

# **MANEUVERING THE PUBLIC: A SIMPLE SITE VISIT GOES A LONG WAY**

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The beginning of the twenty-first century finds cultural resource professionals, and society at large, at the confluence of a unique set of circumstances. For many years, archaeological information has been in effect hidden from the public, hidden even from the people whose ancestors produced the sites and artifacts we study. Many will argue that this archaeological information is not hidden at all, rather, it is available in a variety of repositories, technical reports and publications. But let us be honest, even trained professionals can have difficulty accessing this information. Conducting archaeological research as a non-archaeologist is a daunting task. The researcher must determine who to ask and where to find the information, only to discover the information is often written in incomprehensible jargon. If archaeologists feel that there is adequate public access to archaeological data, and the public and Native Americans do not, then we have not communicated effectively with taxpayers who ultimately fund many of our projects. We have a responsibility to communicate our findings, as well as where the information on which we base our findings is located, and how best to access it.

Archaeological information has been selectively earmarked for public distribution in the mid-Atlantic, generally being made available through private organizations at nationally-recognized sites such as Monticello, Poplar Forest, Mount Vernon, Colonial Williamsburg, and Jamestown, or certain localized county or city programs, including Alexandria Archaeology and Fairfax Heritage Resources in Virginia, and Historic Saint Mary's City in Maryland, to name a few. These latter programs should be recognized for their immense contributions to public archaeology in the mid-Atlantic. Their stalwart examples demonstrate that even with relatively small funding, successful programs can thrive for years, largely based on public interest and volunteers. The majority of archaeological studies conducted in the mid-Atlantic, has not been made accessible to the public or Native Americans. This situation can be attributed to many factors. This paper will briefly touch on them, with the intention of sparking fires, I mean eliciting future discussion and exploration of why this has occurred in the mid-Atlantic for so many years, and how it is now changing.

To briefly preface usage of certain terminology, it is important to note the distinction between the terms "public" and "Native American." "Public" refers to the general population. "Native American" refers to a Native American tribe, band, nation, or other organized group or community. Native American groups are a component of the "public," an important component who need to be involved in the Section 106 process. As such, this discussion uses the term "the public" with the understanding that it includes Native Americans, as it includes all ethnicities and nationalities. Further, this presentation will use the term Native American History when referencing PreContact time.

Many mid-Atlantic states, when compared with midwest and western states, exhibit a lack of interaction between public and Native American groups and archaeologists. Factors that directly contribute to this phenomenon include overall differences in population density and land-use strategies; location, organization, and varying levels of Native American interests and/or their ability to pursue these interests; and the relative invisibility of public works and other projects receiving federal funds thus subject to the mandates of the NHPA. Invisibility is a situation more apparent in areas of higher population density, such as that which comprises much of the mid-Atlantic. For instance, in urban areas and the east, archaeological sites look very much like construction sites to passerby. Conduct of archaeological projects are far more noticeable in

areas where the ratio of people to land is lower, and infrastructure and congestion do not camouflage public works activities.

The number of federally recognized tribes in the midwest and western states greatly outnumbers those that exist in the mid-Atlantic, resulting in a lower frequency of public/Native American interaction with archaeologists in the mid-Atlantic region. Federal recognition of Native American groups is a subject of much debate, and could easily comprise discussion for the remainder of the session. However, the critical factor in this discussion is the perceived status this “federally recognized” label has conveyed. Many agencies have largely ignored the sections of the NHPA that apply to all Native American groups who ascribe indigenous rights to lands within a state, respectively, citing that, “there are no Federally recognized tribes in my state.” While this comprises compliance with the letter of the law, it does not comprise compliance with the spirit of the law.

Unless NAGPRA applies, Native American groups often have not been contacted in many mid-Atlantic. The representation of federally recognized tribes in the United States does not reflect reality; there are far more Native American groups who are not federally recognized to which these laws apply. This graphic illustrates numbers of federally listed Native American tribes; it does not illustrate groups who have, or are, pursuing federal listing. It is troubling that this label has kept many groups from being consulted, and is symptomatic of a broader issue, one which is rooted in the fundamental underpinnings of bureaucracy. Simply put, right or wrong, the federal agencies abide by federal rules, speak a language rooted in federal terminology, federal contracts, federal listings. But it is not that simple, is it?

The new age of communication, technology, and cultural expression, have promoted public access to the intriguing science of archaeology. Interest has been generated as information has been made available, through the media and other public forums, such as archaeology weeks and months in certain states. Unless people are aware that there is something is there to be interested in, they have no way of making the choice to BE interested. Hopefully, the popular image of Indiana Jones will be no longer the first thought in people’s minds at the mention of the word archaeology. Knowledge will dispel the myth that the paint brush is our only tool. Rather, this new age of archaeological accessibility will usher in a tidal wave of textured information, adding depth and meaning to the archaeological information we have, and have yet to discover.

The revised Section 106 regulations issued by the Advisory Council mandate public and Native American involvement in the process. So now, even the most recalcitrant archaeologists, in all of their reticence, must incorporate, no...must...EMBRACE the public and Native Americans as part of the archaeological process.

The new regulations provide guidance regarding Native American coordination, as well as clarified definitions of, and an emphasized need for, public outreach. The regulations do not, however, delineate activities or outline means by which the requirements should be satisfied. Without specific mandates regarding agency activities, often the vehicle for fulfilling the public outreach component of the regulations is left up to the agency sponsoring the project. Since public outreach initiatives do not receive bulleted consideration in regulatory language, agencies often do not include this requirement to contractors executing archaeological tasks associated

with public works projects. Without agency support, it is rare that cultural resources consultants can absorb the extra cost and energy required to conduct a formal campaign of public outreach, no matter how dedicated they may be to public archaeology.

Archaeological sites are an ideal venue to host public outreach activities and fulfill Native American coordination mandates for agency sponsored projects subject to Section 106. Ideally, incorporation of Native American and public concerns should occur as early in a federally sponsored project as possible, which dovetails nicely with planning for cultural resources management. For example, if there were established avenues for communication, early coordination with the public and Native American groups could assist in locating sites and interpreting findings, greatly augmenting efforts of CRM professionals, particularly concerning issues of significance. This early dialogue ensures important knowledge is disseminated so that design efforts can take site locations into account, as well as to reallocate financial resources or reduce costs associated with initial location of archaeological sites.

Hopefully presentations within this session will demonstrate the many benefits of public archaeology, far outweighing the drawbacks, albeit with a slight amount of glorification, and perhaps a hint of evangelical fervor...These benefits pervade every aspect of the compliance, cultural, professional, and public atmospheres surrounding the Hickory Bluff project, a case study whose methods will hopefully be incorporated or applied at investigations in the future.

After an admittedly operatic soliloquy, I will attempt to present an iteration of the Hickory Bluff site from a non-archaeological perspective, indeed, that of a person involved in bringing people to the site, helping them understand it, ensuring they had a good time and learned something, all the while hoping to augment and proliferate the efforts of an individual archaeologist at DelDOT, who, for two decades, had pretty much been single handedly conducting a public program as matter of course for archaeological projects. I will not mention his name, but his efforts have helped us all reach a new level of understanding of Delaware's Native American History, a new level that will lead us to the next, and the next, and so on. His endeavors have touched and broadened the cultural education of thousands of people, young school children, senior citizens, scouts, and even DelDOT employees.

When Parsons was apprised of DelDOT's interest in and desire for public accessibility at the Hickory Bluff site, we decided to explore and attempt to expand on the multi-pronged approach already begun by DelDOT. In honesty, Parsons had never before been confronted with the opportunity to develop and implement a comprehensive program of public outreach, during a lengthy Phase III excavation.

We approached the public from multiple angles, as "the public" is inherently composed of many different sectors, groups with access to different types of media, and groups to whom certain things do or do not appeal. To avoid being exclusionary, we strove to implement a program where the local community really could not miss that archaeology was happening "in their own back yard," with advertisement strategies revolving around brochures, handouts, posters, newspaper and magazine articles, radio and television spots, t-shirts, as well as exposure on DelDOT's website.

Realizing that not all school and other groups with interest may have the ability to visit the Hickory Bluff site, multiple visits to schools were conducted, and hands on archaeological presentations were given. Groups and individuals who visited the site were shown displays, and offered tours and the opportunity to dig. Multiple school groups, ranging in size from 8 to 120 children, came to the site on field trips to tour and dig. Events were conducted targeted towards professionals, as well, including a 2-day open house, sponsored jointly with another CRM company doing archaeology for DelDOT at a nearby site.

In all, the active public outreach effort during the course of fieldwork was considered successful. We did not begin to imagine some of the hidden benefits, benefits supplied to us, the archaeologists. They helped us look at things a different way, offering interpretations of features, suggestions for future programs, all the while expressing sincere gratitude at having had the opportunity to not only observe, but participate in archaeology, and for free, to boot.

Prior to the Hickory Bluff project, there was no formalized procedure for Native American and public involvement at DelDOT-sponsored archaeological projects. As the Hickory Bluff project comprised a distinctly public campaign, once the “word” got out, it was only natural that we encountered unforeseen scenarios. As a result of the Hickory Bluff project and the nature of the discoveries, a dialogue was initiated between archaeologists, Native Americans, and State Agencies. This dialogue has resulted in a modified approach to Delaware archaeology.

Since this time, Native Americans have been involved in each of the critical steps associated with the Section 106 process in Delaware, from the field work and data gathering, to interpretation and analysis, to report preparation, and, participation in professional venues, such as this. Without the support of the Delaware Department of Transportation, the Delaware State Historic Preservation Office, the Native American community in Delaware, and the public at large, we would not be at this unique podium in history - this collaboration allows for a more holistic interpretation of mid-Atlantic archaeology, one that enables the public and Native Americans to access cultural information.

Prior to the implementation of the new Section 106 regulations, some states had poorly defined procedures for coordinating with Native American groups, especially if there were none formally listed within the state. Since the issuance of the new Section 106 regulations, the process of coordinating with Native Americans has improved, and in Delaware, the changes occurred much sooner.

As the public continued to visit the site, newspaper articles and television advertisements appeared, it was only a matter of time before tribal members and representatives heard about the Hickory Bluff site, “Pompeii-like” in its preservation. Native American representatives (and I will only speculate on their behalves), undoubtedly began wondering, “a)how possibly could one of our ancestral sites be located in the path of a highway, which was planned for years; b)how did we not know archaeologists were digging it up; c)and what can we do about this, now and in the future\*?”

