indicate that this is indeed a point rather than a foreshaft.

Several stone projectile points were found in various contexts last year. Several lanceolate Paleoindian point fragments were located, including what appears to be the midsection of a resharpened Simpson Sunfish. An unusual Clovis point with a unifacially resharpened impact fracture was found and loaned by Kurt Cox.

Several individual finds deserve mention while discussing projectile points found last year. Matt Mihlbachler found an 8cm unbevelled Bolen. Overall we found seven more Bolen points roughly all in the same area as the Aucilla Adzes. Susan Kane found her first point, a heavily resharpened Culbreath-like corner notched point. Melanie Damour also found her first point, an expedient arrow point made on an old flake. This point is rather unusual and not attributable to any type. However, it superficially resembles a Kirk corner notched variety.

Last year we reported the recovery of seven Aucilla Adzes in our earlier work. Five more Aucilla Adzes were recovered in 1998. Additionally, data on five more from Sloth Hole was generated from specimens in the Ohmes collection. This brings our total to 17. This density in one site is somewhat of a surprise to us. Certainly the case for an Early Archaic Bolen age wood working activity area is bolstered by the dramatic increase in sample size from one portion of the site.

It turns out that the Aucilla Adze is not as rare as reported last year. It now seems there are indeed hundreds of them known. While not as common as Bolen points they are a good cultural and temporal indicator of Early Archaic Bolen peoples.

Other stone tool discoveries included: bifacial and unifacial scraping and chopping tools; formal unifacial graver spurs; flaked stone cores and many other tool types.

A wide variety of bone and antler tools dominated the surface collections. Several hundred bone pin or point fragments and nearly a hundred complete bone tools were found. Some of the shorter bipointed bone tools appear to be gorge fishhooks.

Numerous bone fishhooks were recovered this year. The most interesting form is a barbed type (see Figure 3). No single piece barbed fishhooks have been reported in the Florida literature. The barbed hook is made from the proximal end of a left deer radius. One complete example and two broken barbs were located, all made on left radii. This deer radius barbed hook seems to be the first true archaeological "type" encountered, possibly in the whole of the Southeast. Since our initial discoveries we have learned that more than a dozen of this type of hook are known in private collections. An article describing this type of hook is being written with Ryan and Harley Means who have found several of these at another location.

The most surprising artifact yet collected at Sloth Hole was discovered in the museum collection amid unsorted faunal remains. Amy Schwarzer found a lynx mandible with an incised spiral pattern repeated three times on each side (see Figure 4). It was recovered slightly outside of Sloth Hole proper in an area containing most of the pottery we have found. The mandible is most similar to material reported from Tick Island and could be older than 6000 years BP. While probably newer than the Paleoindian materials we normally focus on it is a great contribution to distributional data for this type of bone working.

While trying to explain the potential benefits of sorting faunal materials to Brian Beatty he found a piece of turtle carapace with the same geometric pattern carved on it.

The faunal finds were as spectacular as the artifact finds last year. No new extinct animals were added to our faunal list, but more remains of mastodon, mammoth, camel, tapir, horse, sloth (*Megalonyx*), and muskrat (*Ondatra* - locally extinct) were found.

Our best *in situ* material was from two mastodon (*Mammut americanum*) skeletons that we have been following across the site since 1996. Prior to 1998 we had recovered most of the limbs of a juvenile mastodon and good portions of the skull of a very old mastodon. In 1998 we found both astragali and a calcaneum of the juvenile and the left calcaneum and right astragalus of the old fellow embedded in the 28,470 +/-170 RCYBP sediment adhering to the proximal end of a 7.5 foot mastodon tusk.

The large unstained calcaneum dated to 12,180 +/-60 RCYBP (Beta # 119350). This indicates that a 12,000 year old mastodon died and was deposited in 28,000 year old sediments on the edge of a pond. Because both mastodons' remains were found on a ten foot terrace, and in this case unstained and *in situ*, we feel confident they are nearly in the position in which they died at the end of the Pleistocene.

As Sloth Hole fieldwork comes to an end it is clear the remains of a very strong Clovis presence, and Bolen presence, that we have documented will make broad contributions to both Florida's archaeology as well as the continent wide investigations of Paleoindian adaptation(s) and migration. As the museum research now hits full stride the significance of what we have been doing in the field all these years becomes readily apparent, sometimes on a daily basis.

Fossil Hole site update

By C. Andrew Hemmings

In 1997 the ARPP briefly revisited an inundated quarry site at the southern tip of Ward Island called Fossil Hole 8JE1497, which we had documented in 1994. Our goals then were to see how much diagnostic artifactual material remained in the surface collection, collect additional raw material samples, and document the site perimeters.

While surface collecting we encountered numerous post cranial pieces of *Holmesina*, the extinct armadillo. This is a somewhat unusual late Pleistocene genus to recover in the Aucilla River. The formerly exposed knappable bedrock chert outcrop had been buried by recent storm action, which prevented us from collecting any samples.

As part of the 1998 summer field season we decided to spend three days on this site. Our goals were to thoroughly surface collect the site looking for clusters that might represent camping areas and to do some limited excavation seeking stratigraphically intact sediments in the dense lithic scatter.

Unit 1 produced an astonishing amount of flaked stone material (N=37,218 flakes and 28 cores). Three natural stratigraphic levels were delineated during excavation. The strata and separate artifact counts are presented in Table 1.

Level	Substrate	Thickness	Flakes	Cores
1	Surface lithics, leaves, loose medium fine sand	~25cm	5,100	11
2	dissolved limestone, gray/green silt and clay, lots of shell, all between two large limestone boulders	~40cm	14,283	7
3	darker green silt, limestone gravel and cobbles, no shell	~70cm	17,835	10
4	dissolving white limestone, Bedrock		0	0
	Totals		37,218	28

Table 1

Several unusual features bear reporting. Only one flake was bifacially worked, and even this example was not beyond very early bifacial reduction when it broke. The five largest cores weighed between 50 and 86 pounds each. Flake counts from Levels 2 and 3 are sure to go up slightly when sediment samples are processed in the future. Virtually every conceivable stage of reduction flake is present in this one-meter square. Cortical primary flakes, primary flakes, secondary flakes, shatter, bifacial thinning flakes, broken flakes, flake fragments, pressure flakes and core trimming flakes are all present. Very little bipolar flaking seems to have occurred in this sample.

USGS 7.5 minute Nutall Rise quadrangle map

Notably absent from Unit 1 are hammerstones and broken bifaces (N=1). Both should be present, even given our very limited view of the site. Clearly, bifacial reduction to at least the stage of preforms was occurring in this portion of the site based on the very high numbers of small thin bifacial reduction flakes in Levels 2 and 3 (>6000 and >10,000 respectively). Our one meter unit is not expected to contain all the stages of quarrying and lithic reduction activities occurring at Fossil Hole. However, considering the variety of materials present the mentioned absences seem exceptional.

The discussion of lithics is not in and of itself very significant. A quarry site is expected to have very high numbers of artfacts spread out across the site. The excavation of Unit 1 is important because of the faunal remains encountered.

Four genera of gastropods were found only in Level 2: *Palodosa, Planorbella, Campeloma* and *Viviparus*. The *Viviparus georgianus* is quite significant because it is locally extinct by 8500 radiocarbon year ago. Even if our lithics are secondarily redeposited in a fluvial system they have been undisturbed for a minimum of 8500 years. This would indicate an Early Archaic cultural affiliation at the youngest.

A terminal Pleistocene date is possible for the cultural material encountered in Level 2 and below. This is based on the only identifiable large mammal remains being Tapir, which is of course locally extinct.

Two bone pin fragments were recovered in Level 2 as well. It is tempting to tentatively assign a Paleoindian or Early Archaic designation to these items. If it turns out they are Paleoindian in age that helps establish a very early date for the use of these items in the prehistoric tool kit.

Our enthusiasm regarding the paleoenvironmental data noted so far should be held in check until the context of deposition for the Fossil Hole sedimentary sequence is more fully understood. The microhabitats of the assorted gastropods may prove to be our most fruitful line of inquiry to pursue based on what we now know.

Wakulla Springs Karst Plain Symposium

By Joseph M. Latvis

On October 9,1998 the Florida Geological Survey in conjunction with several other agencies sponsored a technical symposium at the Florida State University Turnbull Conference Center. Approximately forty speakers presented their talks in two concurrent sessions. Florida State Representative Janegale Boyd (House District 10) provided Keynote introductory remarks. Topics of particular interest to archaeologists and paleontologists conducting research in the Karst Plain region (which encompasses the study area of the Aucilla River Prehistory Project) included:

Archaeological and Historic Sites Within the Woodville Karst Plain by Mike Wisenbaker, Historic Preservation Planner, Department of State, Bureau of Archaeological Research.

Regional and Local Geologic Setting of the Woodville Karst Plain by Frank R. Rupert, Florida Geological Survey.

Wakulla Springs - Quality of Life by Sandy Cook, Manager Wakulla Springs Park and Lodge, Florida Park Service.

Geomorphology and Extent of the Offshore Woodville Karst Plain, Northeastern Gulf of Mexico, NW Florida, USA by Z.Q. Chen and Joseph Donoghue, Dept. of Geology, Florida State University; R.W. Hoenstine, F. Rupert, S. Spencer, L.J. Ladner and E. Lane, Florida Geological Survey; M.K. Faught, Dept. of Anthropology, Florida State University.

A Geological Investigation of Sedimentation and Acretion Rates of Marine Coastal Wetlands Within Apalachee Bay by L.J. Ladner, R.W. Hoenstine, A.A. Dabous and Debra Harrington, Florida Geological Survey. The Aucilla River Prehistory Project's contribution to this symposium was presented by project director Dr. S. David Webb, the abstract of which now follows:

TWO CYCLES OF LATE PLEISTOCENE SINKHOLE FILLING IN THE MIDDLE AUCILLA RIVER, JEFFERSON COUNTY, FLORIDA

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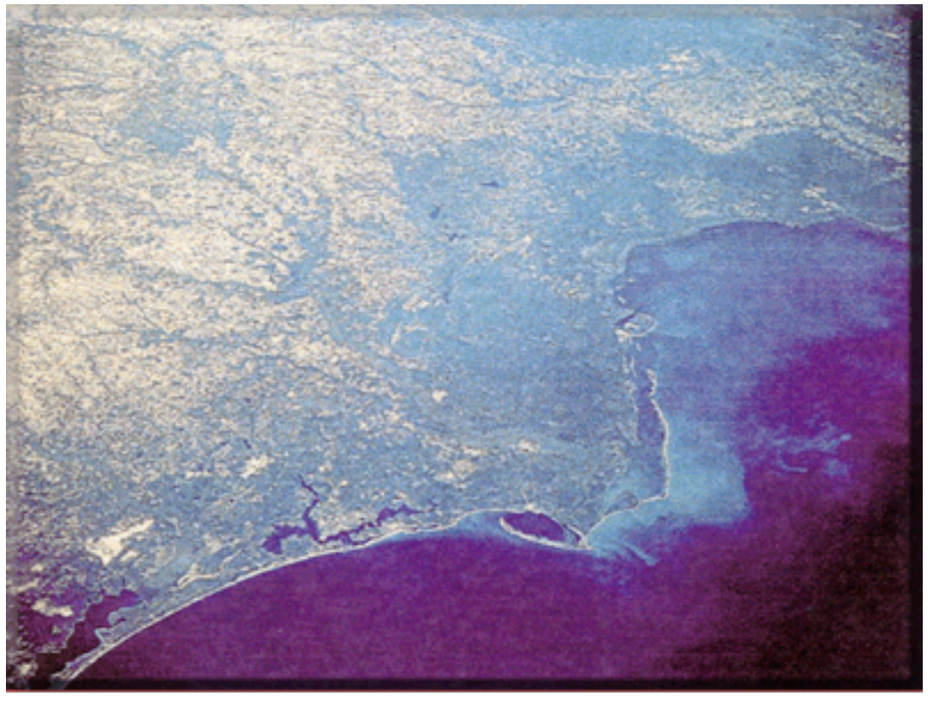


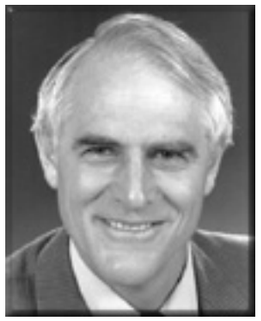
NASA Shuttle photo of Wakulla Springs Karst Plain

During the past decade the Aucilla River Prehistory Project (ARPP) has intensively explored the middle reaches of the Aucilla River in search of relatively thick, continuous sections of late Pleistocene sediments. Teams of paleontologists and archaeologists have successfully excavated more than a dozen such sections using SCUBA, dredges and underwater lights. The various sections studied by the ARPP range from about three to more than five meters thick and represent nearly continuous deposition of fine-grained, highly-organic clastic sediments, including peats, clays, silts and fine sands. Most of these sections lie immediately adjacent to relatively deep holes in the uneven bottom profile of the river. Evidently these sediment packets in the Aucilla River represent sinkhole fillings in the Suwannee Limestone, now partially exposed by the river.

In the course of its excavations, the ARPP has acquired more than 90 radiocarbon dates on river-bottom sections from the middle reaches of the Aucilla River. We anticipated that the dates would represent the last deglacial hemicycle, driven by a rising piezometric surface geared to the latest glacial sealevel rise. For a majority of dated sections these expectations were fulfilled. For example at the Page/Ladson site sediments record fine details of back-filling history between 15,000 and 9,000 radiocarbon years (Oxygen Isotope Stage 2). Quite unexpectedly, however, nearly 40 percent of the sediment packets sampled and dated by the ARPP represent a previous interval of sinkhole filling with dates between about 28,000 and 34,000 radiocarbon years before present. This earlier cycle of sinkhole filling correlates with the next highest oxygen isotopic peaks (Stage 3) (before the latest Pleistocene) in the Greenland Ice Core record. The abundance of such sediments in the Aucilla River, despite being overprinted by a later cycle, suggests that they played an important role in regional karst history.

Patterns of sediment deposition in the middle Aucilla River

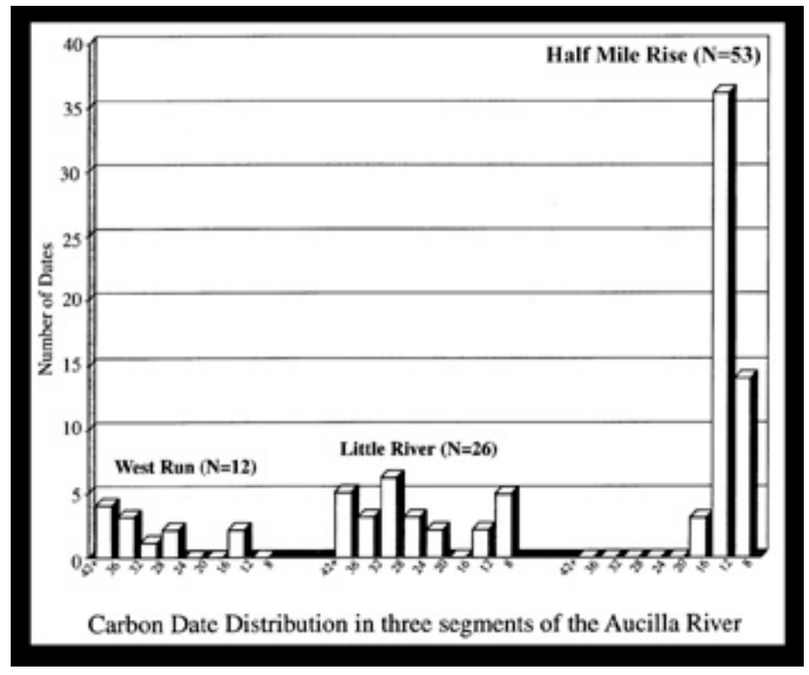
By Dr. S. David Webb



After investing considerable time and energy in locating late Pleistocene sedi- ment deposits in the Middle Aucilla River, the ARPP might be expected to have discerned some patterns of how such sediments accumulated and how one might locate further bodies of similar nature. Besides recording the kinds of sediments and the geometry of their deposition, the ARPP also has a substantial inventory of their ages based on about 90 carbon-dated samples from more than a dozen sites in the river bottom.

The ancient sediments of the Aucilla River consist of two unequal sets of very different genetic origin. The prevailing "bedrock" is the Suwannee Limestone of Oligocene age, about 30 million years old. Along the river bottom this limestone is often exposed as shallow hard bottom. But it alternates with deeper, subcircular exposures of highly organic peats, clays, silts and fine sands of late Pleistocene age, less than a million years old. ARPP's work shows clearly that these sediments represent sinkhole fillings.

The late Pleistocene sediment accumulations are related to water tables which in turn are related to sea level cycles. When sea levels are down due to glaciers tying up much of the world's water budget, the sinkholes tend to open up and drain by subterranean systems far out into the Gulf of Mexico. On the other hand, when sea levels rise during interglacial intervals, the water tables in coastal Florida rise substantially and sinkholes tend to backfill with sediments. The Aucilla River's record of late Pleistocene deposits must reflect these global sea level cycles.



