A Review of Underwater Stone Age Archaeology in Florida

James Alan Reade McClean

Abstract

This paper provides an overview of underwater Stone Age archaeological research in Florida, USA. The public is most aware of Florida's shipwreck legacy as a result of media sensationalism, however there also exists a community of scholars dedicated to prehistoric research in Florida. As in the Baltic region, submerged sites have provided excellent preservation of organic materials. Research in Florida's submerged past has a history extending back over one hundred and fifty years utilizing surface supplied diving technology to recover extinct Pleistocene mammal remains from springs. Recent and current projects are outlined in this paper to raise awareness of the development of high standards in this "nascent discipline" in Florida. A brief description is also given of scientific diver training available at the authour's home institution, Florida State University, in Tallahassee Florida.

Zusammenfassung

Ziel des Beitrages ist ein zusammenfassender Überblick zu den unterwasserarchäologischen Forschungsergebnissen zur steinzeitlichen Besiedlungsgeschichte Floridas. Allgemein werden die Begriffe "Florida" und "Unterwasserarchäologie" meist mit der Untersuchung spanischer Schiffwracks durch verschiedene Schatztaucherfirmen assoziiert. Dabei wird aber häufig übersehen, dass es in Florida neben kommerziellen Bergungen auch wissenschaftlich ausgerichtete Forschungsprogramme zur präkolumbianischen Geschichte des Landes gibt, bei denen unterwasserarchäologische Untersuchungen erhebliche Bedeutung haben. Ähnlich wie im südwestlichen Ostseegebiet sind auch die steinzeitlichen Unterwasserfundstellen in Florida durch hervorragende Erhaltungsbedingungen für organisches Material gekennzeichnet. Deren Erforschung begann vor etwa 150 Jahren, als unter Verwendung schlauchversorgter Tauchgerätschaften die Bergung von Überresten heute ausgestorbener pleistozäner Säugetiere aus Süßwasserquelltöpfen erfolgte. Anhand der in diesem Aufsatz beschriebenen Projekte der jüngeren Vergangenheit und der Gegenwart soll der mittlerweile entwickelte hohe Standard dieser auch in Florida noch wachsenden Disziplin demonstriert werden. Abschließend wird noch kurz das Ausbildungsprogramm zum Forschungstaucher des Forschungstauchzentrums an der Florida State University in Tallahassee, Florida, der Heimatuniversität des Autors, vorgestellt.

Translation: Harald Lübke

Introduction

It is the intention of this paper to introduce the audience to Stone Age underwater archaeology in the state of Florida, USA. Florida is located in the southeast region of the United States and is a peninsula bounded by water on nearly all sides, the Atlantic Ocean to the east, the Caribbean Sea to the south and the Gulf of Mexico along the west coast. Florida has over 4000 kilometers of coastline, and over 17000 kilometers of rivers and streams. As such Florida is a prime location for marine archaeology, not only historic shipwrecks, but a long cultural heritage spanning twelve thousand years. The recent history of Florida as a colony of Europe is well known. Stories of Spanish treasure ships stranded along the Florida Keys have filled the media since the introduction of SCUBA technology in the 1950's. What is less well known is the story of the earliest Paleo-Indian settlement of Florida. This history lies mostly underwater and this paper addresses the development of underwater research at Stone Age sites in Florida.

Before discussing the archaeological sites it is first necessary to introduce the various topographic features of Florida. The state is a peninsula forming the southeastern corner of the USA. The state is predominantly composed of