Through a series of meetings, workshops, field trips (and not to mention a few beers), a relationship began to be forged in Delaware, a relationship that has since grown and achieved

new dimensions. Entirely due to the persistent hard work, dedication, and unfaltering energies of Native American representatives, DeIDOT, the SHPO, and others, a process is emerging whereby the opportunity for communication and interaction between the aforementioned parties is constantly available. This ensures that pre-planning occurs, everyone is involved at every stage of the process, and coordination does not stop at data collection.

There is a growing recognition that the oral history of Native peoples is largely untapped, and time is running out to earn access to this great resource. Most archaeology and archaeological interpretation at Native American sites in the mid-Atlantic has occurred without verbal documentation. To quote a Native American friend, speaking of the written word, "When you consider the degree of degradation which the truth has suffered throughout the history of the written word, this venue of preservation is something less than pristine."

Efforts to include the public in Delaware archaeology have grown exponentially within the last couple years, resulting in a symbiotic, synergistic, relationship emerging between agencies like DeIDOT and the consultants who work for them, the SHPO, Native American groups, and academic affiliates. This has resulted in an expanded Archaeology Month Program, incorporating a broad and dynamic range of activities, appealing to several levels of interest and ability.

Without fail, the interaction that has occurred has always been productive and informative. I would go so far as to say Delaware has nurtured a new collective public interest, in Native Americans, archaeology, and how the two relate. As an aside that bears mention, I have had the great personal fortune of assisting in several presentations and site visits with school children and other groups over the course of the past several years, and have observed a consistent shift, or perhaps sophistication, in the public's areas of interest. Through the continual efforts of DeIDOT, the SHPO, Native American representatives, and academic affiliates, written and unwritten history, as well as history in the making, has been exposed to the public in and around Delaware.

\*While neither oral tradition, archaeology, history, nor anthropology can absolutely demonstrate that the ancestors of any one "tribe" were the original occupants of a specific geographic area thousands of years ago, they can help us make hypotheses about the lives of Native American ancestors. There are distinct cultural expressions indigenous to most all Native peoples that revolve around natural elements. These natural elements make it possible to interweave past and present, devoid of the introduction of time as it understood by Americans in the twenty-first century as being linear, and compartmentalized. Rather, distinct Native cultural expressions that have survived and passed through time via stories, songs, languages, ceremonies, and other forms of oral tradition, are believed to had their nascent beginnings with the earth, with the creation of Native cultures, and the ancestors. Where it may be difficult for people without a background in Native cultures to understand, the shared system of cultural beliefs has remained endemic to Native Americans for thousands of years. Lifeways, culture, if you will, that evolved thousands of years ago revolved around celestial observations, seasonal passages, the plant and animal world. The fundamental genesis of culture has not changed, cognitively, in Native Americans today.

I would like to close with a simple reminder, we are all interested in the past. Archaeologists, Native Americans, and the public. As practitioners of archaeology, we are often the last people to see cultural remains, remains that hold a different significance for different people. As such, we have a responsibility to handle these materials, not only physically, but also intellectually, spiritually, and cognitively, with the greatest respect. Often respect is communicated by offering the public and Native Americans the opportunity to critically evaluate the evidence we find, comment, and offer suggestions or new ideas for change. Archaeological paradigms are not threatened by alternate opinions and interpretations, rather, these traditional paradigms are enhanced. If your academic backgrounds did not include Native American and/or ethnographic coursework, ask yourselves how your research questions and methodology might be altered if you had. We now have that opportunity, to introduce a new dimension to the science, to enhance the understanding of the public, and to allow our understanding to be enhanced.

## A Native American Perspective on the Archaeology at Hickory Bluff

A Native American Perspective on the Archaeology at Hickory Bluff was presented by Charles C. Clark IV, then Assistant Chief of the Nanticoke Indian Association in Millsboro, Delaware. Mr. Clark prepared no written presentation but spoke elegantly and extemporaneously about the Nanticoke past, the Native American history in Delaware, the history of the Nanticoke involvement with the Hickory Bluff excavations, and the gradual coming together of Native American thought and participation in archaeological investigations.

**On the Threshold: Turning the Experience of Archaeology in the Middle Atlantic**

I'm a dweller on the threshold  
And I'm waiting at the door  
And I'm standing in the darkness  
I don't want to wait no more<sup>1</sup>

By

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## Introduction

In her consideration of the worldview of southern New England native groups, in particular their conceptions of the sacred and its spatial manifestations, Kathleen Bragdon points out that for many seventeenth and eighteenth century Algonquian-speaking people of the East, the cosmos was animated. It was imbued with life force. The cosmos consisted of an upper or 'sky world', the middle world or 'the earth', and the underwater world (Bragdon 1996:191-2). Spiritual beings of the other-than-human worlds could be encountered in sacred places that embodied the qualities of the other worlds—high spots, and low, marshy areas and other areas close to water. These places were spatial correlates of manitou (Bragdon 1987:192). Manitou is described in one way as this vital force present in different times and amounts in all things natural and supernatural.<sup>2</sup> Manitou mediates the connections between different levels of experience, between these different worlds.

Bragdon draws on the work of George Hamell (1987) who describes the sacred places where the three realms of the cosmos converge as 'thresholds'. Here, on the threshold, saturated with Manitou, humans and other-than-humans communicate and cross between the different worlds through physical, spiritual, and social transformations.

Archaeology in the Middle Atlantic (for the purposes of this paper I mean Maryland, Delaware, and Virginia) stands on its own threshold. From a convergence of forces—federal mandates, state-level policies, individual and institutional archaeological directions, and public action—the practice of archaeology, particularly within the domain of Cultural Resource Management or 'contract archaeology' is undergoing transformations. These transformations hinge on the recognition and combination of different approaches to culture, the past, and culture in the past. These approaches require the consideration of new and forms and sources of data and different ways of presenting interpretations of the data. Many of the new approaches entail the use of data that archaeologists can claim to have been using for quite some time.

For instance, the use of ethnography to inform archaeological interpretations is not a new concept. Ethnoarchaeology, perhaps best known through the work of Lewis Binford, advocates the study of living human systems to afford archaeology the best types and amounts of data with which to understand systems in the past (1996:40). The direct historical approach, using descendants of past cultural traditions and groups and their material culture to inform our understandings of antecedents, dates back to the late eighteenth century with the naturalist William Bartram using extant Creek ceremonial structures to inform his understanding of ancient mounds (Trigger 1990:69). Ethnohistory, considered the study of Native American history, and the history of any ethnic group, has also experienced a long and steady employment for archaeological interpretation.

Public archaeology programs were developed well over twenty years ago in the region with such places as Colonial Williamsburg, Jamestown, and the Alexandria Archaeology program in Virginia, and Archaeology in Annapolis and Historic St. Mary's City in Maryland. Archaeology in Annapolis stands as a forerunner in the inclusion of public participation in archaeological interpretation. As an integral part of their program, the public is involved in considering the multiple, overlapping, and conflicting histories of the landscape—the construction of which they are a part.

### **Why Are We at a Threshold?**

With these plentiful examples of different approaches and forms of data available, why is archaeology in the Middle Atlantic at a threshold, a point of transformation? In part, recently enacted federal mandates have directed that programs involving federal funding or federal properties develop and practice more substantial forms of consultation and inclusion of public ideas in their projects.<sup>3</sup> This is particularly so for working with Native American groups.

Also, archaeologists are seeking richer interpretations of patterns and practices of humans and their environment in the past and are aiming at a broader understanding of their meanings. There is also a push to reconsider the ways in which archaeological data and interpretations are produced and consumed. To accomplish these goals, archaeologists are drawing on not only the integration of the latest technological innovations, but also the benefits of a fuller use of an anthropological perspective. They are

also seeking the in-put of voices of those outside the profession and outside of scientific and academic circles.

In treating with the search for new approaches to the study, presentation, and treatment of culture and culture in the past, this paper focuses on issues of cultural resource management and interaction with Native American people.

### **III. What is Converging at the Threshold? The Status of Native People and cultural/archaeological practices in the Middle Atlantic**

Compared to western states, and some in the East, the Middle Atlantic has quite a different configuration of indigenous populations. Briefly, processes of contact and colonization and the entrenched racism that remained led to the severe dislocation of the region's native people. Whereas in other regions there are large numbers of federally recognized tribes with tribal lands, these three states do not yet have federally recognized indigenous populations. In the past, there were Native American reservations in the colonies now forming each of the three states. Two reservations persist in Virginia, and there are eight state-recognized tribes. Maryland has several groups who have applied for state recognition but none have tribal lands. The Nanticoke Indian Association is a state-recognized tribe in Delaware without a reservation, but with a spatially definable community that can be easily traced back over 150 years, and without too much effort, back to pre-colonial times. Each state also has self-identified groups. The persistence of native communities in various forms and Indian identity has been documented by numerous scholars (Babcock 1899; Cissna 1986; Houck 1984; Rountree 1986, 1990; Porter 1977, 1986; Speck 1915) and demonstrated by the communities themselves.

Although these communities exist, interaction with the archaeological community has not been a common occurrence. It is only recently that the two have begun to investigate the concerns of the other. The relationship between regional native peoples' connection to and concern with their past and its tangible manifestations and archaeological work on pre- and post-contact Native American sites, if not considered irrelevant, is at least not clearly conceptualized by archaeologists. The same could be said of native people's views of archaeology. However, at present the Middle Atlantic is witnessing a burgeoning dialog

between archaeologists and Native Americans that is certain to become increasingly more frequent and more substantial. It is time to address our conflicts and converging interests.

Some of the key points where we differ concern the conceptualization of human relation to the environment. Archaeologists' division of the tangible remains of past human activity into discrete geographic entities called 'sites' with specific temporal parameters differs from many Native American understandings of spatial, temporal, and cultural categories. The meanings assigned to sites and features differ. The ways archaeologists make sense of 'artifacts' employs different axes of meaning than those of Native Americans. Views on how you treat land, its resources, and special physical places also differ, as do views over the rights to study archaeological sites and the ownership of objects. And, the treatment of human remains is an obvious source of disagreement. The common ground between the two is formed by a mutual concern for the relevancy of prior human existence to us today and concern for the appreciation of humans in past and their relationship with the physical world in which they formed their lives.