Carbon Date Distribution in three segments of the Aucilla River

The substantial number of carbon dates obtained by the ARPP from late Pleistocene deposits in the Aucilla River provides a general schedule of sinkhole filling sediments in the Wakulla Springs Karst Plain. The essential data are summarized in the accompanying figure. The dates are grouped by river segments, the Half-Mile Rise, farthest inland, and West Run, nearest the mouth. A major cluster of dates in the last deglacial hemicycle, from about 15,000 to about 9,000 radiocarbon years before present is to be expected. The older clusters, however, are somewhat surprising. The explanation for an older cluster of carbon dates between 24,000 and 32,000 years, best shown in Little River, is that this represents the penultimate glacial rise. The oldest cluster of dates between 36,000 and more than 42,000 corresponds to still another meltdown. It is interesting to note that as one moves down river the accumulations of late Pleistocene back-filled sediments appear to become more equally recorded. In Half-Mile Rise, farther inland, there is no record, insofar as we know, of older interglacial or interstadial records.

Editor's Note: In October 1998, Floridians celebrated Earth Day along with many others in the United States and Canada. Governor Lawton Chiles issued a proclamation underlining the importance of Earth Day and of appreciating geology. One of the events in recognition of Earth Day in Florida was the Wakulla Springs Karst Plain Symposium held at the Turnbull Conference Center on the campus of Florida State University (see "Wakulla Springs Karst Plain Symposium";). This article is a synopsis of the paper presented on behalf of the ARPP by project director S. David Webb. A longer version is in press in the symposium volume to be issued by the Florida Geological Survey, edited by Dr. Walt Schmidt, Survey Director.

Natural site formation processes

By Krister Efverström

First of all I would like to thank Joseph Latvis, Bill Gifford and David Webb for giving me the opportunity to participate in the ARPP. It has been, and will be, a big adventure for me to work with a culture that I had little knowledge about before this summer's Clovis Underwater '98 excavation in the Gulf of Mexico and the fall ARPP expedition at Sloth Hole on the Aucilla River. I also would like to thank Andy Hemmings for his time and trust with me concerning the scientific work. I hope that my analysis will contribute to a better understanding of the Paleoindian/Early Archaic cultures.

The climatic changes that have occurred in the northern temperate zone over the course of the past 20,000 years have been nothing short of dramatic. The climatic shift from a regime of arctic severity to one of relative warmth began around 15,000 BP. It led to the virtual disappearance of the continental ice sheets and to the replacement of barren tundra by mixed woodland over large areas of Europe and North America. A combination of climatic and vegetational changes exerted a major influence on a range of other landscape processes including fluvial activity, weathering rates and pedogenesis. Landscape, people and climate are three variables which are inextricably linked, and an understanding of the course of environmental change requires analysis not only of the elements themselves, but also of the way in which each influences the other.

In the commentary section of Anderson and Sassaman's *The Paleoindian and Early Archaic Southeast*, Henry T. Wright celebrates the great variety of Paleoindian/Early Archaic stone artifacts and the importance of understanding and interpreting this variety. He also argues for the importance of knowing the local environment in the area of a site at the time of the site´s use. Between these two big issues I would interpose the importance of understanding the site-formation process because of its influence on cultural and environmental development. Archaeological sites are three dimensional mosaics consisting of natural sediments, vegetation, modern artifacts and settlement and archaeological remains. In order to understand how settlements functioned in regional systems, one must try to reconstruct changes in the landscape. Much of the archaeological variability within and between regions is a consequence, not only of past human behavior, but also of differences in the local environmental processes that form an archaeological site. Joel Gunn proposes on page 420 in the same 1996 volume cited above, " that sites need to be seen in the context of the environment at the time of occupation, not in broad regional community syntheses " and that " Paleoindian/Early Archaic transition can be elaborated to include that the site-specific conditions are a part of the global ecological context".

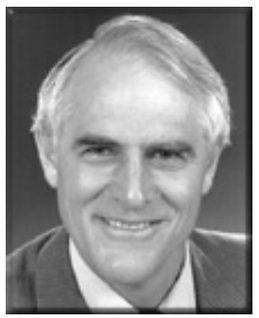
Understanding site-formation processes is, I believe, one important key to unravelling archaeological questions, especially for inundated archaeological sites like Sloth Hole, because of the depositional complexity. Because the site is producing so much cultural evidence, it is particularly important that we understand its environmental formation processes. In addressing site-level environmental processes, one asks three basic questions:

1. What noncultural processes contributed materials, as ecofacts, to the deposits?
2. What noncultural processes modified the deposits?
3. How did noncultural processes affect behaviour at a settlement?

The focus of my research will be to describe the process of site formation at Sloth Hole. A study of non-cultural site formation processes should be set in an environmental framework that includes spatial, temporal, physical and biotic parameters. A better understanding of site formation will give us a more complete "tool-box" to interpret inundated Paleoindian/Early Archaic sites.

First Floridians and Last Mastodons

By Dr. S. David Webb



A score of collaborators from diverse institutions in Florida, Michigan, Minnesota and California, completed their contributions to the ARPP book early this year. After further editing and illustrating, the book will be bundled off to Plenum Press for publication. The diversity of contributions is quite remarkable, a tribute to the wealth and variety of evidence preserved in the river bottom and recovered by ARPP underwater excavators.

Several early chapters set forth the regional geology, especially the late Pleistocene of the Aucilla River and Apalachee Bay. The stratigraphy and carbon-dates that establish the chronological framework are presented in excruciating detail. The fauna and the flora are analyzed in multiple contributions and then synthesized to give a sense of the regional environment. Two chapters are concerned with stable isotopes and their environmental significance. Two other papers present details of the mastodon digesta found in abundance in certain strata. And last but not least, of course, are several studies of cultural remains from early and late Paleoindian horizons.

In broadest terms this book will provide the most intensive prehistory yet known of a late Pleistocene and early Holocene setting in Florida. The environmental and chronological studies provide a sound frame onto which the rich tapestry of faunal, floral and cultural evidence is woven. It has long been known that Florida's submerged sites yield some of the richest evidence of Paleoindian cultures in North America, but this is the fullest test of the "Oasis Hypothesis" that purports to explain Florida's underwater wealth. The title, *First Floridians and Last Mastodons* captures the essence of this long book. It will probably be published during the year 2001.

Clovis site distributions

By Mark Muniz

The goal of this paper is to further attempts at modeling Paleoindian subsistence/settlement strategies by first reconstructing paleohabitats based on fossil pollen evidence, then evaluating mammal diversity for those reconstructed areas, and finally plotting site distributions in relation to those habitats. Due to space limitations, only Clovis site concentrations will be addressed here, although data for Paleoindian and Early Archaic periods of Florida have been presented elsewhere in a 1998 paper by Louis Tesar and me.

Paleoenvironmental reconstruction is based on published pollen studies from Lake Annie, Lake Tulane, Sheelar Lake, Lake Louise, and Camel Lake. To estimate species diversity, 48 mammalian species were chosen from those occurring in the Late Pleistocene of Florida and matched to habitats that met the dietary requirements and proposed niches of each animal. The only mammals not included in the distribution are mice, voles, moles, and others of comparable size.

Because so much of Florida has been inundated by sea level rise over the past 12,000 years, consideration of Paleoindian subsistence strategies clearly needs to take into account resources then available in the now inundated region of the continental shelf, which would have then been coastal plain. Habitats that combined both terrestrial, freshwater, and saltwater resources (such as estuaries) offered a greater diversity of resources than upland habitats 11,000 years ago, as they do today, and were surely utilized by Paleoindian peoples. Unfortunately, we will have to wait until pollen data from inundated regions of the Gulf of Mexico and Atlantic Ocean have been collected before a total picture of the habitats available for Paleoindian utilization can be completed.

For the period 12,000 to 11,000 RCYBP the habitat surrounding Camel Lake (located about 60 Km west of Tallahassee) is characterized by mesic deciduous forest with many mast producing oak trees and abundant moisture. To the northeast, the Lake Louise habitat (located about 20 Km south of Valdosta) was much drier, with far fewer floral species, exhibiting prairie development and dominated primarily by oak. The region around Sheelar Lake (located just outside of Gainesville) was characterized by a mesic moisture regime with broad leaf trees declining and pine increasing. Oak and herbs were also present, and there was some prairie development as well. The south-central Peninsula, represented by Lake Annie and Lake Tulane, was a much drier scrub and prairie habitat with some sclerophyllous oak woodlands on the upland regions. This area also contained composites, grasses, and some pine.

Prior to the extinction event of the terminal Pleistocene, the distribution of the 48 mammals chosen for this study ranged from a high of 34 species in the Panhandle to a low of 22 species in the northern Peninsula and 27 species in the south-central Peninsula. In every habitat, species ranged in size from the Gray squirrel to the Columbian mammoth. During this period, sea level rose at least 15 meters.

The heaviest concentrations of Clovis sites occur along the borders between differing ecozones and drainage basins, and range from 75 Km to 250 Km apart (Figure 1). Many Clovis sites once located along natural levees and terraces of coastward river valleys are today inundated. As a result, this distribution may only illustrate a part of the subsistence/settlement strategy practiced by these people. Nevertheless, it seems that Clovis people in Florida did not focus their sites in a single kind of environment, but instead concentrated on areas where the widest diversity of floral and faunal resources could be obtained. For example, exploiting the region between Camel Lake and Lake Louise provides access to 92% of the mammalian species chosen for this study, versus 71% in the Camel Lake region and 46% in the Lake Louise region. There was undoubtedly increased diversity of floral resources along these border lands as well.

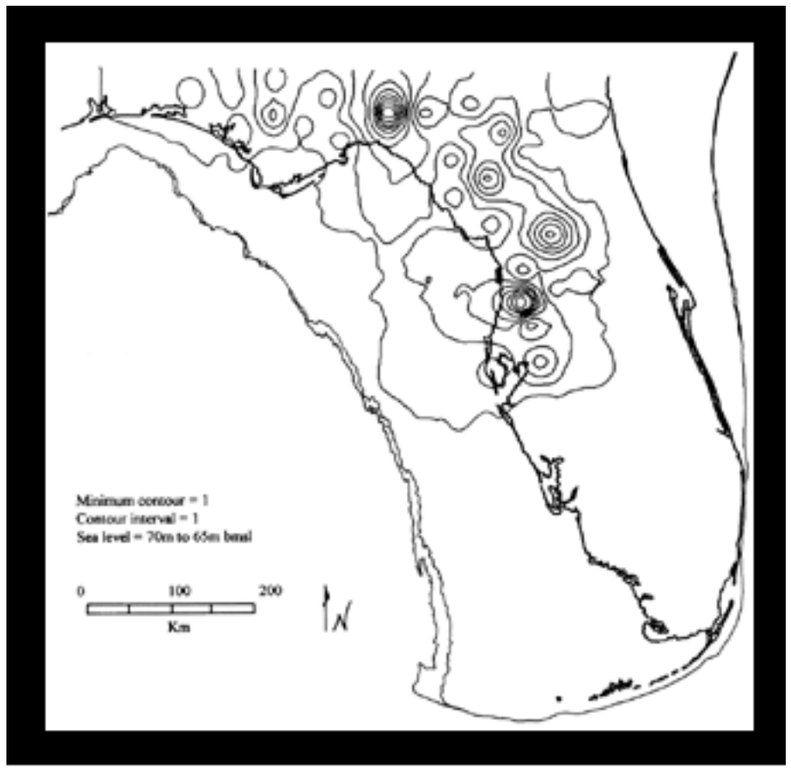


Fig. 1. ***Clovis site distribution by county (including modern and 11,500-11,000 RCYBP sea levels).*** **M. Muniz**

The southern Peninsula, which most closely resembled habitats found in the Southwestern U.S., with large grasslands, prairie, and scrub oak woodlands, appears completely uninhabited. This is unusual given the presence of faunal resources such as mammoth, mastodon, bison, deer, and sloth that were present (representing 56% of the 48 mammalian species), and suggests a subsistence/settlement strategy for Florida Clovis peoples different from that employed by their Northeastern counterparts.

The very weak presence along the Atlantic Coast emphasizes the Clovis focus on the Gulf of Mexico. Of the six drainage basins bordering the Gulf, Clovis sites are concentrated in the central four. Site concentrations along the borders of drainage basins once again indicate a focus on areas that allowed access to greater diversity of faunal and floral resources. Finally, distinct concentrations in both the Panhandle and near Tampa Bay may suggest the territories of at least two macrobands.

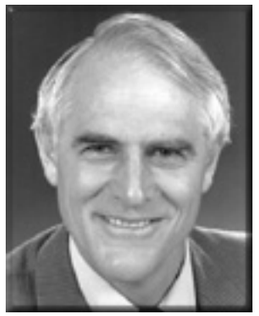
Following the arguments of David Meltzer and others, hunter-gatherer settlement in regions with high species diversity and accompanying low populations of individual species, should result in a generalist, rather than a specialist, subsistence strategy. In addition, quarry and/or tool production sites should be the only site types that are large and repeatedly visited by generalists. The location of Florida Clovis sites along transitions between different habitats supports a generalist subsistence strategy. Meltzer's generalist hypothesis is also supported in Florida by the many isolated finds characterizing the Clovis presence along karst river valleys, with very few base camp sites or sites exhibiting repeated occupations that often characterize a specialist subsistence strategy as employed, for example, by Paleoindians in the Northeastern U.S.

Hopefully this brief discussion sheds light on Clovis subsistence strategies in Florida. Due to the absence of faunal remains from Clovis sites, we are forced to rely on theoretical formulations and inference to derive our conclusions. However, with more pollen data (especially from the Gulf of Mexico) and the continued search for intact, stratified Clovis sites in Florida, we will eventually be able to flesh out the model presented here.

Editor's Note: This paper was presented at the 31st Chacmool Conference, on Novermber 14, 1998, in Calgary, Alberta, Canada. It is excerpted from a larger paper entitled "Peopling of the peninsula".

Aucilla River time machine

By Dr. S. David Webb



Now that our project has entered its last year of field work, I want to reveal our most important secret. We actually discovered this secret at the end of our first season, and it has sustained us through the 15 subsequent years.

In our first explorations of the Aucilla River, we discovered that the bottom consists of two very distinct types. There are shallow sections with hard limestone bottoms and, on the other hand, there are deep areas filled with dark organic sediments. These latter areas often produce rich samples of fossils. The deeper, richer areas are also usually wider, forming more or less circular patterns within the course of the river. We soon realized that these are sinkholes that were back-filled with sediments, and it is in these sinkholes, now merged with the river, that we discovered the Time Machine.

The only way to relate this stunning discovery is to start at the beginning. With only a few days remaining in our inaugural field season, Buddy Page offered to show us a very rich, very deep hole, informally known as “Booger Hole” near the middle of Half-Mile Rise. Once we adjusted to the darkness, we saw several large bones scattered about. My eyes focused on a large radius. This long bone from the forelimb is strongly bowed in mammoths. As I stared at the convex anterior face, I noticed that the outer cortex was worn almost to nothing and that it was broken just at the point of deepest wear. And as I continued to ponder the origin of that bone the TM kicked on.

As I watched, a woman came out of the darkness, picked up the radius and began scraping hides. She yelled strange sounds to a child sitting nearby. She gave a hard thrust to the radius and I saw it snap near its midpoint. The longer piece fell to the ground. I realized then that the time machine was playing this scene for those of us in “Booger Hole”. It also indicated to us that the time was more than 12,000 years before the present. The experience lasted about ten minutes. Then I realized that my SCUBA pressure gauge was about to enter the reserve zone. I was slowly carried back up to the present where the light was brighter and people spoke English.

That experience was the first of many. I began to realize that the time machine operated only in deep holes where the river encountered a standing sequence of ancient sediments. And in most such instances the TM seemed to be driven by divers’ intense interest in a specimen that invoked a particular scene from the past. I also realized that the machine gave its chronological printout based on the ratio of radioactive carbon 14 to stable carbon 12 in the sediments on location in these deep holes. As we watched the woman scraping hides, the machine evidently commuted between the past and the present, computing the difference in C14 levels. In the present it saw only 1/8 as much radioactive carbon as it saw then. It registered that two and a half half-lives of C14 had already decayed, and thus based on the half-life of 5,700 years for radioactive carbon, it calibrated that our visit was more than 12,000 years before the present.

It also occurred to me that the machine could not operate where deep sediments were absent. In such cases, few specimens could be found, and often, if there were some, they were mixtures of diverse ages, presumably giving conflicting signals. On one occasion I noted that the machine’s chronological sensor spun crazily. Only a few deep sites gave strong signals for the machine. Those of us who are fortunate to have experienced those ancient scenes, must now do our best to convey these remarkable glimpses of the lives of the first Floridians to present and future Floridians.

More about radiocarbon dating

By David Thulman

The great promise of radiocarbon (C14) dating is that it provides a method for dating and sequencing specific prehistoric events. On the Aucilla projects, C14 dating is used as a method for weeding out unpromising sties that are either too old or too young. In addition, it provides a method for determining the relative chronologies at the various sites and their relation to sites elsewhere in the world. Are we working on some of the earliest human cultural remains in North America? C14 dating can help provide the answer.

Given the pervasive reliance on C14 dating in archeology, it is necessary to understand the limitations of C14 dating and how the results can be skewed and misused. A C14 date is not really a "date" at all; it is an estimation of the number of years it would take the radioactive carbon in a dead organism to decay to leave the amount of radioactive carbon actually found when a sample of that organism is analyzed.

For example, at the Aucilla River sites, we typically take samples of buried tree branches for C14 testing. (Wood is a very reliable material for C14 testing.) The ratio of C14 and C12 in that branch is then compared with the ratio of C14 and C12 in a modern standard, and an estimate is made of the C14 remaining in the branch. If half the amount of C14 in the modern standard is left in the branch, the branch should be about 5,730 years old. I say "about" since the decay of C14 is random and the estimation of the amount of C14 is based in part on statistics. That is why C14 dates are always reported with a "±" margin of error. Typically, the margin of error reported is for one standard deviation from the norm. Therefore, a C14 date of 10,000 ± 200 BP on our branch sample means there is a 68% probability (a 2 in 3 chance) the branch died sometime between 9,800 and 10,200 years ago. A common practice is to report a C14 date as the single middle date (in our example, 10,000 years). This is misleading since there is actually an equal chance the true date of the branch will fall anywhere within the 400 year margin of error.