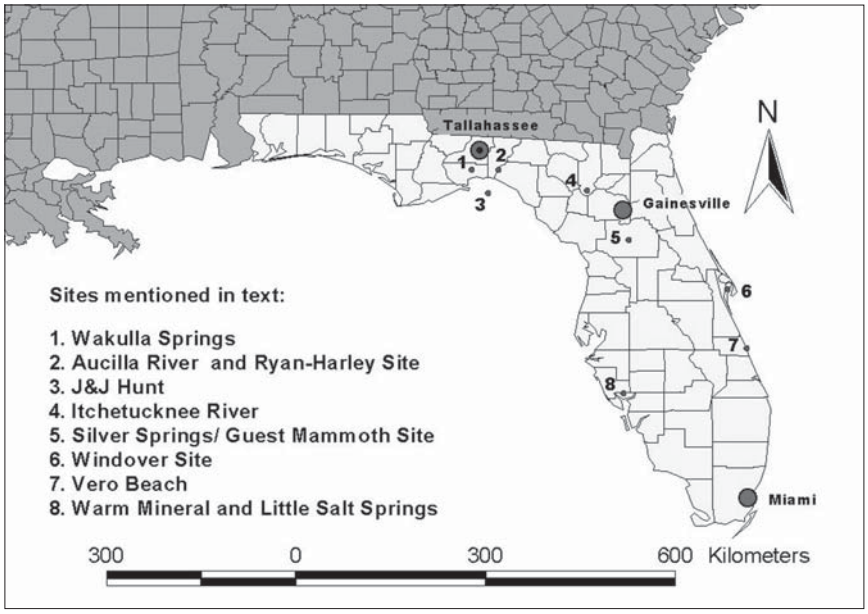

Abb. 1: Map of Florida indicating sites mentioned in the text (Prepared in ArcView by James Alan Reade McClean).

limestone formed over the past 200 million years as a thick carbonate deposit in a warm shallow sub-tropical sea. This limestone is overlain by surficial sediments of undifferentiated sands deposited by sea levels higher than present. The state today is characteristically flat with elevations generally less than 100 metres. During the last Ice Age global sea levels were lowered by as much as 80 meters and the Florida peninsula was almost double in width, exposing a vast flat plain now partly submerged under the shallow Gulf of Mexico along Florida's West Coast. The northern region of Florida bordering Georgia is mostly covered with thick red clay deposits that were water transported away from the southern Appalachian Mountains (Scott 1995). The relationship between overburdening clay and sand over porous water bearing limestone is significant to understand the relevant topographic features that are typical of Florida today. These are; springs and sinkholes, rivers, wetlands and the shallow near shore open ocean.

Limestone is readily eroded by chemical action from surface waters containing carbonic acid. The porous limestone allows ground water to flow easily in lateral directions under the surface deposits. The northern part of Florida is characterized by the Floridan Aquifer, a lithostratigraphic feature of permeable limestone saturated by subsurface ground water. Overlying clay sediments of the northern region are impermeable to water and restrict upward flow from the underlying aquifer. The Cody Scarp forms a sharp limit to the northern clay deposits and runs east west across the northern part of the state just south of the capital city of Tallahassee (Lane 1986). South of this feature the water saturated

limestone is covered by only a layer of porous sand about 8 meters thick and freshwater springs are typical for regions south of the clay deposits. Wakulla Springs is a well-known example of a Magnitude 1 spring (discharging 693 million litres of fresh water per day at a constant 20° Celsius) and is characteristic of the springs that are so significant to Florida's geophysical and cultural history as discussed below (Rosenau et al. 1977).

Sinkholes are related to spring features. Sinkholes begin as cavities in the soft limestone as a result of carbonic acid dissolution of the carbonate rocks. Hydrostatic pressure of the aquifer helps to support the overlying sediments as the subterranean cavities increase in size. At times of lowered water table levels, or when the cavity becomes too large and unstable, the overlying sediments are liable to collapse into the cavity forming a sinkhole (Lane 1986). Sinkholes may be filled with sand or may be open water filled passages with direct access to the water table. When formed in riverbeds, sinkholes often swallow rivers with subsequent discharge considerable distances downstream. This type of feature is known as a "lost river". Lost rivers may disappear and re-emerge several times in their course of travel, which inevitably leads downhill toward the sea.

Because of the lack of overlying clay sediments throughout most of the state, waters south of

the Cody Scarp are typically "gin clear" and free of suspended sediment particles. Freshwater springs form the source of most of Florida's rivers. The water is typically crystal clear during the dryer winter season and stained a dark brown from tannic acid during heavy rain seasons, usually spring and summer. This fresh water can provide extremely good conditions for the preservation of organic materials, and certain rivers are famous for the number of Pleistocene animal remains recovered there, as will be discussed below.

Throughout the southern portions of the state, low lying areas are typically characterized by boggy wetlands, including the famous Everglades region. These wetlands have anaerobic conditions suitable to the preservation of organic remains such as wood and human remains. Some sites have yielded exceptionally well preserved finds of organic remains, especially human skeletal material such as found at the Windover site discussed below.