It is important to point out that Federal agency directives state that only Federally-recognized tribes are those to be dealt with in government-to-government relations (Executive Order #13084; FHWA 1999) and that native groups not entitled to this special relationship are to be consulted with as 'interested parties', as particular groups within the larger constituency called 'the public.' Yet, the concept of federal recognition is based upon experiences of people and circumstances far different from what transpired in the Middle Atlantic region. Whereas there are numerous geographic reservations of federally recognized tribes in other parts of the county, this region has what one might call 'temporal reservations.' A 'temporal reservation' confines the relevancy of Native Americans in the arena of historical and cultural affairs to the remains of their ancestors and their material culture. While Native Americans herald the importance of their ancestors, they point out that the ancestors live through the succeeding generations.

Another aspect of the 'temporal reservation' is that you can't leave. No one denies the drastic effects of contact and colonization on native populations of the region, yet the question also arises as to why Native Americans are some how not allowed to change through time. Such are the questions being asked in the region today.

Given these concerns, what is the status of interaction and what directions should we take to address the varied viewpoints? To begin answering this, I will briefly summarize interaction in the region at the state level touching on cultural and historical concerns, cultural resource management issues, and NAGPRA. This will be followed by consideration of the next steps. In Virginia, there is a state Indian Commission and there have been at least two considerations of repatriation to state tribes under NAGPRA (Federal Register 2000, 1997). Consultation with state tribes has taken place on several CRM projects such as work at the Pasphegh Site (JRIA 1994) where tribal leaders were consulted to formulate a plan of human burial excavation, study, and reburial. The recent plans for the construction of the King William reservoir in an area between the two state reservations has been one of the more significant tests of interaction. Outside the cultural resource management venue, archaeologists in the Department of Anthropology at the University of Virginia have been working closely with several Virginia tribes for many years. As a graduate student there studying Native American sites and history in Maryland and Delaware, my own research involves interaction and dialog with native groups and individuals in the two states.

Maryland also has a Commission on Indian Affairs constituted primarily by people identifying themselves as indigenous to the state. Recently dialog between the professional archaeological community, through the Council for Maryland Archaeology, and the Commission on Indian Affairs has begun for the purpose of facilitating communication and understanding of the multiple perspectives of culture, history, and archaeology. As part of Maryland Archaeology Month, we are having a symposium with speakers from archaeological and Native American perspectives.

The State of Delaware has created a part-time Executive Assistant for Native American Affairs position to handle the growing interaction with Native groups within and outside the state. Last year Native American human remains, disinterred as part of CRM projects, were reburied at the state-designated reburial site with the Nanticoke performing a state-sanctioned ceremony. Also, a stewardship agreement is being finalized between the Nanticoke Indians and the Delaware State Parks concerning a park property that contains a Native American burial ground. The Delaware Department of Transportation has long had public education as part of its archaeological program. As there is an increased emphasis on these programs and working with Native Americans coming from federal agencies, the DelDOT and its consultants are leading the field in the region in innovative programs. This includes developing public

education programs to draw in multiple perspectives and to produce reports and other kinds of information sharing material that address the new demands from within and outside the field. With the Hickory Bluff project, Parsons Engineering and DeIDOT plan to include the input of the public in the site interpretation. This will proceed in various formats. One will include the contribution of written interpretation of the site from Native Americans.

#### **IV. What's on the Other Side?**

Now that these kinds of interactions have been initiated and with the recent federal mandates calling for more public involvement in cultural and environmental resource management, we are all contemplating how these views will be integrated. What can we do to answer archaeological needs for better understandings of the past? How can the voices of the public, particularly Native Americans, be integral parts of the study and preservation of our cultural and natural resources?

The answer for everyone appears to be to take a more holistic approach to the study of the past. One device that we might use to encompass seemingly disparate understandings and appreciations of the past and of human relationships with their environment is the concept of 'cultural landscapes.' This term has experienced a substantial engagement within the field of archaeology. It also resonates within the fields of cultural geography, landscape design, literary criticism, and historical ecology.

The use of this term in this paper encompasses the broadest possible conceptions of human relations in their physical and cultural environment. This broader perspective on cultural interaction within an environmental matrix fits well with what Native Americans have expressed about the relation of humans in the world. Stemming from work with the Southern Paiute, Stoffle, Halmø, and Austin (1995, revised 1996) relate that, "most Native Americans' conceptual organization of cultural resources is best expressed through the idea of cultural landscapes rather than as distinct archaeological sites or as smaller geographic conceptions such as Traditional Cultural Properties". The authors state further that, "cultural resources are bound together in broad categories based on functional interdependency and proximity. At its simplest, places and things associated with them are interrelated." This perception meshes with recent approaches within archaeology and related disciplines.

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The concept of cultural landscapes is a point of engagement with more varied sources of data, types of interpretations, and perspectives on culture. Some aspects of what this approach would entail include:

1. Looking at broader spaces and focusing on connections and relations at multiple levels rather than adhering to a focus on sites as defined by a collection of material objects or by some drastic modification by human beings.
2. A corollary to this would be to consider spaces devoid of artifacts as parts of the cultural landscape that were used differently than those where we find archaeologically observable residues.
3. Consideration of histories of landscapes and how their uses and meanings changed though time is also an important facet. This frees studies from strictly archaeological methods of gaining information about the past human environment and moves the study in to the realm of the present.

Investigating meanings and landscapes through time requires ethnohistoric research. The region has a wealth of documentary history that includes indigenous conceptions of the land, natural resources, spiritual connections between people and place, and how people arrange themselves in space to negotiate different social, political, economic, and spiritual realities. There is also information on conceptions of time, the past, and their relation to the physical world.

Tracing out meanings of places and spaces to living people (the public/Native Americans) provides a richer view of the significance of landscapes and complements questions of concern to archaeologists. An important aspect of these meanings includes the articulation of present understandings of history, heritage, identity, ancestors and their relation to the environment. This type of research requires seeking understanding and the opening of our approaches to include many other perspectives. It requires doing ethnographic fieldwork. The region has a rich history of ethnographic studies of native communities from at least the late 19<sup>th</sup> in to the twentieth century. Many observations include walking the land and recounting stories of previous generations and their relationship to specific places (Speck 1915).

These multiple lines of evidences and multiple perspectives can be merged with environmental and archaeological studies to provide more complete understandings of humans interacting in a physical

and social world. This sketch is only a hint of the approaches that could be taken to address the converging concerns of archaeologists, environmental scientists, federal and state agencies, the public in general, and Native Americans in particular.

Beyond the interpretive benefits of a more holistic approach, I suggest some ways that the concept of cultural landscape can serve as an organizing principle in cultural and environmental resource management agencies in the planning stages particularly with public consultation. Taking a holistic approach, consultation with the public, instead of being segmented by divisions within departments, can be addressed in a more integrated fashion so that the environmental, historical, and cultural concerns of the public can be accessed and assimilated as the public chooses to present its ideas. And these may very well intertwine the concepts inextricably. Such a forum for consultation would seem to accommodate what Native Americans and others are telling us about their views.

And, as the recent revisions to federal mandates are meant to streamline NEPA and Section 106 compliance and reduce redundant efforts, a more holistic approach seems to promote this streamlining.

The focus on cultural landscapes would open up channels of communication on how living Native Americans organize, change, and want to preserve different parts of their world including, but not limited to their past and its tangible remains. Seeking out multiple perspectives in the planning process, in the construction of research designs, in the conduction of fieldwork and analysis, in interpretation, in the presentation of findings, and in the disposition of artifacts and other data makes a significant shift in the direction of cultural and natural resource management. The concept of cultural landscape and its strength as an organizing principle and bridging device grows out of listening to multiple perspectives and attempting to tack back and forth until some common understandings or agreements to respect variation are reached.

Archaeology is the sub-field of anthropology with most probably the greatest interaction with the public. What we do influences how the field is perceived and policies regarding the necessity and relevancy of archaeology in particular. Because of the more political nature of archaeology within cultural resource management, this venue is where archaeology confronts a public with the direct power to change the course of our practices. I view the recent call for the inclusion of more public in-input into cultural and

environmental programs as a call or an opportunity to practice the full range of anthropological inquiry.

And that sounds like not such a bad proposition.

I see the Hickory Bluff project as engaging a holistic approach, seeking out broad understandings through sound research and through an experiment in archaeological anthropology. The site and the approach can be interpreted in one way as thresholds. I end with an excerpt from a Van Morrison song.

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<sup>1</sup> Lyrics from *Dweller on the Threshold*, (Van Morrison/Hugh Murphy) Essential Music (BMI) from album, *Beautiful Vision* (1982).

<sup>2</sup> For more local uses of the term manito and words to express spiritual force, essence, and gods Rountree (1990:135n) discussion includes 17<sup>th</sup> century references to varied words for the term. From Spelman (1910) she cites the terms "Caukewis, Manato, Taukingsouke,[and] Quiacassack" to refer to lesser gods also called kwiokos. She cites Lederer's (1958 [1672], p. 13) observation that the Powhatan and other Indians used the term Okaee or Mannith to refer to the powerful creator deity. Another contemporary author listed Tanto as a derivative of the more northern word "manitu." Murray's (1792, reproduced in Brinton 1839) Nanticoke vocabulary includes the words 'mann!-itt' for 'god' and 'ahkee' for 'earth'.

<sup>3</sup> See Executive Order #13084, Coordination and Consultation with Indian Tribal Governments (63 Federal Register 27655, May 19, 1998) dated May 14, 1998; Federal Highways Administration, Department of Transportation programs, Policies, and Procedures Affecting American Indians, Alaska Natives, and Tribes (Dated 15 November, 1999); National Environmental Policy Act of 1969, 42 U.S.C. SS 4321, 4321 note, 4331-4335, 4341-4346b, 4347; Native American Graves Protection and Repatriation Act of 1990, 25 U.S.C. SS 3001-3013. The 1992 National Historic Preservation Act (NHPA) amendments place major emphasis on the role of Indian tribes, the most recent 1999 amendments in particular.