Carbon 14 dating is based upon a number of important assumptions, but only one will be discussed here. In order to compare C14 dates meaningfully, we must assume that all organisms contained the same amount of C14 when they died. Otherwise, organisms with less C14 will appear older because there will be less C14 than expected when the sample is tested. Unfortunately, that assumption is faulty.

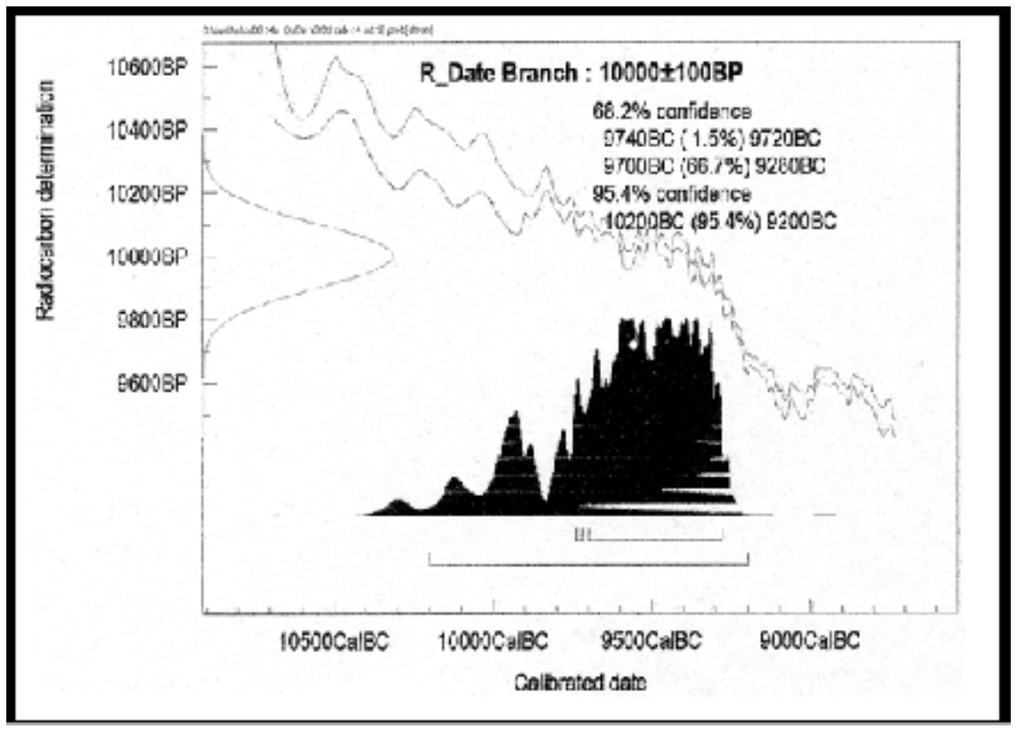


Fig. 1 ***OxCal chart correlating C14 and Calendar dates***

As Mary Hudson explained in her *Aucilla River Times* article two years ago, C14 is created by cosmic radiation in the upper atmosphere. That radiation fluctuates year to year and therefore so does the creation of C14 . That means if our branch grew at a time when relatively lower levels of C14 were in the atmosphere, it would have less C14 when it died and would show an older apparent age than it should. Conversely, if it grew at a time of abundant C14 it would appear younger than it should. This differential C14 concentration may give our branch a younger C14 age than another branch that died hundreds of years after our branch, making comparison of the two samples misleading.

The only way to resolve this uncertainty is to calibrate the C14 dates with calendar dates. This calibration has been done by compiling a dendrochronological (tree-ring) record and painstakingly figuring the C14 age of these tree rings. This tree-ring record now extends back about 11,500 years, and by comparing the calendar age of the tree rings with their radiocarbon age, calibration curves have been created to produce a calendar date for a corresponding C14 date. The differential production of C14 produces "wiggles" in the calibration curves, and these wiggles can result in a single radiocarbon age corresponding to more than one calendar age.

There are presently a few computer programs available over the Internet that automatically calibrate C14 dates. The latest version of OxCal v.3 is fairly simple to use and produces information like the graph in Figure 1. The program can be downloaded from http://units.ox.ac.uk/departments/rlaha/oscal_h.html. By inserting a C14 date of 10,000 ± 100 for our branch, OxCal produced a range of calibrated dates with different confidences. Just like C14 dates, calibrated dates are given in a range. Note that as OxCal translates the lab date to a calendar date it also switches from BP (before present) to BC (before Christ). From Figure 1, we can be fairly confident that the date of our branch is between 9,700 cal BC – 9,280 cal BC, and very confident it falls between 10,200 cal BC – 9,200 cal BC. ("cal BC" means calibrated years before Christ as opposed to "BC" which means radiocarbon years before Christ.)

Carbon 14 dating has revolutionized archaeology by providing a method for dating events and allowing the comparison of events where previously their relative ages could only be indirectly inferred. However, it should be used with caution. Hopefully, even with its limitations, it will help us better understand the relation of our sites to the broader context of Paleoindian archaeology.

Editor's Note: David Thulman is an environmental attorney with the Florida Department of Environmental Protection. This article follows Mary Hudson's excellent description of the basis of radiocarbon dating in the April 1997 edition of the **Aucilla River Times.**

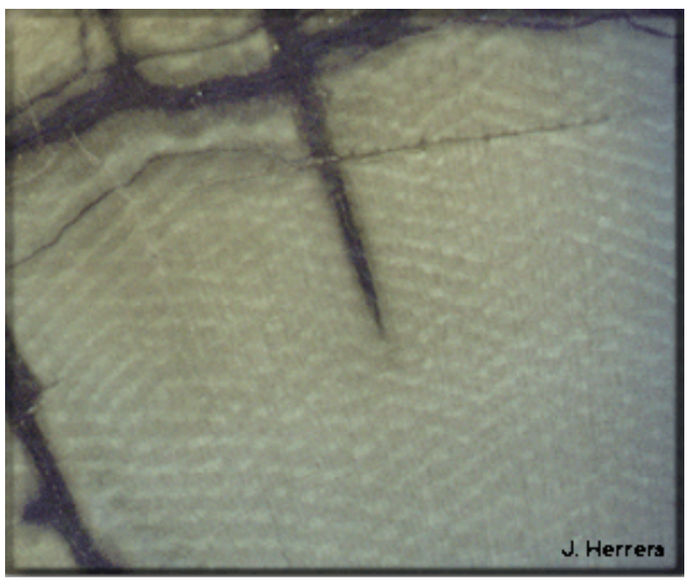
Determining the species source of prehistoric ivory

By Dr. Joan Herrera

Paleoindians hunted mammoths and mastodons here in Florida over 12,000 years ago. They made tools from the ivory of these animals, most notably a spearlike tool. This tool is commonly referred to as an ivory foreshaft, but recently there has been much debate about its actual purpose.

Although the Paleoindians are known to have hunted both mammoths and mastodons, it is thought that they may have had a preference for using mammoth ivory as the material for making shafts. It is not known if there was a cultural basis for this preference, or if it was due to some property of the material. Whatever the reason, it will be remarkable if a significant number of the ivory tools that we test are made of mammoth ivory. While mammoths were more common farther north, in the regions from which the Paleoindians probably migrated, mastodons appear to have been much more prevalent here in Florida.

The proboscidean species from which a piece of tusk came can be determined by looking at the pattern of dentin tubules spiralling through the ivory. This feature of the dentin is the “Schreger pattern”, and each species has a distinctive herringbone pattern (see photograph).



Cross section of mastodon tusk illustrating the Schreger pattern

The Schreger pattern is made up of alternating bands of dark and light material forming convex spiralling tracts through the ivory. There are elements in the pattern that spiral to the left and others spiral to the right. By measuring the angle formed by tangents drawn to the left-facing and right-facing curves of the spirals, Dan Fisher (University of Michigan) and his colleagues have quantified a significant species difference between mammoths and mastodons in these intersection angles. Fisher found that the Schreger pattern angles of mastodons average about 124.7 degrees, and those of mammoths average 87.1 degrees. By measuring these angles in the dentin of the ivory foreshafts in our collection we hope to determine the species from which each foreshaft was made, and to discover if the Paleoindians did have a species preference for the source of the ivory for their toolmaking.

The information gained from measuring the Schreger patterns in the ivory foreshafts in the Florida Museum of Natural History collection will be added to other data from electron microscope studies and will be analyzed, presented, and published by Dr. S. David Webb, James Dunbar, and Andy Hemmings in their studies of worked ivory.

Blackwater photography

By Tim Barber

The first rule of successful underwater pho tography is get close. Because of its density and the presence of suspended particles, even “clear” water absorbs and scatters light much faster than air. Not only is the total available light reduced, but colors are shifted toward the blue end of the spectrum as the longer wave lengths are absorbed first. So the less water between the lens and subject, the better.

The water column that we encounter in the Aucilla River contains not only a generous supply of particulate matter, but also a chemical component, mostly tannin, which makes this “get close” rule even more important. This actually simplifies equipment choice.

To obtain a close focal distance with a generous field of view, use a wide angle lens. Think of looking through binoculars backwards where you have to get really close to something to make it appear normal size. This is the choice for rendering larger objects such as megafaunal remains or procedural shots of divers. To get even closer for small objects, use a macro lens of at least 60mm or greater. You may lose some context because of the narrower picture angle, but you can capture images of *in situ* material actual size.

All of the underwater photos in this issue were shot using a Nikon 8008s with an AF Nikkor 28mm f/2.8D lens (9” minimum focal distance). This was mounted in an Ikelite SLR-AF housing. A dome port was used to correct for the water’s refraction. Since the only available light at depth is provided by our 1000 watt Snooper lights, I used an Ikelite 100 A (medium intensity) strobe, hand held.

I used Kodak Ektrachrome Lumiere 100X professional slide film for its high color saturation and exceptional resolution. Kodak no longer makes this film, but told me their E100S and E100SW professional films have similar properties.

What about digital cameras? At present there is equipment capable of mounting the required lenses and approaching film’s near-seamless resolution. However they’re bulky, expensive, and underwater housings are unavailable.

I think that we regulars on the Aucilla River Project tend to take our “snapshots”, both underwater and topside, for granted. After all, we’re there in the field every day - we know what this stuff looks like. Then I consider the now priceless images of previous expeditions, say Howard Carter in the tomb of Tutankhamen or Roy Chapman Andrews’ crew at the Flaming Cliffs in Mongolia. I hope that one day our pictures will have a similar archival relevance. If not, then at least we’ve captured some great memories. But, if so, then maybe, just maybe, having to listen to Bill Gifford whine about his coffee will have been worth it.

Sidescan sonar mapping

By Dr. Michael K. Faught

For years we have tried to describe the bottom of the Aucilla River. Terms like “highly variable, craggy, and variegated” come to mind. There are places with rocky shoals, there are sandy bottoms, sinkholes, and leafy sediment beds. There are dead fallen trees, branches and boulders. There are also a few old docks and boats. This highly variable bottom, in combination with the low visibility of the dark tannic waters, makes diving in the Aucilla treacherous and finding evidence for prehistoric peoples challenging, to say the least. For years we have desired a way to map the bottom of the river, to make sense of its morphology, and to predict where we might go to find additional sediments for coring, or excavations, to seek out more data about Paleoindian and other material culture (archaeology) in the river.

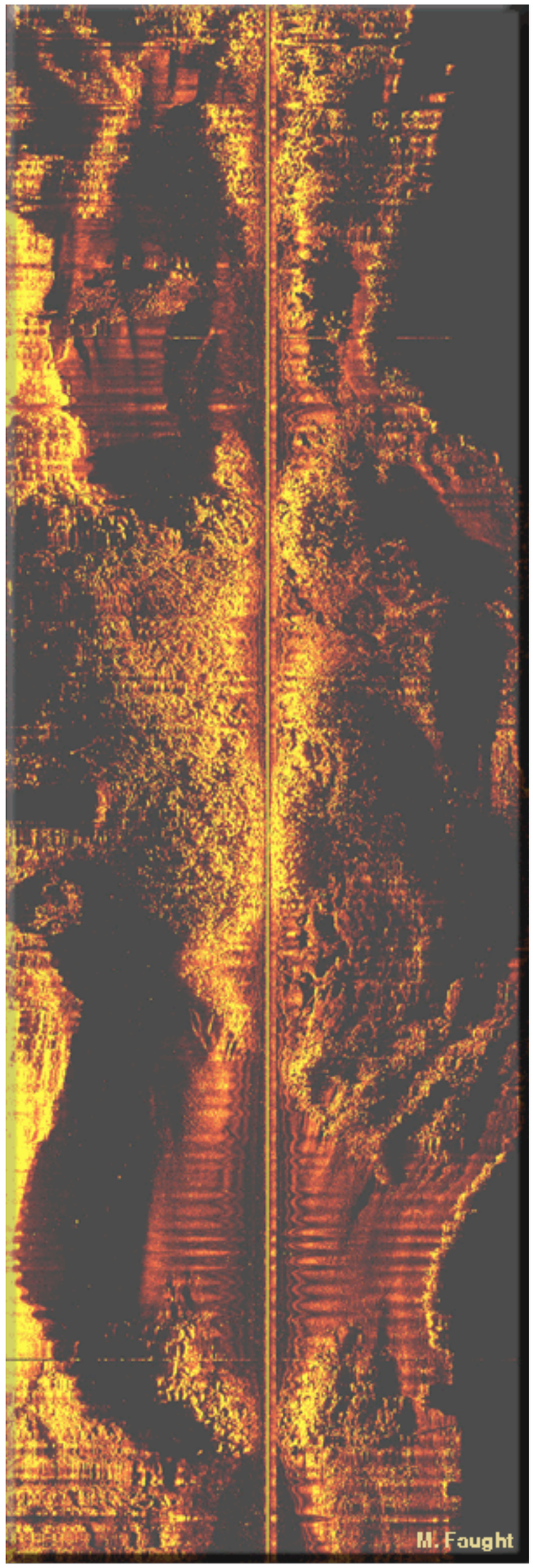
We now have the capability to do this because of a familiar piece of equipment that is being used in new ways. In the summer of 1996, while having dinner with Roger Smith of the Bureau of Archaeological Research, and Brett Phaneuf, graduate student with Texas A&M’s Nautical Program, and discussing the benefits of Marine Sonics’ Windows based high resolution sidescan sonar equipment, I was excited to think that this same device might reconstruct the channels in the geological features of the Woodville Karst Plain. (See “Wakulla Springs Karst Plain symposium”). Phaneuf’s relating how well the device worked in a rock quarry got me to thinking about how well it might work in the Aucilla. The usual targets for sidescan sonar devices are shipwrecks and other historic features protruding from usually flat sandy bottoms.

As one of the cooperative efforts between the University of Florida and Florida State University, several students and staff undertook sidescan sonar imaging of portions of the Aucilla River in April of 1998 as an experiment in its utility. The device, purchased by FSU’s Program in Underwater Archaeology, is a Marine Sonics splashproof model with Pentium CPU, 2 gigabyte hard drive, and Windows 3.1 environment. The towfish sends out pulses at 600 Khz, and the device is integrated with a Trimble NT200D differential GPS that determines position from satellites to an accuracy of about 12 feet (4 meters). It is very useful.

However, at the time of the Aucilla River survey in April our equipment was undergoing some growing pains. The GPS unit and the sidescan both performed admirably, but they were unable to communicate because of a burned out serial port. We were able to overcome the adversity by manually recording the locational data, but the post-processing time has been greatly increased because of it.

The data consists of about 200 megs of images on CD ROM, along with a GPS position data sheet taken every 30 seconds. We still have to lay out the track-lines and determine the placement of the images on local maps. The device read out straightens out the river track way, but the images can be saved as *.tif files and cropped to fit a GIS based map in proper order and alignment. The figure shown is a segment of the Aucilla, north of Williams Fish Camp, but south of Ward Island. In this image one can discern rocky portions and smooth sediment filled portions, some logs and evidence of erosion. The river flow is from top to bottom, the width of the image is 150 meters.

We have scheduled another trip this spring to re-do the data so that the locational fixes are integrated onto the images and to expand our coverage to the Page/Ladson site. The crew on the April 1998 cruise included: Michael Faught, Andy Hemmings, Binion Williams, Joe Latvis, Thadra Palmer, Grayal Farr, and John Davidson.



Sidescan sonar image of a section of the lower Aucilla River channel

ARPP: Scientific diving to national standards

By Dr. Robert Millott

During the past three years the Aucilla River Prehistory Project (ARPP) has made over 1500 dives for a total bottom time in excess of 1780 hours. This has been accomplished with no diving accidents. The number of volunteer divers who participate in the project averages about 20 per field season, in addition to the regular staff. All of the volunteers are required to demonstrate competency as defined by the American Academy of Underwater Sciences (AAUS) and the University of Florida's Diving Science & Safety Program (DSSP) standards. There is at least a sense that those who do dive on the project are competent in diving skills for the task at hand.

A great deal of the diving is performed in water with mild to strong currents and low visibility, using artificial lighting and surface supplied air. In addition, the dive sites are remote from medical support systems. Thus there is always a need to address the potential problems associated with this environment. Wide ranges of training and dive experience among volunteers from across the country who are new to such activities have suggested a need for extensive review of their skills development to minimize project risk.