Similarities between Florida and the Baltic region

There exist several similarities between Florida and the Southern Baltic region in terms of prehistoric site types and methodological approaches. Wetland sites are one such example. Like the well-known bog body sites of Rauchmoor, Osterby and Windeby in Schleswig Holstein, is the Windover Site (8 Br 246) in Broward County Florida. Windover is located approximately 8 km from Cape Canaveral, Florida and was discovered in 1982 by the accidental recovery of human remains in a wetland bog by construction workers. Subsequent ^{14}C dating of these initial finds revealed dates in excess of 5000 years old. Such early dates prompted the establishment of a full excavation, which was undertaken between 1984 and 1986 in three field seasons. Dr. Glen Doran, presently Chairman of the Department of Anthropology at Florida State University, directed the project that was funded in part by the landowner and also by state legislative funds. Recovered artifacts included bone tools and pins, antler tools, wood, gourds and fabrics with C^{14} dates ranging from 8120–6990 BP. The skeletal remains of one hundred and sixty eight individuals were recovered. The bodies were interred underwater and held in place with wooden sticks shortly after death. Although skin was not preserved along with the skeletons, ninety-one of the recovered crania contained well-preserved cerebral tissue. The preservation of human material was among the most noteworthy aspect of this excavation. Studies performed upon the brain tissue included X-ray, CAT and MRI scanning as well as mitochondrial DNA studies to determine cultural affiliation of the remains to present populations (Doran/Dikkel 1988). Preservation of this type is a rare blessing for archaeologists, and is a hallmark of both Florida and the Baltic region.

Another aspect of Florida archaeology similar to the Baltic region is the opportunity to prospect for and study cultural sites submerged by global eustatic sea level rise. The Florida peninsula during the last glacial maximum was about twice as wide as its present shape. Occupation sites at elevations lower than present sea levels were subsequently submerged by the rising waters of the Gulf of Mexico (Garrison 1992, Ruppe 1980). This is a feature that is similar to the southern coast of the Baltic, which is less prone to isostatic rebound than northern Scandinavia. The methods of underwater archaeology developed by Danish archaeologists (Fischer 1995, Malm 1995, Skaarup 1993) to study submerged Stone Age sites are equally relevant to the situation in Florida.

Considering the environmental similarities between Florida and the Baltic region, and the specialization of underwater archaeology as a set of tools within the larger field of archaeology, it is important to develop international understanding of the methods and theory of underwater archaeology as practiced in these two regions. An open forum of discussion can greatly benefit both regions as we enter upon a new century of research in which many of the encumbrances to our „nascent discipline" have been formally developed into a set of standard working procedures. To preserve a high level of international standardization within our discipline it is necessary to maintain open channels of communication between the various scientists involved in underwater archaeology, especially those of us who work under similar conditions in different regions of the world.

Chronology of Underwater Stone Age Research in Florida

Wakulla Springs

Among the earliest recorded Stone Age remains recovered from an underwater context

Abb 2: Gopher Sink, Leon County Florida. This sinkhole is typical of karst collapse features. In this case the sinkhole connects to the Floridan Aquifer (Photo by James Alan Reade McClean).

in Florida was at Wakulla Springs, located just south of the capital city of Tallahassee in the Woodville karst plain. Wakulla is a Magnitude 1 spring, discharging 693 million litres of water per day and is among one of the largest in the state. As early as 1850 Professor George S. King of Newport Rhode Island used tongs to recover mastodon bones from 9–15 meters of water. Rumour has it that the remains were shipwrecked while en route to a museum in the northeastern United States. Again in 1895 workers using dredges recovered mastodon remains. In 1930, surface supplied divers with air hoses to loosen sediment were able to recover a complete mastodon skeleton under the direction of the Florida Geological Survey. This skeleton is now on display at the Museum of Florida History in Tallahassee, Florida.

In 1958 students at Florida State University made use of SCUBA diving technology to explore Wakulla Spring with greater attention to detail. Over one hundred dives using compressed air were conducted to depths as great as 69 meters with not a single mishap. The methodology involved first photographing all remains using a housed camera and then recording the position and orientation of all bones along a base line before recovering specimens with lift bags. In addition to the mastodon remains, divers noted the presence of over six hundred bone spear points (Olsen 1958). Several geologic mapping projects have been undertaken in the Wakulla Cave since that time, but there has not yet been any systematic survey of the artifacts that lie waiting in the deep waters.