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# CHRONOLOGY, MATERIAL CULTURE, AND OCCUPATION CYCLES

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## INTRODUCTION

The Hickory Bluff Site covers an area over 5 acres in extent, on the east bank of the St. Jones River. It sits atop a prominent high spot at a major bend in the river. Over eight hundred 1-meter square units were excavated in various portions of the site. These excavations produced a large and diverse data set, which included over 85,000 artifacts.

Several types of chronological data were collected at the site. Organic material for radiocarbon dating was not abundant, but efforts were made to collect suitable samples from the most likely and secure contexts. At present, 22 radiocarbon samples have been submitted for assay. The dates returned range from 4,500 years BP through the historic period. Diagnostic artifacts included over 6,000 ceramic sherds and 250 projectile points. The points and ceramics indicate major phases of occupation dating to the Late Archaic, Early Woodland, and Middle Woodland, while small assemblages represent other temporal phases.

## RADIOCARBON DETERMINATIONS

A series of 22 radiocarbon dates have been obtained from different parts of the site, representing aggregate samples from features and level proveniences, charred nut hull fragments, and residue from ceramic vessels. The dates, reported as 2-sigma calibrated calendar year dates, span most of the interval from the late historic period through the middle portion of the Late Archaic period, around 3000 BC. While sampling of the types of material and proveniences was not systematic, the locations from which the samples were taken were varied enough that we believe the date range to be an accurate representation of the periods of site occupation, if not the consistency or intensity of site use during any given interval. The radiometric data were collected from several sources, and the results of the assays corroborate the chronology of the artifacts collected. The cluster of early dates is notable in that they are essentially identical, statistically, averaging about 2800 BC. Two of the four dates are aggregate samples from a single feature, while the other two were from hickory nutshell fragments recovered from widely separated proveniences.

## CERAMICS

There were over 8,000 ceramic sherds recovered from the excavations at Hickory Bluff, of which approximately 2,000 were large enough and bore sufficient attributes to be typed. The frequency distribution for the main types identified is shown in the slide.

Almost half of the typed sherds were identified as Middle Woodland clay-tempered wares – mostly Colburn, and a small amount of Nassawango. Another 28 percent consisted of Early Woodland steatite-tempered Marcey Creek. The only other well-represented type was Wolfe Neck, from the late Early Woodland – these accounted for almost 20 percent of the total.

A chart was created showing a form of seriation analysis using the conventionally accepted date ranges of each ceramic type and the aggregated frequencies of the types within 100 year

intervals. Note that the frequencies are based on sherd counts, not minimum vessel counts. The earliest wares, Marcey Creek and, to a minor extent Dames Quarter, account for the high frequencies early in the Early Woodland, while the clay-tempered wares combine with Wolfe Neck at the Early-Middle Woodland transition. There were relatively few sherds representing late Middle Woodland or Late Woodland wares, as indicated by the thin line at the top of the chart. The fall-off in the middle part of the Early Woodland is not necessarily an indication of a decrease in site occupation. Rather, it results from the lack of overlap in the accepted date ranges of the ceramic wares, and thus suggests that our understanding of these ranges is incomplete.

## POINTS

Point types from the Early Archaic through Late Woodland were present at the site. The greatest frequencies were among stemmed points, both large and broad-bladed forms from the end of the Archaic period (Koens-Crispin, Lackawaxen) and smaller stemmed points manufactured from the local gravels. These small stemmed, and occasionally side-notched points do not have good contextual or chronological data associated with them, but they are widely presumed to be Woodland in date. Thus we have applied the broadest acceptable range for their presence: that is, most of the Early and Middle Woodland subperiods.

A seriation graph for points similar to that constructed for ceramic types was constructed using the conventionally accepted date ranges of each point type and the aggregated frequencies of the types within 100 year intervals. Not included on the graph are two early points, Palmer and LeCroy, both of which were single representatives of their types. Inclusion of these points on the chart would have rendered the scale unreadable. Since they were individual finds that could not be confidently shown to indicate early site occupation, their presence is acknowledged, but they have been left off the graphic.

As the chart indicates, point frequencies increase near the end of the Archaic period, reach a maximum during the Early Woodland and decrease during the Middle Woodland. The dramatic fall-off in the Late Woodland reflects the small number of acknowledged point types from the subperiod (several forms of triangle) and the low frequency of occurrence of those points at the site.

## COMPARISON

In comparing the three datasets, it is apparent that the frequency peaks for points and ceramics tend to correspond in the Early and Middle Woodland subperiods. We fully recognize that the frequency of occurrence of ceramics and projectile points cannot necessarily be translated directly into intensity of occupation. We are, after all, dealing only with the stone and ceramic artifacts, which represent a small portion of the contemporary material culture from the site – estimates of the proportion range as little as 5 percent. Nevertheless, these data do give us an indication of the amount of activity that was ongoing during these periods.

There were fewer points from the Late Archaic period, even though there were more types present. In addition, radiometric data were less frequent from early periods. There were none to correspond with the Early and Middle Archaic points, which may be an indication that these artifacts were heirlooms or scavenged pieces, and do not represent occupations. While the lack of radiocarbon data from these periods could alternatively be a matter of sampling bias, it is more likely a question of preservation – that is, organic material, even when carbonized, is more likely to dissipate in a sandy sedimentary environment the longer it lies in the ground, thus resulting in a bias against older dates. Preservation may be better in the case of charred hickory nutshell, since it is a denser material than carbonized wood, and in fact some of the earliest dates from the site were from nutshell fragments.

The reverse of this is also true – organic preservation creates a bias toward younger dates. And thus we see the Late Woodland fairly well-represented by radiometric data, while there were comparatively few contemporary artifacts, such as triangular projectile points or thin-bodied shell or sand-tempered ceramics.

## CONCLUSIONS

To sum up, a wide range of chronological data was recovered from the Hickory Bluff site, including radiometric determinations and an assortment of temporally diagnostic artifacts. These data varied both in type and quality. The distinction in terms of data quality is important in the analysis and interpretation of site use. That is, the different forms of data are given different weight in the analyses – some used as primary data, some as corroborating data. For example, diagnostic projectile point frequencies suggest that there was increased activity at the site at the beginning of the Early Woodland period. Ceramic frequencies are comparatively high during this period, as well. A series of overlapping radiocarbon dates tends to corroborate this observation. In contrast, there is ambiguous or unclear evidence of occupations early in the Archaic period, with several diagnostic artifacts present and an admittedly biased radiometric database.

In general, the radiometric data from the site, which was collected from several sources, corroborated the chronology of site use implied by the artifact assemblages. Together, the data present a strong case for concluding that the heaviest periods of occupation were from the latter parts of the Late Archaic through the Middle Woodland. At this stage of our analysis, it is difficult to determine whether the large numbers of artifacts and features were derived from single, long-term occupations by large groups, or were the result of multiple re-occupations by small groups following seasonal rounds.

There are several avenues available for investigating the question of the intensity of site use, and all of them are based on assessing the formation processes behind the structure of the site: determining how the site that we encountered archaeologically was formed. One approach involves ongoing analyses of the spatial distributions of artifacts and features, using the chronological data we have outlined here. These analyses will be discussed in a subsequent paper. But first, we will examine the results of geoarchaeological investigations that focused on

the definition of site context, and the examination of feature formation and preservation, and the range of natural and cultural processes that have operated to structure the site.

# **Geoarchaeological Investigation at Hickory Bluff: Site Formation and Preservation within a Changing Holocene Landscape**

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## **TITLE SLIDE**

When I was a beginning student in geology, it was continually drummed into me that a good field geologist must always know where he=s at geographically and stratigraphically. I have carried this philosophy with me throughout my career and, as I became more involved in with archaeology, have come to understand providing just such an overall sense of time and place is the most basic and important perspective that geoarchaeologists can provide.

## **AREAL OVERVIEW OF SITE SLIDE (LOOKING SOUTH)**

Sadly, the "Big Picture" overview, which places a site within the broad sweep of the gradual, often millennium-long, fluctuations in Holocene environment, is often lacking. Happily, Parsons and DelDot understood that such a Big Picture, which can only be derived from interdisciplinary contributions, is required to truly understand human settlement systems. Along these lines, we are investigating a whole raft of issues at Hickory Bluff. These range from site pedology and geochemistry to sedimentology and depositional history. While much of this work is in progress, we'd like to present several pertinent ideas concerning site location and formation within a framework of constantly changing environmental conditions.

## **MAIN POINTS SLIDE**

During the next 10 minutes we will concentrate on several issues. Firstly, we will look at where Hickory Bluff fits into Holocene history. We'll offer some insights about the significance of the site locale as well as suggest why it was occupied when it was -- the where, when, and why of Hickory Bluff. We propose that people came to Hickory Bluff primarily to take advantage of resources provided by the river, which may strike you as an overstatement of the obvious. However, we hope to demonstrate how the availability of certain resources may have changed through time in response to rising sea level during the Holocene transgression of Delaware Bay. Consequently, the behavior and character of the riverine environment changed, as well as the resources it

provided, ranging from gravel availability to plant and animal resources.

Additionally, we will describe how soil weathering has destroyed much of the direct subsistence information needed to understand site structure and use. We will, however, also show you how soil characteristics of both texture and chemistry may provide ways of recovering at least part of that lost information.

Finally, we hope to provide some insights into the identification and characteristics of the range of features identified across the site.

Now, let's look at the site from an earth science perspective -- that is to say geographically and stratigraphically.

## **SITE OVERVIEW FROM OBLIQUE ANGLE, AERIAL VIEW**

Geographically, the Hickory bluff site is located just south of Dover. It lies along the St. Jones River about 10 km upstream from Delaware Bay. The surrounding area, as is true for most of Delaware, is underlain by the sandy Columbia Formation, which although these days goes under a variety of names, still represents late Pleistocene fluvial and shoreline deposits in the Delmarva. In the vicinity of Hickory bluff the Columbia is 10-20 m thick and is particularly gravel-rich B an archaeologically important factor.

Surface exposures of the Columbia weather into friable, acidic soils, especially under the influence of a deciduous forest cover. Subsequent erosion of surface sediments—particularly by eolian processes—is evident on a regional scale through the identification of surface features such as blowouts and low dunes within the vicinity of the site. On a smaller, site-specific scale, identification of similar processes is less obvious and somewhat masked by subsequent soil weathering and the land-modification practices of the recent past, particularly those related to agriculture.