The University of Florida attempts to control hazardous activities through the efforts of the Environmental Health & Safety (EH&S) office. The DSSP is a component of this office directed to oversee and manage all sub-aquatic activities for risk management purposes. This program is an active organizational member of the AAUS.

The AAUS originated in part to address diving activities in science and research, and to obtain an exclusion from the OSHA regulations 29 CFR 1910, Subpart T. This regulation placed major constraints and expenses on all diving activity. To this end, the AAUS provided statistics and guidelines to the government demonstrating that research diving could be conducted with a minimum of accidental injury.

The ARPP has an excellent accident free history of scientific diving activities. With the large number of divers (both volunteers and faculty/staff/students) and dives over the past 15 years, its progressive support and adherence to national standards for dive safety in scientific diving can be seen as a major contributing factor to this outstanding safety record.

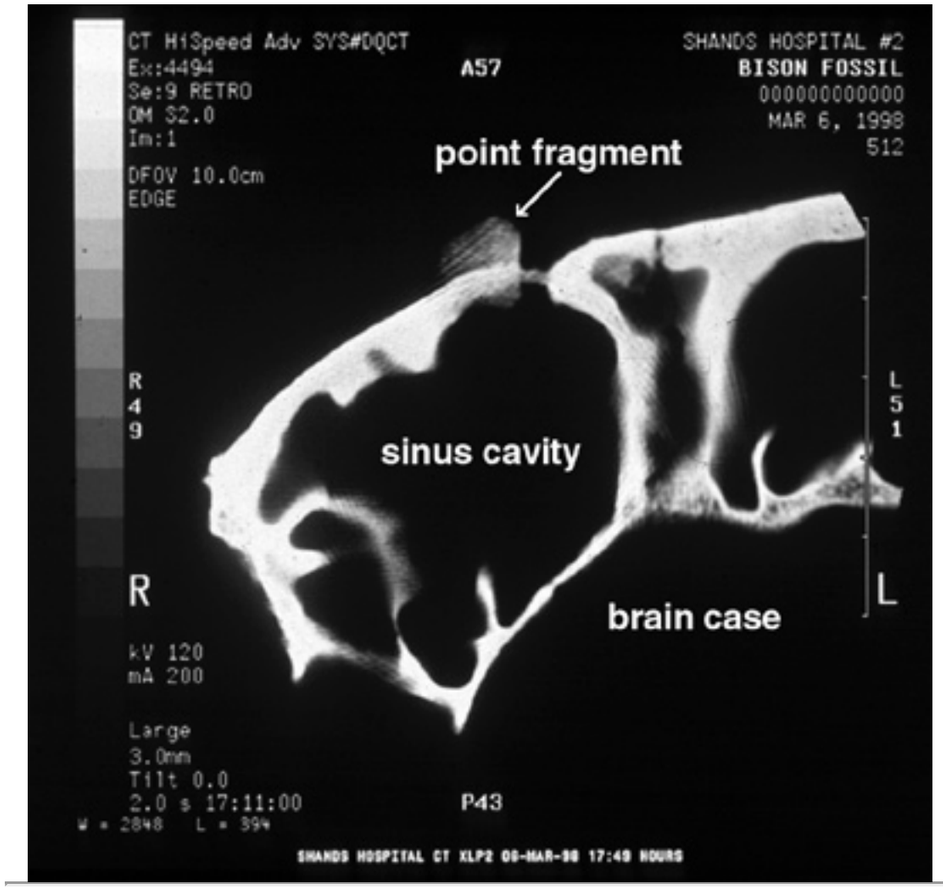
The ARPP has supported and complied with the national safety standards as promoted by the AAUS. It has as its strong support dive group a larger number of volunteers than academicians. Divers coming from all over the US and beyond have proven capable and conscientious in assisting with the research.

The program has demonstrated an attention to details, planning and training that has resulted in extensive scientific diving with no dive-related injuries. The basis of the diver evaluation and requirements is the AAUS exemption from stringent OSHA rules governing commercial diving, which was based upon a history of sub-aquatic research under such constraints with little or no accidents resulting in diver injuries.

ARPP director Dr. S.David Webb, director of diving operations Joe Latvis, and field operations supervisor Bill Gifford have strongly encouraged and supported diver training and performance to insure risk management through attention to detail and careful extensive planning. The dive plans presented by the ARPP are comprehensive and address health and safety issues with great thoroughness. Generally, there are even "dress rehearsals" for potential problem responses (see "Lifeflight/ARPP medevac drill"), thus demonstrating an in-depth review and understanding of the significance of any problems that might occur in what is considered a "safe" activity conducted in a potentially hazardous site.

Editor's Note: Dr. Robert Millott is the University of Florida's Dive Safety Officer.

Wacissa bison radiography



CAT scan radiography of a *Bison antiquus* skull reveals the broken tip of a Paleoindian point that penetrated the surface of the animal's horn core. This bison skull was found in the Wacissa River in 1981 by Roger Alexon. Radiocarbon dates of 9900+/-200 and 11,170+/-130 are associated with it and with other bison bones found nearby. This large date range is still within Paleoindian times.

This spearpoint wound would not have killed the bison, but it did die the same day. This was determined when it was discovered that the bone around this wound site never had the time to heal at all. This is one of very few known occurances of Paleoindian and extinct bison interaction in the Eastern United States.

CAT scan of Wacissa Bison skull showing an impact fractured stone projectile tip imbedded in sinus cavity. Image courtesy of Shands Hospital staff. Enhancement and labels by J. Herrera.

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 1998-99 the ARPP received its fourth major grant for archaeological research on First Floridians and Last Megafauna.

This funding organization was not 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 along the Aucilla River. Our most heart-felt appreciation also goes out to Tom Vereen of Moultrie, GA for his donation in 1998 of his own personal 20-ft. Duracraft boat, motor, and trailer.

The ARPP is pleased to accept your donations which should be made out to the University of Florida Foundation, Inc., earmarked for ARPP and mailed to the ARPP at the Florida Museum of Natural History. Funds are urgently needed to support student research, and software and computer upgrades for publishing results of our research program on Florida Prehistory.

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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	Mark and Marisa I. Renz	Mrs. Terry L. Thompson
	J.R. Walker (for J.R.'s Aucilla River Store)	Susan Verberg
	Bill Wright (for Perry Pepsi Cola)	

ARPP produces educational poster

This year, the Aucilla River Prehistory Project produced a poster for use in our educational and public outreach programs. The poster has already been used in an instructional and outreach role at ARPP open houses, the Florida Museum of Natural History Open House, and Paleofest'98. It has also been presented to some of our contributors and legislators in appreciation for their continued support of the project.

ARPP graduate student Mark Muniz created a preliminary draft and gathered the graphic materials for the poster, then worked with Joan Herrera to produce the final design. The background graphic is a map of Florida representing the central theme of diversity. There is great diversity among volunteers, fossils and artifacts recovered, techniques used, and methods of public dissemination of project findings that serves and promotes the goals of the Aucilla River Prehistory Project.

The map marks the hometowns of those participants who come to us from within the state. The project also attracts many volunteers from around the nation and increasingly from foreign countries. There are also photographs of fossils and artifacts discovered by the project and drawings of quadrats with representations of a probable Bolen culture hearth. Education and outreach aspects of the project are represented by graphics of our newsmagazine, the Aucilla River Times, and of the new Aucilla Mammoth display now on exhibit at Powell Hall (See "Aucilla Mammoth...").

Copies of the poster are available through the ARPP. The posters are 18 X 24 inches and in glossy color. Please request them via Dr. Webb at:

Dr. S. David Webb
Department of Vertebrate Paleontology
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The Class of '98

By Dawn Pinder

The Aucilla River Prehistory Project attracts an amazingly diverse group of volunteers each year. The project draws energy from those who lend their expertise, personalities and enthusiasm to the endeavor. The "Class of '98" is no exception. Here is a brief look at this multi-talented group of individuals.

T. Barber

One of the many ever-changing field crews from 1998. (l. to r. standing): Dennis Mihlbachler, Joan Herrera, John Davidson, Melanie Damour, Andy Hemmings, Bill Gifford, Carl Littlefield, Michael Murray, Matt Mihlbachler, Bob Coughter, and Susan Tuttle. (l. to r. kneeling): Cody Mihlbachler, Bill Reed, David Webb, and David Kendrick.

BARRY ALBRIGHT has been a postdoctoral research associate at the Florida Museum of Natural History until his recent appointment as curator at the Museum of Northern Arizona, Flagstaff. He has been involved with several other field studies including sites in Texas, South Carolina, California, and Georgia.

TIM BARBER, a divemaster and underwater photographer in Tampa, has been with the project for three years. Tim feels "the Aucilla River Project has attempted to shed light on one of the most compelling questions in the natural sciences: to what degree did humans contribute to the late Pleistocene extinction?" Tim also worked on the 1997 Santa Fe River Survey.

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."

CHARLES BROWN, of Lamont, Florida is a volunteer fire fighter and hazard management engineer. Although he was extremely familiar with the Aucilla River area, he found the ARPP to be "not only interesting, but an experience of a lifetime."

SYLVIA BORGES, of Palm Harbor is a professional videographer and an avocational archaeologist.

DARRYL BYRD is a professional archaeologist from Baltimore, Maryland. She has a Master of Arts Degree in Maritime History and Nautical Archaeology and a Bachelor of Arts in History and Ancient Studies.

JENNIFER CANNON, of Gainesville, is an undergraduate student in Anthropology at the University of Florida.

BOB COUGHTER, 24, of Gainesville 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. (see "Volunteer spotlight").

JOHN DAVIDSON, 34, of Melbourne, has a B.A. in Anthropology from the University of Florida. He has worked on the project for the last three years as a crew chief. John plans to attend graduate school in the future. He has also worked on projects with South Archaeology, Inc. of Gainesville.

PHILLIP DIGIROLAMO, currently a resident of Gainesville, received a Bachelor of Science Degree in Geology from the University of Massachusetts and is now working toward a Master of Science Degree in Vertebrate Paleontology at University of Florida. He is excited to apply himself in the great tradition of volunteer scientific research on the Aucilla River Project.

KRISTER EFVERSTROM, Pitea, Sweden.

JOHN EVELAND, 62, of Monticello is a retired operating Engineer. He has been looking for fossils and artifacts for 25 years. John says the ARRP is "an outstanding effort by the professional and volunteer communities to recover, record and display the area's ancient past."

GRAYAL FARR, of Winter Haven, retired from the Army after 26 years of service. He holds a B.A. in history from Florida State University and has completed his last year of graduate school, majoring in archaeology at FSU. He has been involved in a number of field projects with Florida State University.

BOBBY FRANCIS, Tallahassee, FL.

WILLIAM GIFFORD, 49, of DeLeon Springs is a dive instructor. He has participated in over 25 natural science projects. He has shared his talents with the Aucilla project for the past four years.

JERRY GRAMIG, Jr., 36, of Gainesville, FL, holds a B.S. from the University of Florida and works as a senior portfolio analyst. He shares his love of archaeology with his wife, son and father, who have volunteered on various projects around Florida.

ANDY HEMMINGS, of Gainesville, recently completed his master's thesis featuring the Paleoindian artifacts of Sloth Hole. Currently he is working on several more publications dealing with the Paleoindian tool kit of Florida.

JOAN C. HERRERA, from Gainesville, has an M.Ed. in Science Ed. and a Ph.D. in Zoology from the University of Florida. She is currently a lecturer in Core Biology at UF. She has been a divemaster with the ARPP for 9 years, and has worked on several underwater zoological and archaeological research projects

SUSAN HOLLYDAY, of Nashville, Tennessee is an avocational geologist who has volunteered at sites in South Carolina, Arkansas, Ohio, Tennessee and now, Florida.

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 that the Aucilla Project has been "the most memorable experience of (her) life."

RICK IMES, of North Ferrisburg, Vermont, is a writer, editor, naturalist and guide. He is "rapidly developing an interest in archaeology and paleontology."

PETE IRIZARRY, of Tampa, is a mechanic for the U.S. Postal Service. Pete is a member of the Tampa Bay Fossil Club and the West State Archaeological Society.

SUSAN KANE is an undergraduate student in Anthropology at the College of Charleston, South Carolina. She has worked at a variety of field sites in South Carolina as part of her studies.

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

DAVID KENDRICK is currently from California. After completing his Ph.D. in Paleontology at Harvard and marrying Nan Arens, they moved to Berkeley. David serves as a research associate and Nan is on the faculty at UC Berkeley. In June, 1998 David returned to the museum in Gainesville to complete his chapter on the geology of the Aucilla River.

CARL LITTLEFIELD, (see "Rep. Carl Littlefield dives...")

GREGORY LUNA, of Tucson, Arizona, is a professional archaeologist with the Western Archaeological and Conservation Center, National Park Service. He has extensive field research experience in Arizona, Utah, New Mexico, Colorado, California, Mexico and Belize.

JEFFREY MARLOW, of Wilmington, North Carolina, works as a hydrographic surveyor. He worked with the project in both the spring and fall last year. He "enjoys the enthusiasm and camaraderie of (his) fellow volunteers in this fascinating endeavor."

JAMES MCCLEAN is currently a graduate student in Underwater Archaeology at Florida State University. He assisted with the Southern Belgian Upper Paleolithic and Wakulla Springs surveys. James' primary interest is in watercraft and its role in migration.

ALYSSA MCMANUS 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."

CODY MIHLBACHLER, Sigel, IL.

DENNIS MIHLBACHLER, Sigel, IL.

MATTHEW MIHLBACHLER, 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 paleontology projects in Florida and Maboko Island in Kenya.

MARK MUNIZ, of Boulder, Colorado, is seeking a Ph.D. in Archaeology from the University of Colorado. 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 (see "Volunteer spotlight")

MICHAEL MURRAY, of Boise, Idaho, is a professional diver and sales and repair technician. Michael has previous experience in field research projects at the Tolo Lake Mammoth Project and Pipe Wreck sites.

JEREMY OGLE, 25, 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 and will also be spending a summer working at a Paleoindian site in Oregon.

THADRA PALMER, 23, is a fulltime student at Florida State University working toward a M.A. in Anthropology. She has been involved in a variety of other projects while at FSU including Little Salt Spring, Marathon wrecks, the Virgin Islands, and Italy.

DAVID PICKAR, of Portland, OR, completed undergraduate studies in 1998 at the University of Oregon. David has been involved with field projects in the U.S., Italy and Belgium.

JEWEL POZEFSKY, of Altamonte Springs, holds a Master of Arts degree in Mathematics and lists her profession as amateur paleontologist. She has been involved with the Florida Museum of Natural History and the Queensland Museum in Australia.

BILL REED, 28, is a recent graduate of the University of Florida with a major in History and Anthropology.

KELLY ROBERTS, Perry, Florida.

MIKE SAWATZKI is a student at the University of Florida with a major in Creative Photography and a minor in Anthropology. He plans to continue his education to obtain a Master's Degree in Archaeology. Mike has also assisted in field research at Mammoth Cave, Kentucky.

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 third season with the project.

LEE SMITH, of Palm Harbor, is a former state park ranger and now works as a professional videographer. DAVID THULMAN, 43, 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.

SUSAN TUTTLE, of Crawfordville, FL, holds a B.A. in Anthropology from the University of Florida and a Master's Degree in Special Education from FSU. In her spare time Susan enjoys sailing, painting and flying.

SUSAN VERBERG-BOONSTRA, recently from the Netherlands, is currently a high school biology teacher in Gainesville. She saw the Aucilla Project as "a chance of a lifetime!" Susan enjoys collecting animal skulls, minerals and fossils.

BINION WILLIAMS, 56, of Jacksonville is a retired production controller. 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.

ERIC WILSON, 28, of Miami, is an undergraduate at the University of Florida, finishing his B.A. in Anthropology. Eric hopes to pursue graduate research at Florida State University in the Program in Underwater Archaeology.

Volunteer Spotlight:
Melanie Damour and Don Munroe

Melanie Damour

Melanie is a first year graduate student in Florida State University's Program in Underwater Archaeology. She received her BS in anthropology from FSU in 1998.

Raised in Weare (yes Weare) New Hampshire she has relocated to the warmer regions of the Eastern seaboard for her education. While truly interested in shipwrecks from the Age of Discovery and Colonial times she has paid her Paleoindian dues on the Aucilla River and at the Jefferson site in northern New Hampshire.

Melanie has been involved in every ARPP field season since the summer of 1997, including being part of the "lifers" group in the summer of 1998. Barely two weeks after that expedition ended she reported (along with fellow "lifers" Joe Latvis and Bill Gifford to the Clovis Underwater '98 project based at FSU's Turkey Point Marine Laboratory (see "Field campaigns beyond the Aucilla").

While volunteering on the Aucilla River Prehistory Project Melanie has made the shift from screen deck surface crew to diver as well. She has made several exciting archaeological finds during her Aucilla work including: a broken barbed fishhook, the first fishhook found underwater by us, a groundstone axe and her first projectile point (an expedient Kirk like point made on a flake). (See "Sloth Hole site update" for more information about some of these finds).

Don Munroe

Don Munroe was born in Miami, Florida and moved to Ocala in the early sixties. After spending time in the US Air Force, he moved to Gainesville to attend the University of Florida and earn a degree in Nuclear Engineering Sciences. He also earned a Masters degree in Health Physics from the Nuclear Engineering Department. Since 1981 he has been Radiation Safety Officer for the University of Florida.