The association of megafaunal remains with prehistoric human activity had been reported in Florida as early as 1915 by geologists working at Vero Beach, along the Atlantic coast of Florida. This association was reported by Sellards in 1916, a reputable archaeologist of the time, but was disregarded by many skeptical critics. By the 1950's and 60's sufficient sites containing Paleo-Indian cultural material and associated Pleistocene faunal remains had been documented to eliminate any lingering skepticism concerning the antiquity of a human presence in Florida. Megafauna remains were discovered in the Itchetucknee River and within the river flowing from and also within Silver Springs, both areas located in north central Florida. During the 1970's Charles Hoffman and Sandra Rayl excavated the Guest Mammoth site along the banks of the Silver Springs run. Remains of at least three mammoths, one nearly complete, and fragments of bison, large cat, deer, turtle and alligator bones were recovered. Cultural material included a large quantity of chert flakes and thinning flakes located near the ribs of one of the mammoths, a stemless point and two bi-pointed bone pins (Hoffman 1983).

Warm Mineral and Little Salt Springs

Among the most noteworthy underwater archaeological investigations undertaken in Florida during the 1970's were those at Warm Mineral and Little Salt Springs located in southwestern Florida. These are deep hourglass shaped karst sinkholes with preserved human remains and other cultural material dating back to the Paleo-Indian period. Warm Mineral Spring was first explored by amateur diver William Royal in 1959. Royal, a retired Air Force Colonel, discovered stalactites in side caverns at depths of $^{-}9$ and $^{-}18$ meters. In addition to the startling discovery of these features, which can only have formed under dry conditions, Royal and Eugenie Clark found other stalactites and mineralized human remains in nearby Little Salt Spring. Radiocarbon dating of wooden material in close contextual contact with human remains indicated the site to possibly be 10 000 years old. Unfortunately, their discovery was ignored by professional anthro-

pologists who seemed reluctant to believe in the value of artifacts from underwater contexts, especially those randomly collected by sport divers (Burgess1980). In 1959 at Warm Mineral Spring was made the startling discovery of a human cranium with preserved cerebral tissue (Royal/Clark 1960). However, it was not until January of 1971 that Carl Clausen (then with the Florida Bureau of Historic Sites and Properties) visited and conducted controlled excavation at Warm Mineral Spring. Geological and archaeological samples were recovered from a side ledge at -13 meters deep. The sediments were mostly leaves and calcitic muds that were protected by a layer of tufa limestone formation. Within the lowest level were recovered remains of human, deer, opossum, raccoon, rabbit, squirrel, mouse, and frog with dates ranging from 9,379±400 years ago for the upper layer to 9,870±370 years ago for the lower levels. Royal informed Clausen that he had recovered skeletal remains representing a minimum of 30 individuals (Clausen et al. 1975).

Inspired by the success of this preliminary investigation, Clausen returned to the area to conduct more extensive investigations at the nearby site of Little Salt Spring. Investigations were concentrated at a ledge containing well preserved terrestrial sediment -28 meters below the surface of the spring. Among the remains discovered there were bones of bison, mastodon, mammoth, giant sloth and the shell of a giant tortoise. Embedded within the shell of the giant tortoise was a stake of red mulberry wood. At another ledge -14 meters below the water's surface was found a wooden non-returning "boomerang" of a type typical of Australian aborigines and the remains of hundreds of human beings. Subsequent human remains numbering in the thousands were found in the nearby discharge slough at the ground surface (Clausen 1979, Burgess1980). These remains were dated to the Archaic period ranging from six to seven thousand years ago.

Inspired by the successful adaptation of prehistoric terrestrial archaeological methods to the underwater environment, Florida State University conducted subsequent investigations at Warm Mineral Springs throughout the 1980's under the direction of Wilburn Cockrell. The spring has three zones of different water characteristics. The upper 7 meters contains water at 30°C with much dissolved oxygen, while the level from -7 to -58 meters is anaerobic water, also at 30°C. The deepest level, from -58 to deeper than -70 meters, is highly mineralized anaerobic water discharging from a cave at 31–33°C. Three distinct physical components are documented at the spring. There are two distinct ledges that recede a few meters back into the limestone walls at -13 and -18 meters, and a debris cone that has accumulated at the central base of the spring. The deeper ledge contains human remains that have been dated to over 10,000 years ago, placing them in the range of the Paleo-Indian culture (Cockrell 1980). In addition to well preserved vertebrate faunal remains one of the most significant artifacts recovered at Warm Mineral Springs is a carved shell atlatl hook, a typical weapon type for the Paleo-Indian period (Burgess1980). Investigations at Little Salt Spring continue today under the direction of Dr. John Gifford from Miami University, which has purchased the spring for research purposes. These two sites indicted that there exist well preserved remains from the Pleistocene/Holocene boundary in Florida's drowned karst features, and these projects were inspiration for further Paleo-Indian research in Florida.