The St. Jones River and all of its tributaries are entrenched within this landscape, channeling drainage and eroded sediment along a relatively—and progressively—short journey to the sea. Factors of climate, vegetation, relative sea level and transported sediment (bed load) all impart important influences in river behavior over time. As viewed in this slide, the river constituted a wide arcuate bend at this location, prior to channelization efforts that took place earlier this century. The area is presently a tidal backwater. As we hope to point out, factors that carved this wide bend into the Columbia Formation—although not attributable to the recent past—did influence archaeological site formation.

## **SITE OVERVIEW FROM ORTHOPHOTO COMPOSITE SLIDE**

The site's position on the landscape, and its situation in the St. Jones Valley, is critical. It presently lies at the approximate upstream limit of tidal influences in the valley, which is obvious in this slide. Note how broad the valley is below Hickory Bluff compared with above. Downstream from Hickory, the St. Jones meanders to Delaware Bay through a broad up-to-1-km-wide tidal marsh. Its channel is essentially drowned. This configuration, however, is recent. Prior to about 2-3000 BP the St. Jones valley was vastly different. In fact, the timing of these changes is stratigraphically significant

and may correlate with changes in site occupation.

## **AGE OF SITE OCCUPATION (<sup>14</sup>C GRAPH AND ARCHAEOLOGY)**

Based on <sup>14</sup>C chronology as well as the abundance of diagnostic ceramic and point types, Hickory bluff was intensively occupied mainly between 4000 and 1500 BP. Culturally this spans the Late Archaic through the early part of the Middle Woodland. Occupation was relatively minimal before and after this time. This begs the question of why? What is it about Hickory Bluff that made it so attractive between 2-4000 years ago? Especially, why was occupation---as reflected by the archaeological record---less intensive during the Late Woodland?

## **SEA-LEVEL RISE W/ CHARCOAL GRAPH FROM US-1 STUDY**

We believe that the answer lies in this diagram. The left side shows the Holocene transgression of Delaware Bay. It indicates that sea level rose to within 5 m of its present level by 4000 BP, just about the time intensive occupation began at Hickory Bluff. By 2000 BP sea level had risen to within about 1 m of today's level, which is just prior to the time site use changed and probably declined. We don't believe this timing is merely coincidental but rather reflects the intimate relationship between human occupation and the changing dynamics of the St Jones River during the Holocene transgression -- changes that made Hickory Bluff attractive for settlement.

The right side of the diagram shows the generalized depositional history of the St. Jones Valley. It was derived from cores taken during the large ADeIDot Route 1" study 2-3 km downstream from Hickory Bluff. As typically marks such a transgression, the base of the sequence is sandy and organic-rich fluvial deposits. It was dated to about 3500 BP in adjacent cores. These fluvial deposits were buried by over 3 meters of fine-grained organic-rich, tidal-marsh sediment after 2000 BP. In fact, most of the sequence was deposited by 1000 BP, which suggests that more stable conditions were achieved by then. Interestingly, abundant charcoal was also recovered between 2 and 3+ m, with practically none from the upper 1.5 m. (The basal fluvial sediments were not analyzed for charcoal.) Although the original researchers believed this marked a very dry period with extensive forest fires, we believe that it actually reflects just how intensively the Hickory Bluff environs, located just upstream, was occupied during the Late Archaic through early Middle Woodland Periods.

From these data we can see that changes in the Hickory Bluff archaeological record are clearly associated with dynamic shifts in the St. Jones River related to rising sea level. The period of prolific tool production, as well as most intensive occupation, is related to clastic (fluvial) sedimentation when people came to Hickory Bluff to collect the abundant stream cobbles. When cobbles could no longer be easily found due to extensive marsh infilling of the valley, site use, as well as occupational intensity, changed. The next few slides illustrate an informal model of the relationship between gravel abundance, sea level rise, stream dynamics, and human settlement.

## **MODEL OF GRAVEL BAR EXPOSURE Pre-4000 BP SLIDE**

During most of the past 100,000 years Delaware Bay was mainly dry. Consequently, streams draining into the Bay, such as the St. Jones, eroded deep valleys through most of the unconsolidated Columbia Fm. As is true with most down cutting systems, the St. Jones channel was probably straight, with few meanders. As it eroded the Columbia Fm, gravels may have been periodically exposed but were probably not aerially extensive. Additionally, valley walls probably were also soon slumped and vegetated. Consequently, outcrops of gravel in the Columbia Fm were probably hidden under soil and vegetation.

### **MODEL OF GRAVEL BAR EXPOSURE 4000-2000 BP SLIDE**

As sea level rose during the middle Holocene, the St. Jones Valley began to back-flood. By 4000 BP, Delaware Bay was within 5 m of modern levels and probably began to affect the upstream portions of the river near Hickory Bluff. Rising seas, which form base level for the St. Jones, resulted in a lowered channel gradient & a flatter, less inclined channel. This caused the river to begin to meander. Big arcuate bends in the river formed. As these meanders cut into valley walls, they stimulated erosion and exposed fresh outcrops of the Columbia Fm. Some of these were gravel-rich. Additionally, sizable point bars were formed that further winnowed the gravel. Continued transgression amplified the process. Meandering accelerated, as channel gradient became flatter. Within the channel more extensive point bars developed that included reworked older sequences. The valley aggraded with coarse-grained fluvial (channel) deposits. In fact, by 2500 BP, the valley bottom probably looked more like a braided stream sand-plain than a meandering channel flood plain. Indeed, people were attracted to the area both for the extensive, continually replenished, gravel deposits associated with active fluvial channels, as well as outcrop exposures Columbia Fm gravel.

### **MODEL OF GRAVEL BAR EXPOSURE post-2000 BP SLIDE**

After 2000 BP, however, the valley became fully tidal and extensive fine-grained and organic-rich sediments began filling the valley bottom. The St. Jones channel became drowned progressively upstream and could no longer carry coarse sediment. Point bars were buried or not replenished. Valley walls stabilized and vegetation and soil again covered Columbia Fm. outcrops. Gravel availability at this location was reduced. By the Late Woodland, Hickory Bluff was a different type of archaeological backwater (PUN!), perhaps more focused on aquatic resources within the newly formed tidal marsh.

### **BLOCK DIAGRAM MAP OF THE SITE LOOKING NORTH**

The presence of knappable materials, and the prolific distribution of tool manufacturing debris, are important components of Hickory Bluff. However, these components of the site reflect obvious preservation of these types of materials. Other aspects of the site occupation should indicate a wide range of other activities associated with this location. Unfortunately, because of the sandy nature of the

Columbia Fm., a lot of the record for this daily life is absent. Over the past 2-4000 years, the site has been leached and oxidized to such an extent that most of the organic material, including bone, ash, charcoal and shell is gone. Moreover, what little remains is probably skewed toward the more minor, Late Woodland occupation because it was subjected to less weathering.

Thus, one of our tasks was to recover some of this information. To this end, we analyzed the texture, geochemistry, pedology, and sedimentology of 280 samples collected from profiles, features, and regular grids in excavation blocks (Locus A and I). We looked at sand-grain distribution, texture, and a whole host of sediment characterizations, including 12 elements using ICP-MS. We certainly can't show you all this data, but will present a couple of the more interesting results concerning feature identification and phosphorus distribution from over 45 samples collected on a 1 m grid block in the Locus A.

### **Locus A Block Map of Fine-grained distributions**

Basin or pit features were often identified in the field by changes in the overall feel of the texture and consistency of excavated fill. Little or no differences were noted in color or contrast, two of the more common indicators of potential features. This distribution of fines within the Locus A indicates that several anomalies, which were identified in the field as potential features, actually show up texturally. Excavators' observations that features appeared to be softer actually reflect the increased relative sand content of feature fill. The cultural significance of these features is another story.

### **Locus A Block Map of Phosphorus and Calcined Bone.**

Cultural influences can intensify the additions of select organic substances across a site, in discreet areas such as features. The addition of quantities of plant and animal foodstuffs, waste, organic artifacts, and wood ash—as examples—can result in localized additions of distinctive chemical elements. As bone weathers, constituent elements (Ca, Sr, P, etc.) are released. Some of these elements are carried away by groundwater—especially in a sandy, acidic environment such as Hickory Bluff—while others are adsorbed on mineral grains and oxides. Although eventually these too are leached away, some can remain in the soil for quite awhile as remnant indicators. Such systematics apparently also functioned at Hickory Bluff.

Phosphorus distribution in Locus A, however, is intriguing. Comparison of the concentrations (counts) of calcined bone, about the only bone on the site, to phosphorus abundance is striking. Clearly, relatively high phosphorus is associated with abundant calcined bone. These results are encouraging, but also beg the questions: Do other areas of high phosphorus indicate where non-calcined (or green) bone once resided? If so, can we also look at, for example, the range of features identified across the site and discern what was once in them?

### **Soil-Feature Histogram and Feature Type Histogram.**

Comparisons of the abundance of phosphorus in all features with other soil

(non-feature) samples from throughout the site (the left side of this diagram) shows that although a great a variability exists, cultural features are generally higher and more variable. This is evident in the means and standard deviations. This variation in the feature data suggests that some differentiation may also exist for various types of features. These data (the right side of the diagram) show that the large basins are particularly high in phosphorous. FCR features are particularly low in phosphorus. Additionally, pedological and sedimentological data show that many of the large basins were excavated and then immediately back-filled B apparently with the excavated soil. Meanwhile, many of the FCR features—in contrast—remained in a highly leached, near-surface context. What implications these data impart concerning feature origin and significance needs to be further investigated in consideration of all archaeological, physical and chemical data.

### **Summary Slide.**

In summary, we believe that resources associated with the St. Jones River changed over time, in relation to stream dynamics associated with the Holocene transgression of Delaware Bay. In particular, the exploitation of stream cobble resources changed. As the St. Jones tidal marsh evolved through the Middle and Late Woodland, site use, occupation intensity, and the archaeological record changed accordingly.

We have also shown that despite harsh preservation conditions, some aspects of site character may be evident in the physical and chemical characteristics of site sediments. While these ideas need to be further tested in consideration of the archaeological data, promising trends appear evident, especially concerning the identification and characterization of site features.