While attending the university, Don would go canoeing with friends on local rivers such as the Santa Fe, Suwannee, and Waccasassa. During one trip on the Waccasassa he found an arrowhead and horse tooth in a gravel bar. He was hooked, and began collecting fossils and artifacts from the local rivers. His searches were limited to shallow water since he was snorkeling. He also began reading books and journals about Florida archaeology and fossils, and loved going to the Florida Museum of Natural History to study the displays of indian artifacts. One day his job took him downstairs to the vertebrate paleontology lab where he met Dr. Webb and Russ McCarty. They showed him some interesting fossils and artifacts and mentioned the ARPP.

After learning of the ARPP and reading early issues of the *Half Mile Rise Times* (now known as the *Aucilla River Times*), Don decided to learn how to SCUBA dive so that he could volunteer as a project diver. In January 1994 he took his first SCUBA class at the University of Florida and became certified as an openwater diver. Later that year he took additional scuba classes including Advanced, Deep Diving, and Cavern.

Don was accepted as a volunteer diver for the October 1994 field session. Unfortunately, a hurricane blew onto the gulf coast and flooded the region. After a couple of days of watching the river rise and surrounding land flood, the session was cancelled and everyone sent home. The adverse conditions didn't dampen Don's enthusiasm.

Now that he was a certified scuba diver he began diving in the local rivers. His love of the hobby allowed him to ignore to a certain extent the spookiness of diving in dark river water.

In 1995 Don was able to complete his first dives on the project. It was fortunate that he had experience in diving dark water, because the Aucilla River can be as cold and dark as a black hole. It can also be almost as clear as spring water. Since 1994 he has been able to spend at least a week at each field session. Don reports "They have all been very interesting learning experiences since there have been different field Scientific Directors overseeing the research. Being a safety diver isn't one of the more exciting duties assigned to scientific divers, but it sure is more exciting than holding the underwater light while Joe Latvis films the underwater excavation."

In summary, Don reflects that "As an avocational amateur archaeologist I enjoy participating in the ARPP. You can only learn so much from books and journal articles. Listening to and learning from professionals and more experienced amateurs really helps your understanding of the varied fascinating aspects of Florida prehistory."

State Representative Carl Littlefield dives with ARPP

By Joseph M. Latvis

Among the many unique applications we received in response to our 1998 “Call for Volunteers” was one from a diver who listed his occupation as “Florida State Representative from the Dade City district”. Having received encouragement from preliminary discussions with ARPP director Dr. S. David Webb, Carl Littlefield had formally registered his interest in participating for a week on the May/June field season’s dive roster. He was not deterred by learning that the University of Florida’s Diving Science and Safety Program requirements (beyond already possessing a recreational SCUBA diving certification) included a rigorous physical examination, written SCUBA test, and in-water swim and SCUBA skills tests. Nor was he put off by the prospective tent-living conditions at Nutall Rise base camp that all roster participants subscribe to. And so roster dates were mutually agreed upon for the upcoming field season (along with thirty-three other volunteers).

Carl arrived at base camp the morning of May 18, and after the usual morning operational/scientific briefing and introduction to that particular day’s crew, loaded his dive gear into the project pickup trucks for transport to the shuttle vessels that would take us all to the Latvis/Simpson site already under excavation at the Little River section of the Aucilla. As with all divers new to the DSSP certification program who require swim and scuba skills verification in the field, Carl was put through the standard drills by field operations supervisor Bill Gifford that morning. Now fully certified as a scientific research diver Carl was short-cycled into the operations roster for his first project dive that afternoon.

After a detailed pre-dive briefing, Carl and I departed the surface of the Aucilla for the working excavation below. Winding our way among blowdown trees that guarded the one by one meter excavation unit, we arrived on the bottom for the beginning of our scheduled 2-hour dive. Carl displayed the comfort and confidence in the low-visibility, high-current environment that good recreational diving skills typically engender. I introduced Carl to the new skills he would practice with subsequent lead divers in pursuit of the secrets hidden within the Aucilla’s riverbottom sediments: Snooper light tending, fossil and artifact recognition/identification, sediment characterizations, provenience control, dredge excavation, mapping, photography, and field specimen protocols. Carl responded with the cautious enthusiasm typical of our most conscientious divers, eager to acquire the scientific diving techniques requisite to helping explore these fascinating places. A post-dive debriefing clarified subtleties of the preceding dive that were impossible to discuss while on the bottom. Carl returned to his legislative responsibilities that evening, having successfully completed his certification with and introduction to the Aucilla River Prehistory Project field operation.

He subsequently returned to the Nutall Rise base camp on June 1st and pitched his tent for a full week of research diving paired with the likes of field scientific director Matt Mihlbachler, Bill Gifford, Bill Reed and Joe Latvis. Carl endured all the indignities of life in the field that we commonly share, from in-river bathing to heavy gear lifting to muddy swamp footing to insect attacks to “the big shakes” (hypothermia) to a turn on the KP roster, all with the good cheer and camaraderie shared by all. He must have enjoyed the experience, because in July he took advantage of the reciprocity afforded him by his newly acquired scientific diver certification to participate in a five-day research cruise with Florida State University’s “Clovis Underwater ‘98 “ project, exploring Paleo-Aucilla archaeological sites now inundated by the Gulf of Mexico. His enthusiastic support for Division of Historical Resources Special Category Grant funding of this sister project to the ARPP will permit research to continue offshore for two more field seasons in 1999 and 2000.

Editor's note: Carl Littlefield relinquished his State Representative's seat in January 1999 to join the Bush administration as Developmental Disabilities Coordinator and Assistant Secretary for Developmental Services in Tallahassee.

Lifeflight/ARPP medevac drill

By Joseph M. Latvis

Before each field season begins, the ARPP publishes and distributes its site-specific dive plan and emergency evacuation protocols to (among many other organizations and individuals) the two medevac helicopter services nearest to our remote Aucilla River sites. In the event of an injury requiring rapid evacuation to a hyperbaric chamber or level one trauma center Lifeflight Helicopter Service stands by as primary air transport to Tallahassee Community Hospital, 20 minutes distant. (Shandscaire Helicopter Service stands by as secondary air transport to Shands Hospital, 40 minutes distant.) Although each ARPP crewmember also receives a copy of the logistically complicated emergency evacuation procedures (which involve recovering a diver from the riverbottom to the surface, to a chase boat, to the operations vessel, to an evacuation vessel, to a boat dock, to an evacuation vehicle, to a predesignated helicopter landing zone) we have never had to activate these procedures.

Shortly after the October ‘98 field season commenced, Lifeflight supervisor Tom McNab contacted me to explore the possibility of conducting an emergency evacuation drill. With project director Dr. Webb’s enthusiastic endorsement, October 8th was designated for the joint exercise. Lifeflight helicopter pilot Don Spells first flew to our primary landing zone LZ-2 at the Ladson property in the open field on high ground at Nutall Rise to verify that ARPP dive plan coordinates were accurate. Because the river was in flood stage, this LZ could not be reached by our evacuation vehicles without traversing inundated access roads to deliver the simulated patient. Pilot Spells consequently wheeled the BK117 helicopter several miles south to our secondary landing zone LZ-3 at the Taylor County Aucilla boat ramp.

The helicopter landed in an open field adjacent to the boat ramp just as our simulated evacuation vessel arrived from Sloth Hole site. ARPP’s lead medical personnel (Metro Dade Fire Department paramedic Mike Simpson, Florida EMT Joe Latvis, and operations supervisor Bill Gifford) met with Lifeflight supervisor McNab and flight nurses Tracy Evans and Kristy Fishback. As the rotors wound down, the rear bay doors were opened, and details regarding patient intubation, packaging, and oxygen administration were discussed, as well as helicopter protocols, communications links, and response times. Field scientific director Andy Hemmings provided an impromptu fossil/artifact clinic for the flight crew, before they boarded the helicopter and lifted off for the return flight to Tallahassee. The compelling intensity of the drill reinforced the field crew’s belief that situations requiring such emergency medical intervention can indeed occur, and that if and when they do, our CPR/first aid/oxygen provider training and evacuation procedure preparedness are the best response to serious injury or illness.

Field Health Beat: Hypothermia

By Mary Gouchnour Hudson

ARPP field crew are susceptible to Cold Exposure, or Hypothermia, due to the environmental conditions in which we live and work. Cold, wind, and rain during both the May/June and October/November field seasons may intensify the effects of working drenched in water on the screendeck and topside during other operational activities. Cold temperatures in October/November can be especially brutal. Two-hour long dive rotations drain heat rapidly from the divers, with water temperatures averaging in the low-to-mid seventies during May/June and in the low sixties in October/November. Hypothermia may occur in 80 degree tropical waters after long dives, and it may strike hikers caught in inclement weather in mild temperatures, so the cold Aucilla River water here is a real concern.

Hypothermia occurs when the body's regulatory mechanisms are overwhelmed, and the normal body core temp of 98.6 F begins to fall. There are three main stages : mild, moderate, and severe.

Mild Hypothermia (98.6-95 degrees F)

Signs and symptoms can include: sensation of cold, shivering, foot-stamping, urge to urinate, increased heart rate, slight incoordination of hand movements, fatigue, and mental dullness. The victim will be awake, shivering, complaining of being cold, and conversing intelligently. With slow cooling, the individual may not be aware of being cold and may not shiver, exhibiting primarily fatigue, loss of manual dexterity, decrease in mental capacity and memory, and loss of strength. Diver performance and judgement are seriously degraded. For divers this can present a direct safety hazard.

ARPP volunteer dressed against the cold and driving wind while framing a boat barn roof at Nutall Rise.

Once these symptoms are recognized by the diver or his partner, the dive should end and the appropriate supervisory personnel notified. Topsiders should take a break and warm-up. Screendeckers should also take a warm-up break; if you are pulling lone duty, then signal the divemaster to send either additional weather gear and a warm beverage or replacement personnel. Mild hypothermia is usually a non-emergency and can be treated with warm beverages, a change of clothes, and rest. If the victim does not improve within thirty minutes or seems to be getting worse, suspect moderate hypothermia and notify the divemaster and senior most qualified medical crew on site.

Moderate Hypothermia (95-90 degrees F)

Signs and symptoms can include: weakness, drowsiness, mental dullness, memory impairment, decreased or suspended shivering, increased muscle incoordination, stumbling gait, confusion, and slurred speech. The victim will be awake, but may appear confused, apathetic, uncooperative, withdrawn, and uncommunicative. At this point, a cold exposure emergency should be declared, and the divemaster on duty and senior most medically qualified crew member will coordinate emergency efforts. Crew members should stand ready to continue operations or assist with the rescue effort as directed.

Typically, passive re-warming procedures include changing from wet clothes to dry ones, warm beverages, blankets between the victim and the ground, covering the head with a warm hat or a blanket, covering the victim with blankets, and shielding from rain and/or wind. Any further rewarming procedures are generally not recommended; however, in a remote setting, the emergency directors may provide further instruction if necessary. They will then proceed with the emergency evacuation plan as they deem necessary.

Severe Hypothermia (89 degrees F and below)

Signs and symptoms can include: no shivering, paradoxical undressing, complaints of loss of vision, inability to follow commands, inability to walk, muscle rigidity, decreased blood pressure, decreased heart rate, decreased respirations, dilated pupils, unconsciousness, and the appearance of death. Rough handling or improper re-warming may cause cardiac arrest, so extreme care is needed. After passive re-warming, personnel should be prepared to initiate CPR if indicated, taking care to treat the victim gently. Emergency directors will initiate the medical emergency and evacuation plan, and personnel should stand ready to assist according to dive plan protocols.

The ARPP's commitment to safety through education, policy, and 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 enjoy the wonders of the Aucilla River.

Role of the crew chief

By Bob Coughter

The resources required to design, fund, supply and staff a scientific field project and the logistical requirements for organizing and successfully operating it can be quite daunting. A perusal of the many articles herein reveals that the Aucilla River Prehistory Project is just such a project. The ARPP is one of the more challenging projects to be found within the spectrum of archaeological expeditions. Our reliance on a wide array of specialized equipment and the sometimes taxing conditions in which we live and work make this endeavor a tricky one.

In order to mount productive field seasons year after year, every member of the project is called on to give 100% of their effort toward achieving our research objectives. Often, everyone delivers 110%. It could go without saying, but it shouldn't, that the cooperation and talents of many dedicated individuals working toward a common goal make the ARPP so successful.

The role of the crew chief is not so easily defined as to allow a tidy list of duties. While I can list some that the crew chief typically carries out, to describe who the crew chiefs are, some virtuous qualities one should possess (or develop), and how they fit into the larger organizational hierarchy will better illustrate what a crew chief does. I believe it will become apparent that to understand the role of the crew chief is to understand the skills and vagaries of personnel management.

Crew chief Bob Coughter piloting a vessel full of Open House visitors to Sloth Hole Site.

Within the field operations organization, the crew chief is found among the frontline levels of the project staff. As with other staff positions (field scientific director, operations manager, operations supervisor, equipment specialist, etc.) a crew chief has at least one, but often several field seasons of experience on the project. This is because she/he must be familiar with not only what needs to be done, but precisely when, and how to do it. Often the crew chief will be directed by the field scientific director or operations manager to resolve a problem, or delegate the responsibility and authority to a qualified volunteer. Being so familiar with operational procedures, the crew chief is certainly free to take the initiative in carrying out necessary activities, thereby relieving some of the task overload from senior staff members.

Since the ARPP tends to attract members who return for multiple seasons, it makes delegating assignments easier when just about everyone already "knows the drill." Most of what needs to be done is reviewed during the morning meetings (via the omnipresent "punch list"), and anything else is taken care of as it happens throughout the ensuing day (and often into the night). As you can see, flexibility is an important attribute of an effective crew chief, as well as dependability and sagacity.

As I mentioned, there are some duties that the crew chief typically takes care of. Formulating an equitable daily K.P. roster is the responsibility of the crew chief, a necessary and often thankless job (sigh). But, as they say, "an army marches on its stomach". The crew chief also helps make fuel and supply runs, because only university employees are permitted to drive project vehicles (due to insurance considerations). Similarly, providing transportation to and from the site for out-of-town members that need it can be addressed by the crew chief. Refilling SCUBA cylinders at our Nutall Rise base camp, recharging the air bank on the Florida State University campus (when properly trained), and instructing others familiar with SCUBA equipment are often chores for the crew chief.

In addition, piloting project vessels, monitoring the operation of equipment on site, instructing new members in the various field procedures, and helping facilitate the safe and smooth performance of project activities are all charges of the crew chief. Crew chiefs are also routinely designated lead divers in daily roster buddy team assignments. Their skills and experience make them valuable role models for less seasoned volunteers. It's not an easy job, but everyone's effort and passion pay off. I can say that I understand how an orchestra conductor feels, as we perform our symphony of science and discovery each field season.

International volunteer's ARPP story

By Susan Verberg

Having worked in the Dutch National Museum of Natural History for the previous five years, I looked forward to attending the FLMNH Open House in September, 1998. It afforded me not only a look behind the scenes of their collections, it also showed people what kind of field trips had been going on. That's how I came to talk with Andy Hemmings from vertebrate paleontology, who was very enthusiastic about 'his' Aucilla River Prehistory Project. I saw some documentary a long time ago about digging up mammoth bones in dark river water, and that picture always stayed with me. I wanted some day to do something like that. And here I saw pictures and heard people talking about exactly the same thing! I really wanted to go with them…

Fortunately for me Andy was very optimistic about my chances to participate in this exciting research. He gave me a lot of information and telephone numbers, and persuaded me to call Joe Latvis, even though the application deadline had already expired. Only three weeks before the October field season would start, I had found out about it! After filling in lots of forms I was certified as a non-diver. I was surprised, but happy I was accepted after applying on such short notice.

It was very interesting for me to find out all about Floridia's natural history with real examples. For Dutch people sinkholes are something from another planet. Only a small part of the south of the Netherlands even has limestone. That part does have some nice caves, especially just over the border in Belgium, but sinkholes seldom appear. Although some fossils occur, they are mostly in the southern part and mostly invertebrate limestone fossils. I have found only sea snails, oysters, echinoderms and lobster or crab limbs. Once I found a print that very well could have been from a dinosaur (that place is famous for it's rare dinosaur footprints) but I'm still not sure.

For mammal fossils in the Netherlands one has to go offshore to the North Sea. My grandfather lives on one of the small North Sea Islands, Vlieland, and he made a living fishing for small shrimp in the old days. He had a fishing boat with big nets that were towed over the bottom of the sea, and in addition to shrimp, he also caught mammoth bones, WW II bombshells and a giant deer antler (he used for years as a hat rack). In the same mode, the Dutch natural history museum annually rents a dragging boat to search for Ice Age fossils. The Netherlands does have its fossils, but they're rather hard to get at. They're not as numerous or as easy to find as here in Florida! A sloth skull in someone's back yard or on campus…

Unfortunately I haven't been able to go on field trips with the Dutch museum. When I was there everybody was working hard on building, moving and mounting exhibits for a new collections and exhibition museum, which finished last April 1998. Next summer a big expedition to the Philippines is planned, and I probably would have been a member if I still worked there. So I can't really compare field trips, but I did hear from the ornithology curator who, after looking at my ARPP pictures described this one as rather luxurious, and not like he was used to. But that's probably because the Netherlands doesn't have a lot going on, and most expeditions go abroad. What is more interesting than a nice tropical country such as Indonesia or the Philippines with tremendous wildlife (but poor living conditions)?