Abb 3: Wacissa Spring, Jefferson County, Florida. This spring is the headwater for the Wacissa River and is typical of spring fed rivers in Florida (Photo by James Alan Reade McClean).

Aucilla River Prehistory Project

Between 1983 and 1999 the Florida Museum of Natural History in Gainesville conducted underwater reconnaissance of the Aucilla River. This river in the north central region of Florida is unusual in that sections of it are landlocked, meaning that the flow disappears underground and emerges some distance downstream. This phenomenon is controlled by karst terrain features such as siphons and springs that form drainage and flow points along the course of the river. This sixteen year project identified several sites of paleolontological and archaeological significance along this river. The National Geographic Society was a principle sponsor of the project, which also received funding from the State of Florida Department of Historical Resources, the Florida Museum of Natural History, and a long list of personal donations and volunteer divers.

The Page/Ladson Site (8 Je 591) located near Half Mile Rise was one of the first sites identified by the project. Hand fanning of sediments revealed the presence of artifacts spanning a long cultural sequence in Florida from Paleo-Indian and Archaic points to later Weeden Island, Swift Creek and Deptford ceramic sherds. Test pits were placed within bottom sediments located six and eight meters below the present water level of the river, with Test Pit B extending four meters deep into stratified sediments. Artifact inventories included Bolen Beveled points, adzes, scrapers, bone, wood, lithic debitage and broken adz bits. These sediments were dated between 9730 and 10280 years ago (Dunbar et al. 1988). Subsequent excavations in 1993 resulted in the recovery of the remains of several mastodons, including a complete two meter long ivory tusk. Cut marks were found at the base of the tusk where prehistoric hunters had removed it from the skull.

During the mid 1990's a stairway was cut into sloping wall sediments at the Latvis/Simpson Site (8 Je 1500). In these sediments were discovered not only the nearly complete remains of a female mastodon, age determined to be about 14–15 years old based upon ivory tusk growth ring analysis, but also the possible remains of her unborn child. In addition to this stunning find were found thick organic sediments later identified as preserved mastodon digesta. From this material researchers have been able to reconstruct the diet of these extinct animals that once roamed Florida during the last Ice Age (Mihlbachler 1999).

The site of Sloth Hole (8 Je 121) provided a wealth of information in terms of artifacts represented there. Ivory foreshafts up to 33,3 cm long have been identified at this site, in addition to bone fish hooks, adzes and Clovis type stone projectile points. Further megafauna remains were recovered at this site throughout the course of several field seasons. A lynx mandible carved with three spiral motifs on each side was found which dated to the more recent Archaic period.

Divers received surface supplied air from a diesel compressor running air lines to standard open circuit regulators. Sediments were recovered in a controlled manner by suction water dredges also supplied from the surface with high pressure water. All sediments were screened and sorted by surface personal upon floating screen deck pontoons. Often the water was stained a dark brown by tannic acid, reducing visibility to less than fifty centimeters. Divers worked in pairs, one holding a 1000 Watt halogen lamp while the other excavated and recorded the position of all uncovered artifacts, sometimes as deep as 10 meters below the surface of the river. The result of fifteen years research can now be viewed at the Florida Museum of Natural History on the campus of the University of Florida in Gainesville. A complete monograph of the project is anticipated to be published in the near future.

Abb 4: A mastodon skeleton recovered from Wakulla Spring on display at the Museum of Florida History, Tallahassee, Florida (Photo by James Alan Reade McClean).