**EXPERIMENTAL ARCHAEOLOGY**  
*Intimate Relations*  
*Between*  
*People and Nature*

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## **INTRODUCTION**

Site formation and geoarchaeological investigations have clearly demonstrated the intimate and often intertwined interaction of cultural and natural processes. In Delaware, there is a large debate concerning natural versus cultural origin of basin-shaped features, with some archaeologists favoring a "pithouse" interpretation whereas others favor a "tree-throw" interpretation. To tackle this problem, a systematic study of formation processes in and around the Hickory Bluff site was conducted: many tree-rots and tree-throws were observed and a total of 17 were excavated, and a variety of basin-shaped pits (a total of 8) were experimentally dug and observed over a two year span. This study has shown that there are complex relationships between natural and cultural processes, and that "either-or" interpretations are sometimes difficult to support.

## **TREE-THROW EXCAVATIONS**

The on-going efforts at the Hickory Bluff site have been the focus of the experimental excavations to date. A total of seventeen (17) bisections of tree-throws and tree-rots were accomplished, with the idea that these natural features may show parallels with many possibly cultural features found at the Hickory Bluff site and others throughout the state and region. These excavations were conducted by bisection to provide a profile view of each feature. Each excavation was dug and recorded, utilizing the established grid of the Hickory Bluff project.

The treethrow and treerot bisections accomplished at Hickory Bluff showed a marked resemblance to the plan and profile views of many of the known cultural features of the site and were dug in proximity to the known cultural areas. The similarities of the treethrow bisections show a deeper pit-like structure which could be construed as a storage area and there were ceramics, tools and debitage present. Of the 17 bisections completed, 15 of these produced substantial amounts of cultural material. Carbonized material was also found in each bisection, but was not sampled. Of the bisected treethrows and treerots, 6 were ascertained to be treethrows and 10 were treerots. The single remaining bisection was determined to be an historic pit. The treerots were found to contain a great deal of mulched soil and to possess less artifacts than the treethrow bisections. The treethrow bisections were heavier with artifacts and had inverted soil strata. These bisections were typically done in 1x2 m units and while displaying an amorphous shape to the actual disturbed area, still gave a feature-like profile upon completion.

In conjunction with the tree-throw and tree-rot units dug at Hickory Bluff, 5-10 tree-falls in the Kent county area have been noted, photographed, and in a couple of cases, excavated to determine any discrepancies or marked comparisons with the experimental units from the Hickory Bluff area. These tree bisections have shown similarities to both the cultural features and the Hickory Bluff treefall excavations, including a D-shaped pit in plan view with minimal debitage, but being located in a different soil, they tend to possess their own attributes as well in the form of their overall shallowness and low yield of cultural materials.

Supposed cultural features encountered in archaeological context may in fact represent natural disturbances, such as tree throws and rodent burrows (Strauss 1978). Such natural disturbances

may sometimes be difficult to distinguish from cultural features, especially in circumstances in which cultural material becomes included secondarily. For instance, a large number of terrestrial snails and small vertebrate bones may commonly become incorporated in open pit features as result of natural entrapment (Whyte 1988). While the bone may not necessarily be associated with the primary formation of the feature, it may provide evidence that the pit remained open for an extended period before it was filled in. Drawing a distinction between cultural and natural features may be complicated further when natural features, such as tree throws, are used for cultural purposes (Thomas 1981).

The idea of tree throws being used as a cultural occupation, while being somewhat unorthodox, lends itself to a bridging of the two distinct camps in the controversy previously described. One must allow for the likelihood of this manner of utilization especially if it is considered from the perspective of a hunter.

Having hunted and fished for all of his life, this author feels qualified to at least describe the use of tree falls in a variety of different circumstances. A treefall allows for a simple, natural camouflage within the forest, especially if it occurs in the vicinity of a well-used game trail. The size of a given tree-fall that would be utilized by a present day hunter is likely to have a root-ball of one to two meters in height, whereas, a prehistoric hunter would have found the size of a tree-fall within the primeval forests to be significantly larger on the whole. These natural windbreaks would provide a sheltered spot for a hunter to sit and retouch his weapons and tools, but would also provide a ready made blind for the hunt. Since many treethrows would occur in the vicinity of game trails, they would likely be utilized as such. The modern day hunter, armed with high-tech weapons, need not place himself immediately adjacent to a game trail. In contrast, the prehistoric hunter, with his less powerful weapons, would indeed have had to be in close proximity. It must also be mentioned that silence and stillness are an integral part of such a hunt, be it prehistoric or modern day and residual activities would be held to a minimum as a result. The paucity of artifacts in some features could be directly related to the fact that they are simply tree-throws utilized as hunting blinds which was followed by a shift to more direct occupation of the area. This does not imply a cultural event in every instance of a treefall, which contains prehistoric cultural material, but it does lend credence to the possibility of use.

The treefalls themselves present a welcoming refuse container even in the event that they are not utilized as a shelter of any sort. As was previously stated; of the 17 treethrows and treerots that were excavated at Hickory Bluff, 15 were shown to contain cultural material amounts similar to the levels found in the known cultural features of the Hickory Bluff site. The probability that the treethrows that occurred during the time of occupation were all utilized as shelters is quite unlikely, but the chance of their being used as dump sites is quite a bit higher, considering the length of occupation of the Hickory Bluff site which ran from the Late Archaic into the Early to Middle Woodland.

The treethrows and treerots that were excavated at Hickory Bluff have given us an excellent visual morphology and have provided a large body of data that can be utilized in comparative studies of past, present and future sites in order to determine the validity of the pithouse vs. treethrow arguments.

Treefalls seem to be a prime factor of floraturbation. Under gale-force winds or better, trees are likely to fall. When this happens, the soil strata and subsequent cultural debris are wrenched out of the ground and a shallow crater-like depression is left. As the rootball erodes, the artifacts and soil are redeposited in the depression and the surrounding area. This leaves a low-relief surface known as cradle-and-knoll topography (Malde 1964). After a period of centuries and/or millennia, the resulting treefalls can almost entirely rework the surface of a well-forested area (Waters 1992).

The natural vs. cultural equation is complicated further by the fact that the open pits of a cultural feature or a natural feature such as a treefall, will collect a large amount of organic matter along with a heavy influx of water from rain and snow. These conditions are quite conducive to the sprouting, growing and general nurture of tree saplings, which in turn can reach mature size and become treethrows themselves.

The possibilities of natural vs. cultural crossovers between the feature types seem endless. Is a given feature a cultural event that has been naturally reworked (e.g. cultural pit construction with incidental tree growth)? Or is the same feature a natural phenomenon that was utilized by aboriginal people (e.g. tree-fall hunting blind) containing residual cultural discards?

These questions are not answered simply, but this experimental study has allowed us to address them. The next section of this presentation which deals with the experimental feature degradation study conducted at Hickory Bluff, compares the dominant feature types found there with the analysis of the erosional characteristics of a series of similar, open feature types.

## **FEATURE DEGRADATION STUDY**

The feature degradation study was conducted over a two-year time span and is still ongoing. A series of pits of varying size and shape was dug and observed with a data recovery methodology which allows for a better understanding of the degradation process.

Eight excavations were dug in a staggered pattern along a partially cleared east-west strip at the southern end of the Hickory Bluff project area. One example of each of the three major feature types (the D-shaped “pit house”, the medium-sized basin and the smaller deep excavation) was constructed at each end of the area, with two backfilled features being used as a divider. The vegetation varied along the course of the strip, leaving the five western most basins (1-5) exposed to almost continuous sunlight during the course of the day and the three eastern pits in a much more shaded environment. Soil strata in this locus consisted of an A horizon which included a plowzone, an E horizon and a B horizon. Columbia Formation sands and gravels underlie the area and were found closer to the surface at the eastern end of the experimental plot and likely allowed for better drainage of those features in that vicinity since they did intrude into it. The observations made over the two-year period gave great insight into the degradation process, but also brought to light the need to expand on the variety of data recovery methods.

It was found in the opening months of this endeavor that the features were subject to extremes of weather and biological activity. It is possible that during the occupation phase of these feature

types, at Hickory Bluff, that the structures, that may have been erected over them, by the aboriginals, likely protected them from much of the breakdown that was observed. However, once abandoned, the basins would go through much of the same degradation that was documented in the two year period of this study.

The biological activity of the flora and fauna in the project area contributed heavily to the degradation processes, but also in some cases the flora served to protect the excavations from damage and decline. This was in the form of soil stabilization from root activity and sheltering from rain and sun.

Earthworm activity in every unit was the first faunal data noted. Their presence was immediately apparent at the first observations, even considering the often extreme cold of mid-winter. The effects of their tunneling and fecal deposits allowed for the soil strata to become mixed and when the rains ensued washed into the bottom of the excavations.

The extremes of storms and freezing conditions allowed for the slumping of soils into the features and the deposition of organic materials within their confines. This was well defined with the frost heaving of late winter which displaces a large amount of surface soil on the crystalline structures of the ground frost.

As the seasons progressed, it was found that soil desiccation was also a contributing factor of the infilling process. Those excavations that were located within the shaded area of the project tended to fare better in the extreme conditions, but were subject to an influx of more organic material in the form of leaf and branch fall. The depths measured over the 24-month period were prone to the most change during extreme weather events and changes of season. The larger basin features infilled as much as 43.5 cm in pit #1 and as little as 5 cm in pit #3. The heavy weather of autumn, winter, and spring caused an average depth change of about 10 cm.

The growth of vegetation in and around the features was quite rapid and as the seasons passed, it became apparent that the organic-rich soil of the basins was a natural environment for the nurturing of vines, mosses and saplings. The saplings noted were of species such as oak, cherry, hickory, beech, and poplar and were obviously the result of the chance falling of seed into an accepting environment. In an actual occupational situation, the seeds which may sprout from the bottoms of these abandoned shelters or storage pits, might be part of the aboriginal diet. It should be expected that a foraging culture such as the native occupants of the Delaware area would actively encourage the growth of certain fruit and nut producing trees and shrubs. It is not so difficult to believe that many of these food producing plants were intentionally seeded. Thus could we have the growth of oak, hickory, dogwood and a wide variety of the indigenous nut and berry flora of the Delmarva Peninsula. The natural inclusion of these seeds in the flora produced in the microclimates of the features in this study should not be of any surprise. These trees and bushes will also be found growing in the basins of treethrows and in the organic rich environs of rotting tree stumps. The natural growth of a forest is not likely to be heavily influenced by the diggings and subsequent occupation of an area by aboriginal people, but it would be somewhat enhanced by the concentration of seeds and the presence of healthy growing environments. The planting of a tree, whether intentional or accidental will still yield the basic components of a forest.