For me the ARPP's October '98 field season was quite an experience. I haven't been on a river with so much current before (flat country in the Netherlands doesn't generate a lot of current), and it was interesting to see all the preparations required to work down there. Sadly I'm not too fond of pitch-black water either, and there was a lot of that at the Aucilla too, as well as big spiders, no-see-um's and killer-mosquitoes. I am not a diver, and that left me unfamiliar with the procedures, but to me it looked like this: The divers make themselves ready on the dive operations boat, which is exclusively for them, their gear, and the divemaster and safety diver. They always dive in pairs, and they work two sites simultaneously. In a nylon mesh bag pieces of surveyor's tape with the site numbers, plastic ziploc bags and a clipboard with a pencil were taken down. The divers use surface supplied air, but they do wear SCUBA tanks in case of an emergency. When they are ready, the air hose is connected, and they go into the water to one of the sites. Each site is marked on the surface with a colored styrofoam ball, and the divers use the attached jugline to find the sites more easily in the cola-like water.

When the divers go in, the two screendeckers canoe out to the floating platforms to check both dredge pump motors and fuel them. When the styrofoam ball in the water is pulled down two times by the divers, the dredge belonging to that ball is started up (three pulls on the float means off). Unfortunately this is not always as easy as this reads; the motor can be stubborn, flooded, choked or out of gas, the couplejet can be leaking air, which can cause problems, such as hardly sucking any water, or too much air (then it has to be back flushed, and everybody will be wet). But normally everything goes well, and the screendeckers have two hours of endlessly noisy, boring, searching, scraping, looking for minute fossils and pieces of surveyor's tape with unit numbers or level changes. Everything that has been found in between two tape change markers has to be stored in a separate ziploc bag, with every bit of known information written on the side.

I am told that underwater the divers are excavating endless heaps of mud, leaves, sticks and stones into the dredge tube in claustrophobic midnight, so that might be hard work also. And when they find something interesting they record its context by taking pictures, making drawings and sometimes video of where, how deep, and what is found. Whenever something rare or fragile is exposed the dive-team will bring it up expeditiously. Everything found on the screendeck either does not require mapping or was missed by the divers. So they get to carry the neat stuff up and show it to everybody, including the sunburned or freezing cold screendeckers...

I knew after a couple of hours on the screendeck why it wasn't a problem to come on such short notice. The work isn't very exciting, and after six hours of endless motor noise in the middle of a pitch black river fossils do seem less interesting. And I can imagine not everybody will think that's such a good way of spending his or her free time. We screendeckers found hundreds of bones, including pieces of giant turtle and mastodon, but also a bone fish hook, two ivory foreshaft pieces, a couple of canine teeth, a camel molar and a rabbit mandible that the divers either didn't see or sent up anyway. I really liked to see the big bones the divers brought to the "bone boat" during lunchtime. And of course there is the wildlife; all those alligators cruising, big turtles sunning, small lizards running, cute butterflies, big kingfishers, turkey vultures everywhere, white ibises and ugly cormorants. They helped a lot to make the experience absolutely impressive (just like my mosquito bites). My average of one roll of film a day wasn't really a lot, if I tried to record everything around me that happened!

All in all I liked this fieldwork a lot, and I'll try to get my divers certificate to participate fully next season (see "Beneath the surface..."). And for anyone who is still interested after all the above, I would strongly recommend that you apply for one week and participate fully! The screendeckers always need an extra pair of hands if available, and you'll gain an experience for sure. Whether it's "not too bad, I'll think about it" or "I'll definitely come back next season!", it's all up to you! Diving in cold cola or being fried on a raft, it might seem a strange way of dealing with free time. But it certainly made my first experience with Florida's natural history an adventure of a lifetime!

Beneath the surface: both sides now

By Susan Kane

The jug disappeared below the surface of the water once, and then again. Two pulls, it was the signal from the divers on the river bottom to start up the dredge. Push of the button and as the motor caught, a huge spray of water shot across the screen deck and out into the river. Quickly we pushed against the pump discharge to drop the stream of water to a controlled flow. So starts my first day as a screen deck operator on the Aucilla River Prehistory Project. We had already tied off the dredge rafts downstream of where the divers would be working, but close enough so that the dredge suction hose could reach. Also we had anchored the dive flags strategically to alert passing boats of divers in the water. The engines which supplied power for the operation had been checked and refueled. We had been briefed in the pre-dive meeting as to which units were going to be excavated, and we had prepared our field specimen bags with the proper labels. The day was to be a wonderful learning experience, not just for me, but also for the hundreds of people that came to visit the site later that day; for this was the project's June Open House. For me however, it wasn't just a visit, it was the beginning of something which would change my life.

I had just finished doing field work on the Allendale Expedition, a paleoindian archaeology dig on the Savannah River in South Carolina, but it had been a terrestrial dig as all of my previous archaeology experiences had been. The riverine environment was all new to me, and learning to identify the abundant floral and faunal remains we were collecting was fascinating. It was very rare however, for an artifact to come up on the screendeck. I learned why later, when the divers finished their two hour shift, and I had an opportunity to examine the wonderful array of artifacts which they had excavated, mapped, and collected underwater. Even though I was on the screendeck working in the sunshine, it was I who was working in the dark. It was the divers, deep in the black waters of the Aucilla River, who were bringing the old world to light. I wanted to be there for the discovery.

Susan Kane working the screen-deck at Sloth Hole site.

I was invited back for the fall field season, and when I told Operations Manager Joe Latvis of my desire to become a research diver he offered me nothing but encouragement. If I could do it, I would be welcomed as a diver. My first challenge was to become SCUBA certified. I enrolled in recreational SCUBA classes with Charleston Scuba, a very reputable company in my hometown of Charleston, SC. My summer was packed, I was working full time running outdoor adventure camps for children, and was also taking two college classes at night, but SCUBA certification was at the top of my list of priorities. By the middle of August I had passed my written exams and all of my checkout dives. I was a PADI (Professional Association of Diving Instructors) certified diver. Now I had to satisfy all of the University of Florida Diving Science and Safety Program (DSSP) requirements. The American Academy of Underwater Sciences (AAUS) certification were the national credentials I would receive when these requirements were met. The DSSP requirements included a full physical (with blood tests, an EKG, and chest x-rays), as well as a written exam, a swim test, and a practical exam of my SCUBA skills in the water. In addition, I had to provide proof of current certification in CPR and First Aid, and as a research diver I also had to be certified as an Oxygen Provider. I already had my Wilderness First Responder certification, so I only needed to register for the oxygen class and make an appointment with my doctor for the physical. With these requirements successfully passed I contacted Joe Latvis about the remaining tests. Since I lived out of state, arrangements were made for the examinations to be taken in the field before I would be allowed to dive. I was responsible for bringing my own SCUBA gear to the dig, though tanks would be provided. I had already spent hundreds of dollars on becoming certified, and as a full time student I was very limited in my resources. I bought a used BCD (buoyancy control device), and borrowed spare gear off of friends for the trip. Having my friend's regulator checked out and serviced was much less expensive than buying a used one, or even renting one. I did not however, borrow or bring a wet suit warm enough for the two hour dive rotations in the Aucilla River, as I would soon find out, for even with a vest and hood generously loaned to me by Tim Barber, I never could stay warm.

The written exam was over. I had passed. It was much more in-depth than the PADI exam had been, and I was glad I had prepared for it. I had also been swimming every day in order to prepare for the swim test, and the months of training had paid off. But now came the real test, in the dark waters of the Aucilla. The river had been way over flood stage and was much blacker and swifter than usual. It was also very cold, in the sixties, which helped to dispel the fact that my shaking might be caused by nerves. Going under into total blackness with only a hand-held light giving about a foot of visibility for the practical exam was a bit daunting. All of my SCUBA gear had to be taken off and put back on, and emergency procedures had to be enacted as if I, or a diving buddy, were suddenly out of air. All of these SCUBA skills were thoroughly checked by operations supervisor Bill Gifford to assure my own safety and the safety of anyone I might dive with. It all went well and I was duly congratulated upon my return to the surface. I was certified and could now begin my training as a research diver.

Every day for the next ten days I had an opportunity to dive with a different experienced archaeology research diver. I learned to handle a snooper light while my buddy worked, to excavate with a dredge, to map artifacts, verify coordinates and to map units in an underwater environment. I also learned the thrill of discovery, of bringing to light remnants of a long-ago world from the cold black waters of the Aucilla River where they had been hidden for thousands of years. The most exciting find for me was the section of mammoth jaw recovered with teeth intact. I loved my experience beneath the surface as a research diver and plan on attending graduate school in the coming fall to study underwater archaeology, but I still take my turn on the screen deck whenever I am not diving, for the joy of discovery can be found on both sides, above and below the water. The last five minutes of my last day on the river I was working on the screen deck when I found a projectile point which had come up through the dredge. It was my first one. I was delighted, and I will remember it always.

Senior beat: return to the Aucilla

By Jewel Pozefsky

It seemed like only yesterday when I volunteered to join the spring 1995 ARPP field crew. Despite it being my second ever experience with camping, it was eventful, fulfilling, and definitely different! My two buddies, Jody Barker and Terry McKibben promised to see that my camping would be something to remember. Well, no one thought the heavens would open up the one night. Tents do fill up with water, and I was grateful that there was room in the bunkhouse (that is, once we moved Joe's dog!). I felt like a sissy, deserting my buddies, but it wasn't long before they too joined the group in the bunkhouse!. Cozy? you bet! The meals were scrumptious, especially the spaghetti and meat sauce, and we did have time to relax and have many entertaining discussions. It doesn't take long to become friends in such close quarters!! The days were filled with gathering fossils on the dredge, and watching Jody, Terry, Joe, Andy, and Joan get ready to see what they could find and record on film. Made me think more seriously about learning to dive, which I am doing now. There were two of us on the dredge most of the time, but I was the only one bundled up like an eskimo, because the huge dredge hose didn't always spurt out the water and fossils where I wasn't. This Florida native wasn't used to such cold water!

The thrill of finding half a bone pin made my week, though. In fact, if I remember correctly, the other half was brought up by one of the divers. Naturally, I was jealous of the divers. It must be a wonderful feeling to be underwater and, after fanning the sand, to find artifacts that have not been touched for thousands of years. The mastodon's tusks were still down there when they were working the bottom. I wondered if I would ever see them, not knowing then that three years later I would be able to study the seasonal growth patterns revealed in a longitudinal section of these magnificent tusks.

The time went too quickly, but despite my "slight" problem with the downpour, I had hoped to return yearly, only to find that I wouldn't be free until October, 1998. My tour of duty on the 1995 ARPP roster was prior to the end of the field season, when all that equipment had to be recovered from the river, serviced and stored for next season. I wondered what that entailed. How much work could that be?? It was a good thing there were many hands, because the equipment didn't get there by osmosis and had to be returned by us. It was good meeting old friends, but this time, yours truly slept in the car - no more tents for me. Also, we didn't have to do any cooking, because meals were brought to us from Perry. This time there was no rain, BUT did we have mosquitos? It was difficult sitting outside at night and almost impossible to outrace them getting inside the car. One should never spray the outside of a car with insect repellent - the coating on the outside mirrors will forever be evidence of those fierce insects. However, they only came out at night!!

Before we broke site camp, a professional film crew came to document our field activities (see "ARPP featured in FLMNH video"). It was fun watching them set up the mirrors, the cameras, the 'actors', and seeing how many takes were needed (actually 16 for the diving action and 5 for the screendeck, with yours truly reenacting the discovery of an artifact). There were other fossils coming up, but nothing as big as the projectile point they wanted to show. Once the filming was completed we began dismantling all the operations equipment for transport by vessel back to base camp at Nutall Rise. After transferring the gear from vessels to trucks, we then had to make a run to Thomas Farm, eventually ending up in Tallahassee for dinner. All the canoes, boats, hoses, buckets, fossils, chairs, etc., etc., had to be stored for the next season. Dr. Webb, Bill Gifford, Andy Hemmings, Bob Coughter, and many others made light work of returning all this stuff. Certainly couldn't do it with only a few hands. It was enjoyable seeing the ending of the project, and I anticipate being able to join the group next year! It is an experience not to be missed. Where else can one find good friends, good food, great music, and all the mosquitoes in the area.

Field campaigns beyond the Aucilla

By Thadra Palmer and Melanie Damour

Thadra Palmer

My summer of ’98 field campaigns began in the Virgin Islands. The National Park Service was conducting archaeological excavations on seven sites located on a small island called Water Island, under the supervision of Dr. David G. Anderson. Water Island is located right off of St. Thomas, and is only two miles long by one mile wide. Water Island is owned by the US Army and is slowly being turned over to the local government. Before the island could be completely handed over an archaeological survey was required to determine if there were sites in need of protection. One of the largest sites was Carolina Point plantation which had formerly been owned by a freed black slave who had bought the plantation and owned several slaves himself. The site includes the main house, a kitchen, an overseer’s house, several slave cabins, and other additional buildings. This main house included one room that had burned along with a large amount of china. This room alone yielded more artifacts than all of the rooms combined. It was hot and sticky work cutting down the jungle just to dig. But hey, this was the Virgin Islands, so after a long day of work you could walk down to the beach and go snorkeling in the crystal blue water. After six weeks in the Virgin Islands I headed to Italy.

For the past twenty years Florida State University has been conducting excavations in Gaiole de Chianti, Italy. The site is called Cetamura (walled city), and has Etruscan, Roman, and Medieval occupations all stacked on top of each other. This year’s work concentrated on two areas, the first being an old well. The well started at 6 meters at the beginning of the season, and by the end of the season reached a depth of 13 meters, and still kept going. Building rubble, tiles, and ceramics were all recovered from the well. The second area was the fortification, which is known to date to Roman times with Medieval material on top. It was hoped that the Romans had expanded the wall from the Etruscan occupation and that by the end of the season we would have moved enough material to reach the possible Etruscan level, but that did not transpire. The unit for the fortification was six meters square, and most of the Medieval material had been removed. Several coins were found, and a bronze mirror handle was also recovered. The area of Chianti reminds me of Napa Valley, CA, with grapevine and olive trees covering the hill sides. Of course Chianti wine was the main crop since this is where Chianti wine originated. We ate dinner at an Italian restaurant, and I quickly found out that Italians really do eat pasta every night. After six weeks in northern Italy, I spent two weeks traveling to Rome, Munich, Paris and London. It was a busy summer for me, and I was actually happy to get back to Tallahassee, if only so I could stop living out of a backpack.

Melanie Damour

The summer of 1998 proved to be very long and full of field work, 12 weeks total with very little time for vacation. After spending 6 weeks at the Aucilla River Prehistory Project in May and June, I spent another 6 weeks in June and July with Dr. Michael Faught and Chuck Meide at the Clovis Underwater 1998 Project (see “Paleo Aucilla Prehistory – Clovis Underwater ‘98”). I was a crew chief for Chuck Meide in the St. Marks River portion of the Clovis Underwater ‘98 Project which comprised the survey of several shipwrecks and river bottom sites. The majority of the project was spent surveying and mapping the remains of a mid-19th century wreck located on the western bank of the Wakulla River at Fort San Marcos de Apalachee. Other shipwrecks surveyed include a modern wreck that is mostly intact and another wreck which may be the remains of the vessel “Spray”. Some survey and sampling of prehistoric and historic refuse scatter on the bottom of the St. Marks River, in Newport, Florida was also completed.

Melanie Damour examining an artifact at the San Marcos de Apalachee site during the Clovis Underwater '98 project.

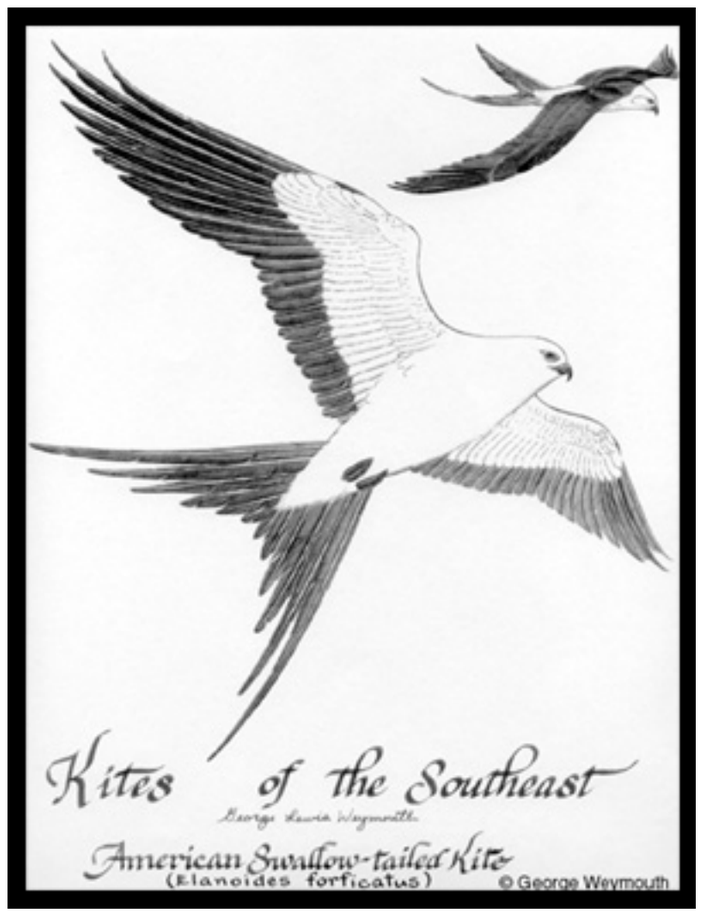
In November, I organized and directed a four day survey of a modern wreck located near the St. Marks Lighthouse. The project was part of a class at FSU which requires each student to develop and run a project using diving techniques in science. After obtaining an Archaeological Research Permit from the Department of Historical Resources, I was able to implement my project. Four days were spent mapping and measuring the wreck to try and identify remaining structures. The wreck was a subchaser in World War I that was later used by the State of Florida Shellfish Commission. With a busy summer and fall behind me, I am gearing up for another busy year full of archaeological projects with more emphasis on shipwreck survey, my primary interest.