Paleo Aucilla Prehistory Project

The Paleo Aucilla Prehistory Project continues to conduct research on the offshore submerged component of the drowned Aucilla River channel. Dr. Michael Faught, Director of the Program in Underwater Archaeology at Florida State University, is the principle investigator for this project. Dr. Faught began investigations of submerged archaeological sites in the Gulf of Mexico in 1986. The primary goal has been to find archaeological sites offshore and locate analogues to sediment-filled sinkholes such as those identified at Page/Ladson along the Aucilla River and to investigate sites by excavation to determine extent of *in situ* stratigraphy and Paleo Indian artifacts (Faught 1996, Faught/Donoghue 1997). Research methods used to identify and investigate relict river channels and sinkholes have included towed diver visual reconnaissance, remote sensing surveys including subbottom profiling and side scan sonar, and systematic water dredge excavations (Faught and Donoghue 1997, Dunbar 1988, Dunbar et al. 1992).

During 1986 cypress wood was identified and collected at the Econfina Channel Site (8 Ta 531). This wood was C^{14} dated to 5160±100 BP and found in association with bifacially trimmed cores and numerous flakes (Faught 1988). Ray Hole Spring was also investigated in 1986. Several test pits around the margins of this sinkhole revealed oak (*Q. virginiensis)* dated to 8220±80 BP and oyster shell dated to 7300±60 BP. In 1988 the Econfina Channel was again surveyed and numerous test pits were excavated. A projectile point base was identified that typologically belongs to the Archaic Period between 7000–3000 years before present. In 1989 the Fitch Site (8 Je 739) was surveyed and well preserved bones of extinct Pleistocene fauna were found including giant tortoise, giant ground sloth, Pleistocene horse and short limbed llama (Dunbar *et al* 1992). Based upon the large amount of medium to fine grained chert found there, Fitch has been interpreted as a raw material quarry site (Faught/Donoghue 1997).

Recent investigations have been focused upon the J& J Hunt Site (8 Je 740) which is located 6.1 kilometers offshore along the relict Aucilla River channel. Using a .3–2 kHz GEOPULSE subbottom profiler, a sediment filled sinkhole was identified at an area recorded as Locus L. Cores were taken in the sinkhole feature to depths of about four meters. Several lithic scatter areas were identified around the margin of the sinkhole and surrounding area. To date several Early Archaic Bolen type points have been recovered at this site, from both surface collections and stratified deposits. Research continues at this site each summer under the field school in underwater archaeology offered annually at Florida State University since 1998, as discussed below.

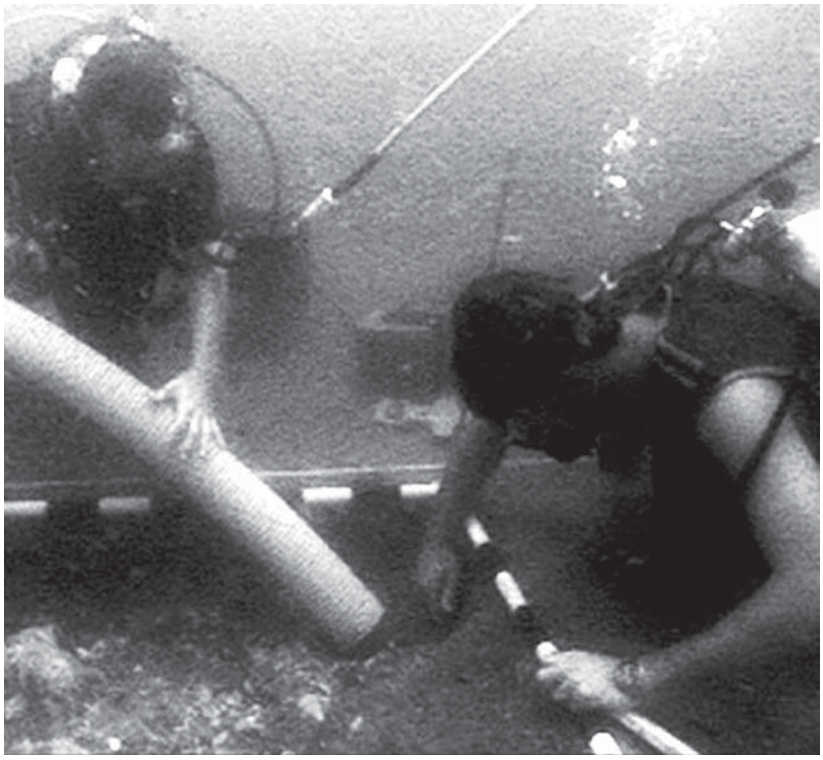

Abb 5: Florida State University students excavating a test pit at the J&J Hunt Site, Jefferson County, Florida, 6 km offshore (Photo by Joseph Latvis).