## CONCLUSIONS

As we are all well aware, the information gleaned from any given study tends to redefine the methodology used and determines the need for more exacting methods of data recovery. Nonetheless, the experimental project at Hickory Bluff has yielded a better realization of how open features infill and breakdown as a result of time, extreme weather conditions, and general exposure to flora, fauna, and the elements of nature in general. The mechanics of bioturbation and fluvial wash have been documented on a level as near to actual site conditions as possible. The bisections of the treerots and treethrows have given us visual and documentative guidelines to go by in future excavations and comparison studies. This should also allow us to reinvestigate data collected in the past with an eye on reinterpretation of questionable results.

The study of these many natural anomalies and artificially constructed basin features, has allowed for a broader understanding of the dynamics involved in the post occupational period of a given prehistoric site. Those that we are fortunate enough to discover and excavate have allowed us to interpret their existence and timelines in many different ways. We are still grasping for the understanding of the settlement patterns of the aboriginal people who left us with these mysteries. By experimenting with new possibilities, we can augment and better understand the collected data of the past, present and future.

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March, 19, 2000

Dear Michael and Dan,

For ease in preparing your discussions, below is our paper in outline/list form, which refer to our slides. **The main points we wish to make for you and the audience are in bold.** You are as versed as we are, in the ongoing (20-year) interest and discussions of the DE pit feature extravaganza. Our “draft” paper is attached. Thank you very much, we look forward to your assessments, critical input and directions.

p.s. as you know I am back in school at CUA, and lovin’ it, in order to get qualified-NPS regs. Please bear with us on this one, as you have over the past several decades. “New” archeology, processual, Binford et. al. hit it’s 40<sup>th</sup> birthday and Hodder’s et. al. postprocessual hit its 20<sup>th</sup> birthday! We are all dealing with the critic of each, (post – postprocessual) while trying together, everyone, within the Mid-Atlantic, to advance our profession.

Kevin Cunningham & Chris Egghart  
Semi-Subterranean Pithouse Blues, Cultural Constructions and/or Natural Features  
Multiple Working Hypotheses

**INTRODUCTION:** Thank FHWA, SHPO, DOT & 100’s of workers. DE Map. SR 1 a 50 mi. 17+ year multi-disciplinary proj. 1,000’s of sites discovered, 100’s of PH I & II’s and 35major excavations by 20 firms. Site avoidance. Field Methods w/pz sample & w/large scale site stripping of 300+/- acres of 25 archeology sites with **2,000+ pit features excavated-a staggering and unparalleled number never experienced before, discovered nor excavated on any other eastern US archeology sites.**

**PIT FEATURES:** Subtle-hard to see-detect, and excavate. **Of the total feature sample (n = 2,000 +) there are only approx. 25 postmolds, a small percentage having artifact assemblages, hearths and internal stratification-only horizontal.** Large variation in shape & sizes, ca. one-half to nine meters in length and width, and ten cm. to two meters deep. Few of the entire sample are dated, those that are, fall within the Early to Middle Woodland ca. 3,000 BC – 1,000 AD period.

**PAST THOUGHTS:** **Are we doing what we are doing because that is what we have been doing?** Either – or. Tree falls or anthropogenic. Same patterns, configurations, seen at tree falls, prehistoric and historic sites. **Similar methods and theories for 20 years. Answers given to these pit features, where/when data are available, presented in DelDOT Archeology Series e.g. Delaware Park, Leipsic, Snapp, Wrangle Hill, Pollack, Carey & Island, C-360 & Dover Downs.**

**NEW THOUGHTS, ATTEMPTS, POSSIBILTIES:** **Innovative, creative, unique, reflexive, divergent thinking, pre-understandings, site formation processes, multiple**

**meanings, multi vocal involvement-interpretations from all of our public(s), richness of the multiple intertwined cultural and/or natural possibilities.**

**Searching for specific histories, creating various narratives from the evidence.**

**Finding patterns undervalue the individual. Breaking away from past approaches, which bound people into particular modes of behavior over time. What do these features mean? Searching for all meanings and functions, through time and over landscapes within the social, ritual, economic and spiritual realms. Considering the framework of meanings and the practices of individuals.**

**There are no final answers, only more questions to investigate.**

**Construct our research into our field, lab, analyses, and interpretations to look for social, economic, ritual, and environmental explanations.**

**Take each and every feature previously excavated and re-analyze as individual artifacts and search for multiple patterns and meanings. Synthesize and create contexts and future research questions and directions.**

**END:**

**Most importantly, we must recognize that in the cultural and natural world, processes and events are far more complex than our intentionally simplified models. For the constructs of these features then, the challenge we face in the future is to insist upon the inclusion of all of our public(s), to develop ways to verify that these multiple intertwining forces are at work, and to tease out the multiple roles, each play in the process. Search for the individual agency and history. Our imaginations and culture only limit us.**

## Introduction

A curious and well-chronicled aspect of Delaware prehistoric archaeology is the occurrence of very large apparent pit features. These features take on various forms, but are commonly described as being D-shaped or as having crescentic or kidney-like plan (**SLIDE of classic D**). In cross section, the features typically exhibit one steep side, with the other flaring at a shallow angle. Considerable controversy surrounds these apparent features. In fact, most researchers are unable agree on a functional interpretation or even whether they are cultural in origin. For the purposes of discussion, the features are referred to as D-shaped anomalies. What sets these anomalies apart from other prehistoric finds typically recorded in the Middle Atlantic region is not only their large size, with many examples exceeding 3 meters in greatest dimension, but also the frequency with which they occur. The University of Delaware has excavated many hundreds of these anomalies on major sites in northern and north central Delaware. Hunter Research also identified a large number D-shaped anomalies during the Phase II and initial limited mitigation work at Hickory Bluff (Liebeknecht et al. 1997). Though prior absolute dates are few, these anomalies are generally attributed to the Delaware Woodland I period.

A majority of the large anomalies reported in the University of Delaware excavations have been presented as component remains of pit houses (Custer et al. 1994, Custer and Hsiao-Silber 1994, Custer et al. 1995). According to this model, the anomalies represent storage facilities located inside shallow semi-subterranean structures, all other evidence of which has been lost to plowing. While the pit house model retains its proponents, it has been rejected by a majority of researchers working in the state. Mueller and Cavallo (1995) have argued that the anomalies *primarily* represent tree throws, while leaving open the possibility that these could have been utilized or modified by aboriginal peoples. LeeDecker (1998: personal communication) strongly discounts the notion that the anomalies represent dwellings while noting the general absence of posts or other recognizable feature types normally associated with structure locations. Others have speculated that natural pedogenic processes are responsible for the phenomenon. Hayes suggests that the possibility of in-place tree rots should be taken into consideration (1998:personal communication).

Hickory Bluff provided an ideal opportunity to test the "Degraded Pit House" model. Present on the site were what could be described as "classic D-shaped anomalies. More importantly, most of the site fell within a wooded area that had escaped modern plowing (**SLIDE of HB woods**). The anomalies were also present in plowed contexts along the site margins, allowing for a direct comparison between their intact, and truncated configurations.

Prior to presenting the Hickory Bluff finds, a brief review of the evidence for semi-subterranean shelters in Delaware is in order. Semi-subterranean shelters are first reported by Griffith and Artusy (1975) at the Poplar Thicket (7S-G-22) and Island Field (7K-F-17) sites. At Poplar Thicket, a very large, shallow rectilinear pit feature was

identified. This pit exhibited very regular, steeply sloping sides and a flat bottom. Internal features, including a central hearth and numerous post molds were recorded. Griffith and Artusy (1975) also report very large flat-bottom pits from the Mispillion and the Warren sites. Radiocarbon dating and diagnostic artifacts firmly date these features to the Late Woodland period.

Investigations at the Delaware Park site in New Castle County identified nearly 200 sub-surface pit features of various sizes (Thomas 1981). Four of these features were interpreted as potential shelters. These features were very large shallow basins with both sloping, and flat bottoms. One example contained a small pit interpreted as an internal hearth. Also noted during excavation were *possible* interior and exterior post molds. A radiocarbon date of 1850 B.C. was obtained from one of the large features while a second yielded a date of 790 B.C..

Recent excavations by Parsons Engineering Science on the Black Diamond Site (7-NC-J-225) in New Castle County identified three very large, shallow basin features (**SLIDE of Black Diamond F-69**). Each of these exhibited steeply sloping sides and a uniformly level bottom. Two of the basins were very nearly square in form, while the third was somewhat irregular in plan. Of the two regular examples, one measured 2.0 by 1.90 meters while the other 3.4 by 3.5 meters. The former example contained clear evidence for posts along its interior rim (**Slide of Black Diamond F-9**). These large features are interpreted as the recessed floors of domestic shelters. All three examples had a small rock filled pit located just outside its southern limits. These features are interpreted as hearths associated with the structure locations.

Custer (1989) first presents a pit house finding at the Clyde Farm site (7NC-E-6A) were in an area of approximately thirty-five square meters, a number of features were discovered including a platform hearth, possible storage pits, and a pit house" (Custer 1989:197). A single radiocarbon date of 1005 B.C. was obtained from the platform hearth. Based on their horizontal spatial association, these features are interpreted as a household cluster (Custer 1989:198). In that regard, the large pit (house) feature, the platform hearth and a storage pit, together with a conjectural area of tool production are illustrated as an idealized "Feature Plot" (Custer 1989:187).