Swallow-tailed Kites of the Aucilla

By Grayal Farr

On the Aucilla our mantra of priorities is: “Safety, Science, and Smell the Roses.” Part of “smelling the roses” has always been our enjoyment of the natural setting and the wildlife around our excavation sites. Of all the wildlife, the most charismatic is the Swallow-tailed Kite, Elanoides forficatus. Elegant, with white head and underparts, the bird’s back and wings are a shimmering, reflective, blue-black. This raptor is striking even in repose. Happily, we seldom see them in repose. They feed, and even drink, on the wing. And, as Peter Matthiessen writes in Wildlife in America, they “are the most graceful of hawks.” The bird guides echo that observation. Dunne, Sibley, and Sutton, in Hawks in Flight, say that “they quarter the wind flawlessly, in total aerial control” and “Time seems to have suspended for the bird.” Just as surely suspended in time, for the ARPP staff and volunteers, are the moments when the birds visit our sites. The big kites are magic - everyone feels it.

Magic or not, they are also threatened. As late as the early 1900s, the birds nested far up the major Mississippi drainages, even into Minnesota. By the 1940s their range had shrunk to that of the present. E. forficatus nests in much of peninsular Florida, and west in the panhandle to the Apalachicola River. From there west to the Sabine in Texas, and north to the Santee in South Carolina, they nest only in isolated enclaves along coastal river swamps. Matthiessen notes that they share “the tameness of all kites” and most researchers attribute their decline primarily to casual shooting.



Swallow-tailed Kites usually begin to arrive along the Aucilla in late March, about a month later than they are first seen in southwest Florida. Researchers suspect that the south Florida arrivals may have come across the Caribbean, and that our local ones have followed the Gulf coast, but little is actually known about migration routes or migratory behavior.

They nest in tall trees or snags, preferentially those in standing water, in locations with good access to open areas possessing high populations of favored prey. Wooded river swamps and pine fringes along flood plains offer these conditions, so the Aucilla is ideal habitat. Because the kites evolved to take small, easily subdued prey, they lack the grip strength or lifting capacity to manipulate sticks and large twigs. Their nests, as a result, are rather flimsy affairs. Nest collapse or blowdown is a common cause of nestling mortality.

The main cause of nestling mortality is sibling rivalry. The young birds compete, and the adults soon begin to feed the larger of their offspring preferentially. Nestlings are known to kill one another. Swallow-tailed Kites typically lay two, rarely three, eggs. They almost never fledge but one young bird.

On the river we often see them take frogs and lizards, so we tend to think of such animals as their primary prey. In fact, both adults and recently fledged young feed primarily on flying insects. They are especially adapted predators of wasps and other biting, stinging invertebrates. Kites have the thickest, most spongy stomach linings of any raptor. They have been found with stomachs full of dangerous wasps and even fire ants, the latter possibly gleaned as one of the floating masses which fire ant colonies form when their nests are flooded out. They also snatch wasp’s nests, eat the larvae, and weave the wasp’s nests into their own. The reason we so often see them with small vertebrates is that these are the foods provided to nestlings. During the May/June field season, we are observing nesting birds.

The birds are quite social. They do defend a 50-100 meter radius around nests with young, but they can often be seen hunting in groups. And especially after the year’s young fledge, they assemble in communal roosts. These communal roosting assemblages grow as the summer wanes and the birds prepare for migration. One roost in south Florida boasts over 2,000 birds. The first birds depart in late July, and by mid-September the roosts are empty. We seldom see them in the panhandle after mid-August.

During the October field seasons they are sorely missed; something vital is absent from the spirit of the river. Which makes our first sightings in spring all the more heart-lifting.

Note: Most of the science in this piece is gleaned from Ken Meyer’s excellent contribution to a compilation of life histories of North American birds. Any errors are mine, not those of Ken or any of the researchers whose work he references.

*Meyer, K. D. 1995. ‘Swallow-tailed Kite (*Elanoides forficatus*)’. In The Birds of North America, No. 138 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, and The American Ornithologist’s Union, Washington, D. C.*

"Shadows & Reflections On The Past"

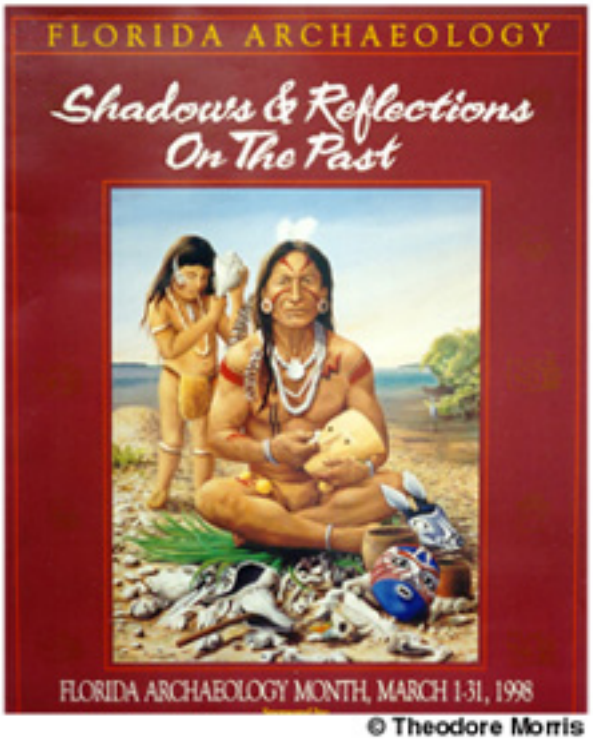
Chaos productions principals (l to r in canoe) Stuart and Cotten Brown taping "Shadows and Reflections" location shoot at the Page/Ladson site. (Roberto Quinonez and Joann Suggs on screendeck.)

In celebration of their 50th anniversary last year the Florida Anthropological Society released a thirty minute documentary on Florida prehistory titled “Shadows & Reflections On The Past”. The theme of this video is the quest 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

Opening scenes feature the natural environment of the Aucilla, topside on-camera interviews with ARPP director Dr. Webb, and underwater excavation footage by the project. “Shadows and Reflections” has now been picked up by the National Educational Television Association (NETA) for national satellite distribution. The video was produced by Chaos Productions of Ft. Myers. Chaos principals Stuart and Cotten Brown previously wrote and directed the award winning documentary “The Domain of the Calusa”, which also received national distribution by PBS.

A VHS copy of “Shadows and Reflections” can be obtained for a $20.00 donation (no credit cards please) to the Florida Anthropological Society by contacting Terry Simpson



at (813) 991-4643 or Email
TSIMPSON@LUNA.CAS. USF.EDU

"A Naturalist in Florida"": video update

by Dr. Joan Herrera

'He could stop by the side of a road, and turn a little ditch into a fascinating cosmos that held you spellbound' – Karen Bjorndahl, University of Florida.

Three years ago, members of the Aucilla River Prehistory Project crew assisted WUFT filmmakers Dennis Gaston and Dennis Ogle in reenacting scenes from the life of internationally renowned naturalist and author, Dr. Archie Carr (see: ARPP reenacts 'A Naturalist in Florida', Aucilla River Times, Vol. 10, 1. page 20 and 'A Naturalist in Florida': an update, Aucilla River Times, Vol. 11, 1. page 20). Several members of the ARPP crew were privileged to attend the premier of the film in association with the awarding of the Archie Carr Medal on November 12, 1997. Since that time, the film has been shown on PBS stations from Maine to California including about half the states in the nation, and it has won numerous awards.

The film won first place in the biography division at the 1998 Silver State Documentary Festival in Nevada. Videographer Dennis Gaston won the Silver Award for Best Editor/Documentary at the 1998 Florida Motion Picture and Television Association Crystal Reel Awards. Independent producer, Letitia Langord was nominated for an Emmy Award for the writing. And, the film also won the Motion Picture, Radio and TV Award from the Florida State Society, Daughters of the American Revolution.

'Archie Carr: A Naturalist in Florida' includes stunning nature photography from around Florida. The documentary includes footage from many of the places Dr. Carr worked with his research and his students: Everglades National Park, the Archie Carr National Wildlife Refuge, Corkscrew Swamp Preserve, Paynes Prairie State Park, and the Ichetucknee, Suwannee, and Rainbow Rivers.

Dr. Carr and his work inspired an entire generation of naturalists. Through his writing he continues to uncover the wonders of natural history for people the world over. You can read a transcript of the film, view selected video clips, and find the latest news releases about 'Archie Carr: A Naturalist in Florida' on WUFT's website at http://www.wuft.tv/Carr.aspx. WUFT reports that many PBS stations have requested the film and are planning to air the documentary, so watch for it on a PBS station in your area.

Aucilla River Project ends. FSU exploration on tap

by Ray Cichon

Jefferson County resident John Eveland has served as a volunteer on the Aucilla River explorations.

As such, he notes that the University of Florida project, under the direction of David Webb of the Florida Museum of Natural History's Department of Vertebrate Paleontology, conducts two diving and exploration sessions each year.

A six week session begins the first week of May and continues to June, with a fall session covering four weeks in October.

Eveland notes that the project is staffed by volunteer divers and nondiving personnel.

John Eveland and Mary Hudson working the screendeck barges that he redesigns and rebuilds between field seasons.

Funded by the Florida Department of State Historical Resources Division, the National Geographic Society and many business and individual donors, the Aucilla River project has concluded its final season, he said.

However, Eveland reports, an FSU Underwater Archaeology Program, directed by Michael Faught, is on the horizon, and will do underwater exploration of the Aucilla River basin in the Gulf of Mexico.

As a volunteer serving on the fall exploration, Eveland shares with readers his observations:

Based at Nutall Rise, this past fall season's explorations were conducted on the West Run of the Aucilla River, south of highway 98.

Boats are used to transport personnel and equipment from the base camp to the dive site. Since the series of storms in September caused the river to flood over its banks, canoes were the only floatable object to get under the highway 98 bridge, providing one lay flat while going under.

With those conditions, the boats and equipment had to be trailered overland each morning to Williams Landing south of the site and returned each evening.

The volunteers who had set up their tents had to move them to higher ground, because the camp, housed in a duplex, was completely surrounded by water, as was the cabin on the opposite side of the river, used by the project.

Canoes had to be used for transportation between the cabins instead of walking or driving. Towards the end of the first week the river peaked then slowly receded, and river travel was back to normal by the end of the season.

A normal day at the site consisted of three two hour dives by two teams.

Team A had two divers as did team B. For each dive, a safety diver and a dive master would be on duty aboard the dive barge.

Divers wore full diving gear but used S.A.S. (surface air supply) from a compressor aboard another vessel. Under normal conditions, the compressor, the generators, fuel and other equipment would be stationed on dry land.

Because of the flooding, the project had to improvise until the water receded. The dive teams would survey, locate, measure, map, then excavate bones and artifacts using a meter grid system.

A 6-inch and a 4-inch dredge would be used to excavate loose debris which was sent to the surface to two screen decks anchored in the middle of the river for further investigation.

Highlighting this past season was the recovery of 24 cm of an ivory shaft (broken in 5 pieces). A tool used by the Paleoindian dating 11,000+ years. A second ivory tool, 9 cm, was also recovered (See 'Sloth Hole site update').

The right side of a Mastodon mandible from a late Pleistocene context was recovered from the area where a 7.5 foot tusk was found earlier this year. Also many other Mastodon and various other animal bones were found.

A small beveled Bolen point and two Aucilla Adzes, all about 10,000 years old and left by people about a 1,000 years after the Mastodon and Mammoth became extinct.

Final interpretation, dating and analyses of all recovered material is undertaken at the University of Florida Museum of Natural History after the end of each dive season.

The personnel roster varied from 14-17 volunteers daily. A project of this magnitude would not be possible if not for all the volunteers from around the country. This season they came from as far away as Oregon, Tennessee, Vermont, Arizona, N. and S. Carolina, Georgia, and one from Sweden.

Editor's Note: This article appeared in the December 2, 1998 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.

ARPP Presentations

Jerry Gramig, Jr. and his son, Jerry III make an ARPP presentation to elementary students at St. Patrick's Catholic School.

1998-1999	Place	Presenter	Type of Talk	Attendance
1998--May 15	FMNH Volunteers Luncheon Powell Hall, U of Florida Campus, Gainesville, FL	S.D. Webb	Popular	200-250
June 6	Aucilla River Open House Taylor County Boat Ramp, Aucilla, FL	ARPP Staff	Popular	100-150
September 6	American Quarternary Ass'n Puerto Vallarta, Mexico	S.D. Webb	Professional	250-300
September 27	FMNH Open House Dickinson Hall, U of Florida Campus, Gainesville, FL	ARPP Staff	Popular	300-400
October 3	Society of Vertebrate Paleontology; Symposium Snowbird, Utah	S.D. Webb	Professional	250-300
October 9	Wakulla Karst Plain Symposium Turnbull Conf. Ctr., Tallahassee, FL	S.D. Webb	Professional	75-100
October 17	Aucilla River Open House Taylor County Boat Ramp, Aucilla, FL	ARPP Staff	Popular	100-150
October 19	Taylor County High School, Perry, FL	J. Latvis	Academic	90

November 18	Adams Middle School, Tampa, FL	T. Barber	Academic	30
1999--January 19	Barnacle Busters Dive Club, Gainesville, FL	S.D. Webb	Popular	30-35
February 6	Tampa Bay Fossil Club, U. of S. Florida, Tampa, FL	S.D. Webb	Popular	100-150
February 26-February 28	Paynes Prairie Knap-in, Gainesville, FL	J. Dunbar A. Hemmings	Popular	1100-1600
March 2	Springs of Florida class, U. of Florida, Gainesville, FL	S.D. Webb A. Hemmings	Academic	25-30
March 24	La Petite Academy, Tampa, FL	T. Barber	Educational	40
March 24 - March 26	Society of American Archaeology, Chicago, IL	S.D. Webb J. Dunbar A. Hemmings	Professional	100-300
.	Central Gulf Coast Archaeology Society St. Petersburg, FL	J. Dunbar	Popular	.
.	Underwater Scientific Techniques Class Florida State U., Tallahassee, FL	J. Dunbar	Academic	.
.	Jefferson County Library Summer Program for Elementary Children, Monticello, FL	J. Dunbar	Popular	.
.	Tallahassee Power Squadron, Tallahassee, FL	J. Dunbar	Popular	.
.	Wakulla County Public Library Summer Program for Elementary Children, Crawfordville, FL	J. Dunbar	Popular	.

ARPP Open House

Every field season we look forward to sharing our work and experiences with all of our open house guests. Friends and colleagues from all over the state, the nation and the world join us for a day of demonstrations, displays, fun, and food. Some of the activities include on-site tours with underwater views of divers excavating the riverbottom discovering fossils and artifacts, award presentations to those who have made significant contributions to the success of the ARPP, atlatl throwing contests, and a delicious barbeque lunch. For more information on this year's open house please see "View from the bridge".

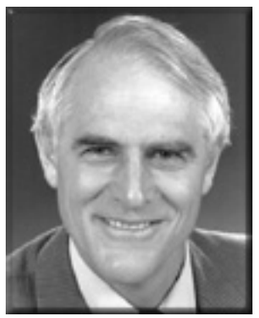
Matthew Mihlbachler wins Patterson Award

ARPP graduate student, Matthew C. Mihlbachler won the Bryan Patterson Award for unique/outstanding field work/techniques. This award was presented at the 1998 Society of Vertebrate Paleontology Conference at Snowbird, Utah. The society is an international organization.

Matt won the Patterson Award for his work on the Latvis/Simpson site. His project included the underwater excavation of 32,000 year old material including mastodon dung and other proboscidian remains. From his analysis of the field samples collected, Matt is recovering information on the diet of the late Pleistocene mastodon and on seasonal variations in diet and nutrition. This research provides the data needed to compare mastodon diets during prehuman times to the data collected from the Page/Ladson site on mastodon diets during Paleoindian times (See “Latvis/Simpson site report”).

Aucilla Mammoth skeleton now on exhibit

By Dr. S. David Webb



You really must visit the Florida Museum of Natural History's new exhibition at Powell Hall, southwestern part of the University of Florida campus. The first thing you will see in the central gallery is one of the largest mammoths in North America. This magnificent skeleton of a mature male Columbian Mammoth (*Mammuthus columbi*) from the Aucilla River stands over 14 feet tall. In life it weighed about 10 metric tons. This is also one of the most complete specimens ever collected: 90 percent of the bones are real; even the breastbones (sternebrae) are preserved. This is the only real mammoth skeleton exhibited south of the Smithsonian Institution. (The other three original proboscideans on exhibit are mastodons.) Collagen taken from the thighbone yielded a radiocarbon date of about 16,000 years old. That probably places it too early to have encountered early human hunters.

As noted in last year's *Aucilla River Times*, this specimen was collected in 1968 and was featured in the February 1969 issue of the National Geographic Magazine. Last year, after lying on museum shelves for three decades, the bones were shipped to "Prehistoric Animal Structures" (acronym = **PAST**), a company in Calgary, Alberta, Canada that specializes in mounting dinosaur and proboscidean skeletons. They delivered it and reassembled it in Florida this past November in time for its dedication at PALEOFEST'98.