Cooperation between amateur collectors and state archaeologists

In 1996 the State of Florida initiated the Isolated Finds Policy. Under certain conditions this policy grants ownership of artifacts found out of archaeological context to divers who report them to the central site management office. The Ryan-Harley Site (8 Je 1004) represents a special case where amateur archaeologists have greatly enhanced the overall knowledge of prehistoric sites from submerged contexts. The Means brothers, Ryan and Harley, are avid river divers trained in biology and geology. Their intimate knowledge of the Wacissa

River, a spring fed river which joins to the Aucilla River, has led them to the discovery and reporting of many prehistoric sites in this remote wilderness. Suwanee type projectile points are a typical diagnostic tool of the Paleo-Indian period in Florida and were found at this site, in possibly *in situ* stratified organic sediments. Subsequent surveys were conducted by volunteers under the direction of Jim Dunbar of the Florida State Division of Historical Resources, Bureau of Archaeological Research. The research objectives were to investigate the stratigraphic integrity of the site and determine if it warranted nomination as a site to restrict further collection under the Isolated Finds policy. Sediment core samples revealed the site to be part of a paleo river channel that has since filled with terrestrial sediments. The artifact concentration is actively eroding out of the riverbank where the river is presently down cutting through the sediments of the former river channel. A large number of intact Suwanee points have been found to be continually eroding out of the riverbank since investigations in 1998 and 1999. Unscrupulous divers hoping to sell Paleo-Indian projectile points to black market collectors have since looted the site. This sensitive wilderness area is reported to contain hundreds of undocumented archaeological sites, and is in great danger of destruction by such looting activities. The State of Florida has responded to pleas for protection of this area by acquiring much of the land under the Conservation And Recreational Land survey program. This action would exempt the area from isolated finds collecting and help to insure that all citizens have fair and equal access to this pristine wilderness.

Education and training in underwater prehistory in Florida

Florida State University offers one of the most comprehensive scientific diving programs available. In addition to academic course offerings that students pursue as part of their regular educational course load, the Academic Diving Program (ADP) offers a wealth of dive training to interested students. Each semester ADP certifies about ninety students in the use of recreational open circuit dive technology. This sixteen week course is comprised of a weekly lecture and pool session which strengthens diving skills. Open water certification dives are performed in sinkhole and open ocean conditions. Graduates of this course may continue their diving education by participating in leadership courses designed to train students to the level of instructor through either NAUI or YMCA standards.

Scientific dive training, under the auspices of the American Academy of Underwater Sciences (AAUS), is conducted each spring semester as a sixteen week course in method and theory of underwater archaeology. The curriculum is comprised of six hours classroom lecture per week, followed by intensive weekend training sessions. During a one week cruise in the Florida Keys students apply their skills utilizing remote sensing equipment and survey techniques to assist Florida Keys National Marine Sanctuary staff to record and investigate submerged cultural resources. At the completion of the course, successful students will have met the minimum requirements of Restricted Science Diver as defined by the AAUS and be eligible to participate under supervision in scientific diving operations with any organization having reciprocal agreements with the AAUS. Topics covered include First Aid, CPR, oxygen administration, rescue, Nitrox, surface supplied and overhead environment diving in addition to familiarization with remote sensing survey equipment and methods of underwater data collection and mapping.

Since 1998 the Program in Underwater Archaeology at Florida State University has offered a field school in underwater archaeology based at the university's marine laboratory at Turkey Point, along the Gulf of Mexico. This six week intensive course covers aspects of both historic shipwreck investigation and geoarchaeological investigation of submerged sites in the Gulf of Mexico and gives students first hand experience excavating sites in a controlled manner using induction dredge technology.

This course curriculum represents the culmination of a long history of dedication to the scientific principles of archaeology as it is applied to underwater sites in Florida waters. As this paper has hoped to elucidate, the State of Florida has a long history of commitment to documenting and preserving its submerged cultural resources. Florida is a state with a rich cultural heritage spanning over twelve thousand years. Dedication to preserving this heritage spans over one hundred years of research at prehistoric submerged sites in addition to the more popularly sensationalized findings from historic shipwrecks.

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Anschrift des Verfassers

James Alan Reade McClean
Department of Anthropology
Florida State University
Tallahassee, FL 32306 USA
Email: jamesmcclean@yahoo.com

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