Dr. Webb cuts ribbon on Aucilla Mammoth centerpiece at Powell Hall display during Paleofest '98

Paleofest '98

By Dr. Bruce J. MacFadden

Paleofest '98 autograph line for guest lecturer and dinosaur hunter Jack Horner

Paleofest98, a celebration of Florida paleontology held on Friday and Saturday 20-21 November, was a resounding success with 320 participants. **Paleofest98** coincided with the annual Fall meeting of the Florida Paleontological Society. The activities started on Friday night with a great lecture by internationally famous dinosaur digger Jack Horner. Over 1,000 folks attended his lecture and Museum Associates-sponsored reception afterwards in the FLMNH's new Exhibits and Education Center at Powell Hall. The ever-popular and affable Jack was highly sought-after for autographs, as can be seen by the line waiting for an audience with him in the museum (photo). The Friday evening reception also included the dedication by FLMNH Distinguished Curator Dr. S. David Webb of the fabulous new Aucilla River Columbian Mammoth skeleton, which is now installed in our Central Gallery at Powell Hall (see "Aucilla Mammoth..."). Saturday's activities included a morning lecture on the new Hall of Florida Fossils by Dr. Gina Gould, Project Director, and then a tour behind the scenes of the FLMNH's paleontological research collections. Saturday afternoon activities were devoted to workshops and field trips, including Dr. Webb's well-attended workshop on Florida elephants. The **Paleofest98** activities concluded on Saturday evening with a banquet and benefit auction. **Paleofest98** was educational and fun for all. Net proceeds will be used to support the new fossil exhibits at Powell Hall. We are currently in the initial planning stages for **PaleofestY2K**.

Editor's Note: Dr. Bruce J. MacFadden is Associate Director of the Florida Museum of Natural History.

ARPP featured in FLMNH video

The Aucilla River Prehistory Project will soon be seen by PBS television view ers throughout Florida on Expedition Florida, the first of a new series of programs being produced by the Florida Museum of Natural History in cooperation with Wild Tracks Productions, a Gainesville based film production company specializing in natural history and cultural programming.

Filming was recently completed by Wild Tracks Productions for segments on the Aucilla and Wacissa rivers. Interviews were conducted with project director Dr. S. David Webb, director of diving operations Joe Latvis, and field scientific director C. Andrew Hemmings. All of the segments were shot on Super 16mm film for production in the 16:9 wide aspect ratio for later conversion to high definition television.

Expedition Florida, The Florida Museum of Natural History's new television and radio series will take viewers on electronic field trips to explore Florida's natural beauty. These natural sights and sounds will help Florida residents and visitors to develop a sense of place about Florida and our rapidly vanishing wild heritage. These programs will be distributed free of charge to all public television stations. Other segments in the first program will highlight the Calusa Indian project at Pine Island and the Northwest Florida caves such as those at Florida Caverns State Park in Marianna. In the future these segments will be available as radio features on Florida Public Radio and on the Florida Museum of Natural History web site.

The television series is being directed by Leslie Gaines, president of Wild Tracks Productions. In 1998 Mr. Gaines won two Emmy awards for his documentary projects: Black Bears and Biodiversity and The Gulf of Mexico: America's Shining Sea.

He was nominated in October, 1998 by the American Indian Film Institute for Best Music Video for his direction of Ways of the Glades, a song by Seminole Indian Chief Jim Billie. The song is from Chief Billie's latest CD, Alligator Tales, produced by John McEuen of Nitty Gritty Dirt Band fame. In December, 1998 Ways of the Glades was selected for screening at the 1999 Sundance Film Festival in Park City, Utah. In June, 1998 Mr. Gaines won the First Place Broadcast Awards in the Conservation and Environment and Natural History categories from the Outdoor Writers Association of America for Black Bears and Biodiversity.

The Expedition Florida series is being written by Stephen Robitaille, PhD. Dr. Robitaille has created numerous documentaries on the arts and the environment. His most recent film, Archie Carr: In Praise of Wild Florida, on the noted sea-turtle expert and acclaimed natural history writer, features appearances by Peter Matthiessen and Russell Hoban and is distributed by Ironwood Films. Dr. Robitaille has also produced film portraits of Beat writer, Allen Ginsberg and poet, May Sarton. In addition to his work as a documentary producer, Dr. Robitaille is a member of the English/Media Studies faculty at Santa Fe Community College in Gainesville, Florida.

FLMNH display features underwater team photo

By Darcie MacMahon and Dr. William Marquardt

The Florida Museum of Natural History's new Education and Exhibition Center, Powell Hall, opened to the public in January, 1998. A permanent exhibit now under construction is the 6,050-square-foot *Hall of South Florida People and Environments*. This is the first permanent exhibit on South Florida in the 83-year history of the Museum. Upon completion, we expect that over 200,000 persons annually will see the exhibit and as many as 2 million more through electronic media.

Here is a brief tour through the exhibit. After an orientation, visitors will enter the *Mangrove Forest Boardwalk* and walk on a broad wooden boardwalk over simulated water in a full-scale diorama of a South Florida mangrove forest and seagrass estuary. Text and imagery along the boardwalk will introduce critical elements of South Florida environmental and cultural history, explored in more detail in the following gallery, the Jessie Ball duPont Natural Habitats Study Center. Visitors will next encounter the richness of the estuary in the *Larger-Than-Life Underwater Walk-Through* gallery, a 10-times-larger-than-life underwater diorama that features marine environments from the perspective of a small fish. This exciting gallery will bring to life the tiny, but critical organisms that sustain these systems at the foundation of the food web.

Next, in the *Fishing Heritage* gallery, visitors will discover the 6,000-year-old Gulf coastal fishing tradition. This artifact-rich gallery will focus on the fishing industry of the Calusa, their predecessors, and traditions that carried into the twentieth century. Included are topics such as fishing, nets, watercraft, and canals. Ambient light for the gallery is provided by two sources: a sculpture suspended from the ceiling, which represents a Calusa Indian paddling a canoe surrounded by fish; the other a floor-to-ceiling back-lit transparency of a Calusa Indian diver with his spear. The model for the diver is none other than the Aucilla River Prehistory Project's Bill Gifford, who obligingly plunged, practically naked, into a cold spring in late January to pose for underwater photos taken by Joe Latvis and Tim Barber. The sketch by Merald Clark shows the approximate appearance of the diver. Bill declined to comment on speculation that he will soon pursue a professional modeling career.

Image of Calusa Indian spear fisher (drawing by Merald Clark), from the forthcoming monograph* The Archaeology of Useppa Island, *courtesy IAPS Books.

Following the *Fishing* gallery, visitors will enter a *Thatched Structure* to find themselves in the presence of the Calusa Indian leader in the midst of a political ceremony. The scene (created with seven mannequins and associated models) is based on historical accounts. In other galleries, visitors will view carved, painted, and engraved objects made by Calusa Indian people. Visitors will also learn that the rich estuaries, rivers, and swamps of South Florida continued to provide prosperity for European immigrants and for Seminole and Miccosukee Indian people, who still inhabit South Florida today.

It takes the combined talents of many people to bring the South Florida story to life. We are very grateful to have the help of our colleagues on the Aucilla River team.

ARPP OnLine

The Aucilla River Prehistory Project contin-ues to expand and improve its website! Featuring back issues of the *Aucilla River Times* (1996-1998), the site can be viewed at http://www.flmnh.ufl.edu/natsci/vertpaleo/arpp.htm. Joan Herrera formatted the 1998 *Aucilla River Times* onto our website, and the 1999 issue will be up and running online soon. These two newer issues feature color graphics. So keep checking back at the above URL.

We have received much positive feedback on the website from such organizations as the National Geographic Society, compliments and requests for permission to link to our site from as far away as Norway, and requests that we add links to our site for archaeological information providers such as the University Press of Florida.

New 'Links in Archaeology'

A new page has been added to our website. 'Links in Archaeology' is now available at http://www.flmnh.ufl.edu/natsci/vertpaleo/links2.htm. This page provides links to many resources and should be equally useful to avocational and professional archaeologists.

Aucilla River Prehistory Project Virtual Museum Exhibit

Our "virtual museum exhibit" featuring some of the highlights of the ARPP continues online at URL: http://www.flmnh.ufl.edu/natsci/vertpaleo/aucilla/arpp01.htm. The exhibit is designed to give the viewer background information on many aspects of the Pleistocene epoch's physical and biological natural history of the Aucilla River area. Designed as a "slide show", the exhibit includes graphic representations of Pleistocene flora and fauna, cultural artifacts recovered during the project, and the personnel and equipment that make the project a success. Included is a special section on highlights of the project's major accomplishments through the years. Special thanks go to Dean Quigley, Marisa Renz, Chris Kreider, and Jim Dunbar for allowing us to use their artwork on the site.

Award winning FLMNH website over one million 'hits' per month

The Florida Museum of Natural History website has won numerous "best site" awards from such organizations as NetGuide, Microsoft Network, Surfer's Choice, Magellan, and Lycos. Most recently, the FLMNH website was selected as a 'Site of the Day' by Science Web. Information can be found at http://www.newscientist.com/keysites/hotspots/arch1.html or at the mirror site http://www.keysites.com/keysites/hotspots/arch1.html. FLMNH Computer Programmer/Analyst, Sean Thompson reports that the FLMNH site is getting over a million visits each month.

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ARPP displays for Forest Capital Museum

The Aucilla River Prehistory Project is designing an exhibit based on Paleoindian artifacts recovered during the project in Taylor/Jefferson Counties. The exhibit will be presented to the Forest Capital Museum later next year.

Chief Preparator Russ McCarty of the Vertebrate Paleontology range at the FLMNH has produced beautiful casts of Paleoindian artifacts, and these will be mounted, along with an informational board, at the museum in Perry. Included are artifacts representative of various Paleoindian cultures including Clovis, Suwannee, and Simpson spear points, an intact ivory 'foreshaft', and a large stone knife. Representative of the animals these people hunted, a mammoth tooth will also be part of the display.

Joan Herrera and Joe Latvis met in Perry late last fall to measure the space allotted our exhibit in the Forest Capital Museum. The museum is located on the west side of Highway 19 in the southernmost end of town. Joan Herrera is currently completing the written copy for the display and working with a local printing company, Creative Workshop to produce the backboard. The exhibit will also include a copy of the new ARPP poster (see "ARPP produces educational poster") and informational brochures.

Letters to the Editor

Dear Dr. MacFadden,

It has been a long time since we last talked. I thought of you and my past adventures as I read the current issue of the *Aucilla River Times* (Vol. XI No. 1 March '98).

1968 was my last year in high school and I was doing a lot of scuba diving in the Aucilla, St. Marks, and Wakulla Rivers. A friend of mine, Charles Parker, called me and said he had met Dr. Richard Ohmes and that Ohmes needed some divers to help get some mastodon material from the bottom of Half-Mile Rise. I had no idea where I was going but met Dr. Stanley Olson for the first time this day. This was the first time we all had seen the mammoth remains on the bottom near a cavern entrance and I remember everyone making a big deal out of it. I guess it was the best specimen found to that date.

Author Jim Morris displaying Aucilla River mastodon bones recovered with Dick Ohmes in 1968.

Enclosed is a picture of me when I was about 18 years old. Dr. Stanley Olson is in the background with his two sons, who are now grown. Dr. Ohmes is hanging off an intertube in the water, which was his trademark when resting. The photo was made by Charles Parker who died last year of a blood disorder. I had sent Charlie the only pictures I had two years ago so he could write to the FSM about this experience. I did not know if he ever did, so I thought I'd write. All the bones collected that day (including a mastodon skull) were taken to Dr. Ohmes home in Chaires, Florida. I never saw Dr. Ohmes again nor the bones. I did read about FSM diving the site around 1970

and collecting the remainder of the specimens. We had to sink a row boat full of hay in shallow water then roll the skull into a boat and bail it out until it floated.

Time is really flying past. It doesn't seem like 30 years ago.

Jim Morris
Chief Deputy
Decatur County Sheriff's Department
Box 792
Bainbridge, Georgia 31717

Dr. Dave Webb,
Florida Museum of Natural History
Gainesville, Florida

Dear Dave, Your article on page 18 of the 1998 *Aucilla River Times* titled "Coring is Not Boring" brought to mind how the first attempt to core "the Sloth" was done. It might amuse Sloth Hole workers. My equipment was a length of rope, a four foot length of pipe and a ten pound sledge hammer. I drove the pipe down a couple of feet into what I judged was the deepest part of the Sloth Hole and fastened the rope around the protruding tee, clambored back in the boat and almost swamped it before the suction broke loose. I finally managed to obtain a six inch core. Disappointed, I tried again. Same result. Fortunately there was no one within earshot to hear my cussing. The "cores" sent to Dr. C. Vance Haynes in Texas, were, as I expected, useless.

Greetings, Dick
(Dr. Richard Ohmes)

Wonderful Life in a petri dish

By William O. Gifford

In the pursuit of science we are sometimes asked to do some rather bizarre things. Such is the case of my investigation into mastodon digesta. After the 1997 May/June field season, Matt Mihlbachler asked if I might be interested in helping with the analysis of the massive quantities of digesta we had recovered from the Page/ Ladson site.

My first day on the job, Matt set me up with a microscope, probe, tweezers and petri dish. After a few minutes of direction Matt left for a class. Fifteen minutes later a young lady came into Dr. Webb's office asking for Matt. Saying that he had just left for class, I asked if there was anything that I might be able to help her with. She then identified herself as Dr. Lee Newsom, adding that Matt had been a former student of hers at Southern Illinois University. There I was on my first day, and who happens to drop by but the world's leading, quite possibly the only, expert on mastodon digesta. As it turned out she was very helpful and suggested three textbooks that would help with my identification of the infinitesimal seeds contained in the digesta. Two weeks later and $150 lighter, I was ready to pursue my quest for the diet of mastodons. It wasn't easy for them to maintain their physique, so I had plenty of material to study.

My first full day found me bent over my microscope furiously using my probe to push the thousands of twigs out of the way so that I could pick out the occasional seed with my tweezers. After an hour or so, I started feeling a little nauseous and questioned the wisdom of having eaten a sausage biscuit for breakfast. It suddenly dawned on me that it was not the biscuit causing my malady, but that I unwittingly had come across the cause of the extinction of the mastodon. It was then that I decided to go outside for some fresh air and get away from whatever nefarious virus had caused the mass extinction of countless megafauna from the Pleistocene epoch. After sitting down for few minutes my symptoms started to subside. I had not contracted a dread disease after all but instead had gotten a rather bad case of motion sickness from the twigs rapidly scurrying across my field of vision.

Six weeks later, I had amassed thousands of seeds. The fact that even *en masse* the vast majority of them were practically invisible to the naked eye did not daunt my pursuit, although it did cause some of my colleagues to ask what I had been doing all that time. It was shortly thereafter that I came upon a tiny mushroom. Sifting through massive quantities of digesta, I had never seen one. Needless to say, my excitement was running very high. I carefully took my tweezers and started to pick out the miniscule mycological wonder. As I slowly squeezed the tweezers together it squished into an unidentifiable piece of amorphous fungal material. Undaunted I continued looking for the next one, but over two years and countless hours of work, I have never seen another.

We had now reached a point in our study when Matt decided we needed to do some comparative dentition work to prove that what we had here was indeed from mastodons. This process entails measuring hundreds of twigs with a caliper and comparing them to the gaps between the crowns of the teeth. I declined adding yet another mind numbing task to the one I already had, and deferred to Matt's vast knowledge of the subject matter.

I did, however, agree to pick up samples of llama and tapir digesta as I drove by sources of them on my way to the museum. One cool winter morning I drove by Reddick Bird and Animal Farm in Micanopy, a place with a substantial number of llamas. After explaining my quandry to Mrs. Reddick (and after her howls of laughter had subsided) she agreed to take me to her husband so that I could ask him. Shaking his head and mumbling something under his breath he told me to grab a shovel and took me out to the llama pens to get a sample. After bagging my still steaming sample I merrily made way on to the museum. We then contacted Silver Springs and found that they indeed had a tapir and would gladly help us in our endeavor.

So it was that on another cool morning Dr. Dave Reuther and I drove to the pen of Pedro the tapir. Entering the pen we started searching the ground for a sample. After half an hour we gave up, and he told me that he would have the animal handlers get me what I needed. Two days later I returned to the administrative offices and asked for my sample. They had no idea what I was talking about but promised that they would check into it, so I left my number at the museum and went on my way. Later that afternoon Dr. Webb informed me that I had a call from somebody demanding I come get my sample out of their office. They were not happy when I told them I could not be there before five o'clock but they agreed to stay late if I would just come get it. That was on a Thursday, and I was not scheduled to return to the museum until the following Tuesday. I placed the sample in my freezer but was called out of town on Sunday and threw it in my trunk. By the time I arrived at the museum things had warmed up quite a bit, and when I turned the sample over to Matt, well let's just say it had become rather fragrant.

In one of the offbeat songs written by Steve Glover, he has a line that laments "archaeology ain't pretty", but as they say "beauty is in the eye (or nose as the case may be) of the beholder".

About the *Aucilla River Times*

Editorial Staff

- **Editor: Joseph Latvis**
- **Coeditor: Joan Herrera**
- **Text and Graphical Layout: Joan Herrera and William O. Gifford**
- **Lead Photographer: Tim Barber**
- **Technical Consultant: James Hudson**
- **Website Formatting: Joan Herrera**

Editorial Board

The Cover

A fluted Clovis projectile point recovered from Sloth Hole by Dr. Richard Ohmes. Line drawings by Jennifer Cannon. Photo by William O. Gifford. Cover design and image enhancements by Joan Herrera.