The concept of household clusters was applied to interpret the numerous sub-surface anomalies found on the Snapp, Carey Farm Leipsic and other major University of Delaware sites. On these sites, the anomalies are seen as the signature remains of plow truncated semi-subterranean dwellings. The conceptual template for this appears to be based on single finding made on the Snapp site (7NC-G-101). (**SLIDE of Snapp Feature**) Here a complex of features was encountered at the foot of a minor slope, protected from the extensive plow truncation evident across the rest of the site. This feature complex consisted of a large D-shaped anomaly set in one end of a much larger, shallow basin. A third pit was defined in the approximate center of the larger feature. These features were roughly enclosed by a pattern of nine, irregularly spaced post molds. Together these features are interpreted as a dwelling composed of a shallow "basement",

or living area, with a "sub-basement" storage facility located at one end. The central pit is interpreted as a hearth with the post pattern representing a superstructure constructed over the below grade house floor (Custer and Hsiao Silber 1995:43-52).

The interpretation of a remnant "sub-basement" to a semi-subterranean structure was applied to a large number of the Snapp anomalies, and extended to other University of Delaware sites on which the anomalies were present. (**SLIDE of Cary Farm from the air**) (Custer et al. 1994, Custer and Hsiao Silber 1994, Custer et al. 1995). For example, on the Leipsic alone, a total of 197 individual anomalies are interpreted as sub-basement storage facilities associated with dwellings, all other traces of which have been lost to plowing. (Custer et al. 1994:36-38).

The unplowed conditions at Hickory Bluff allowed for the Degraded Pit House model to be tested. A total of five very large D-shaped anomalies were excavated in unplowed contexts. These exhibited what might be called a classic form (**SLIDE of F-2**). Though one side typically flared to a short, shallow shelf, none showed the large "basement" or living floor. Repeated and careful examination failed to identify any evidence for post features of any other architectural remains.

As would be expected, the plowed anomalies were shallower in depth. An interesting observation can be made by comparing the plan configuration of the unplowed anomalies and the truncated examples. The anomalies within the tree line exhibit the "classic" flaring, D-shaped form, while the truncated anomalies along the site margins are narrower and crescentic in plan (**SLIDE of feature in backhoe strip**). However, when comparing the respective profiles, the lower portion of the intact D-shaped anomalies are very similar to the whole of the truncated examples. This would suggest that plan configuration is in part dependant on the degree of truncation. It also suggestive of a common formation process.

In summary, the large D-shaped anomalies excavated in unplowed contexts at the Hickory Bluff site do not support the Degraded Pit House model. No evidence of a "basement" living area seen, nor were any posts identified in association. Similarly, recent excavations by Parsons Engineering Science at the Fredrick Lodge site complex in New Castle County (**SLIDE of Frederick F-6**) identified a classic D-shaped anomaly adjacent to an area in which aeolian soils partially buried a Woodland horizon. Though the anomaly itself was plow struck, the degree truncation is thought to be minimal. Again, no evidence of a "basement" living area was noted, nor were any associated features identified. Based on these findings, the interpretation of these anomalies representing the signature remains of semi-subterranean houses is rejected.

Having rejected the Degraded Pit House model for the formation of the D-shaped anomaly, an alternative interpretation is presented. Numerous researchers have adamantly maintained that the anomalies represent simple tree throws (**SLIDE of multiple tree throws**). This is interpretation, too, is rejected. Contemporary tree falls are readily observable in wide variety of locations. The ground disturbance generated by these

commonly have a shallow, dish-like shape. What is clearly lacking, however, is a deep, trench-like gouge that is the defining characteristic of the D-shaped anomaly. In-situ tree rots must also be discounted as the formative mechanism. Deciduous tree root systems comprise a shallow, fast tapering web (**Slide of tree in trench wall**). Though these root systems typically extend outwards at least as far as the canopy spread, deciduous trees are remarkable in how little of their mass actually exists below grade. In essence, the footprint left by the passing of a deciduous tree is minimal. Simply put, if deciduous trees were to leave large gouges such as typical of the D-shaped anomaly, then there would be no such thing as an intact, pre-Late Woodland open air site virtually anywhere in the Middle Atlantic region.

This author, as well as others familiar with the phenomenon, have observed that the fill characteristics of the D-shaped anomalies are consistent with that of prehistoric features. Some anomalies yield distinctively elevated numbers of artifacts, indicating that they were open at the time of the occupation and probably used for refuse disposal. This makes them *de facto* cultural, regardless of their ultimate genesis. So while the D-shaped anomalies are often dismissed as tree throws, other factors suggest that they are cultural. In the following interpretive model, the D-shaped phenomenon is presented as both--as being both the result of a tree fall and as having a cultural origin. This model presents the D-shaped anomaly as constituting the physical trace of a tree fall that had been induced to occur by the site occupants. The functional purpose of this would have been primarily to open forest cover to enhance the propagation and growth of edible plant species.

Key to the Induced Tree Fall model is the fact that soils of the Delaware Coastal Plain are generally sandy and unconsolidated, allowing for easy excavation using primitive tools. In practice, a tree could be induced to fall by grubbing around one side, leaving the exposed roots in place (**SLIDE of Diagram**). A fire would be built to burn through the roots, killing the tree and leaving it unstable and an easy victim for the next storm. In this manner, a large number of trees could be brought down with a minimum of labor. At some point the resulting dead fall could be burned off to fully clear the area. It is recognized that girdling a tree would be equally effective, and that this practice was widely employed by both Late Woodland horticulturists as well as some early European settlers. The key difference is that girdling was undertaken within the context of full sedentism and formal plant cultivation. Once the forest canopy is destroyed, farm plots have to be actively tended to suppress understory and other secondary growth. By contrast, burned areas are free to be colonized by a variety of pioneering plant species, many of which are known to have constituted important prehistoric food resources (**SLIDE of open woods**). In addition, the use of fire to open forests would have had the ancillary effect of increasing the game carrying capacity of an area. Patchy woods in various stages of succession containing open zones and breaks in the canopy cover are far more productive game habitats than a homogenous climax forest.

At this juncture should be remarked that a healthy, climax forest is quite resistant to fire, and when it does burn, many trees survive (Farb 1961:153). Fully destructive forest fires normally occur only in times of moisture-stress, in conjunction with an abundance of fuel

due to storm damage, disease, or parasite infestation. Furthermore, the use of fire by Native Americans to drive game is well documented. These fire drives would have periodically cleared out the understory and consumed available deadfall, making a healthy forest even more resistant to a fully destructive burn event.

Peoples of the Delaware Woodland I are generally recognized to have a less than sedentary life way, sustained in large part by wild food resources. Seasonal availability of these resources and other factors dictated movements between occupation loci, quite probably within fairly regular and proscribed round. It is suggested that within this settlement round, the peoples of the Delaware Woodland I opportunistically modified the local environment via the felling and burning of minor forest tracts (**SLIDE**). This would have been done in order to expand the productive “forest fringe”, and to open areas to enhance the growth of certain edible plant species. Informal horticulture by way of the active promotion of what are normally considered wild plant species, should also be considered a possibility. Indeed, evidence for the intensive exploitation of certain food resources during the Delaware Woodland I is seen by the occurrence of large storage features (**SLIDE of storage pits**). Large, deep pits that can confidently be interpreted as storage facilities have been identified in such numbers on major Delaware Woodland I sites (Thomas 1981, Petraglia et. al 1998, add Puncheon Run) that they can almost be considered a hallmark of the period. These features are very regular in form (i.e. cylindrical, deep bowl-shaped) and bear little resemblance to the trench-like “sub-basements” presented in the Degraded Pit House model.

Also of note is the spatial distribution of the D-shaped anomalies within sites. On other SR-1 corridor sites excavated by the University of Delaware along the St. Jones and Leipsic rivers, the greatest number of D-shaped anomalies were documented well away from the core of the sites (Custer et al. 1994, Custer and Hsiao-Silber 1994, Custer et al. 1995). Some researches have used the occurrences of the D-shaped anomalies along sites margins and beyond, to argue against the Degraded Pit House model. In the Induced Tree Fall model, this is precisely where the anomalies would be expected to occur.

On a cautionary note, while the Culturally Induced Tree Fall model functions well as applied to the D-shaped phenomenon, it should in no way be used to interpret all large anomalies. A wide range of processes, both cultural and natural, act on and shape the archaeological record (**SLIDE of tree root or fall**). The Culturally Induced Tree Fall model itself is predicated on the interaction of natural and cultural elements. These interact in additional ways. Prehistoric peoples are likely to have utilized, expanded or otherwise modified any number of natural disturbances, including tree throws. By the laws of averages, pure tree throws are bound to be present on most archaeological sites. As archaeologists, also know that natural agents such rodents and roots are drawn to cultural disturbances. In fact, Charles Darwin, while marveling at the power of a root tip, once wrote : “It is hardly an exaggeration that the tip . . . thus endowed and having the power of directing the movements of adjoining parts acts like the brain of the lower animals (Farb 1961:100). Human behavior alone, will often leave a diverse and enigmatic

trace. The combination of natural agents working in concert with human activity serves only to complicate an already complex record.

In summation, findings at Hickory Bluff, as well as more recent excavations were used to critically examine the University of Delaware Degraded Pit House model. This model presents the many hundreds of large subsurface anomalies documented in north-central Delaware as the signature remains of prehistoric semi-subterranean structures. (SLIDE). The model is rejected. Also rejected is the notion that the anomalies primarily represent natural tree throws. It is recognized that natural tree throws are sure to be present on most archaeological sites. In terms of site formation processes, it is also recognized natural agents affect cultural disturbances, and vice-versa. However, it is hereby suggested that the distinctive D-shaped anomalies, well-documented in Delaware, are, to a large degree, the result of prehistoric peoples having induced tree falls within and around their occupation loci. The primary purpose of this activity would have been to clear forest cover and expand fringe areas to enhance and promote the growth and propagation of edible plant species. This would have been undertaken within the context of a Woodland lifeway marked by growing sedentism and an increasingly focused exploitation of wild food resources.

**Prehistoric Subsistence on Delaware's Coastal Plain: Observations on the Paleoethnobotanical Assemblage from the Hickory Bluff Site (7K-C-411)**

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**SLIDE INTRO:** A clear picture of human-plant relationships during prehistoric times on Delaware's coastal plain has been elusive to archaeologists. Our recent research at the Hickory Bluff Site included a comprehensive program of soil flotation and macro-botanical analysis which contributes to a growing regional archeobotanical database. In the time we have today, I'd like to present the results of our paleoethnobotanical research and discuss site environmental context from the perspective of plant procurement. Throughout, I'll make some comparisons with archeobotanical assemblages from other sites in the region.

**METHODS: SLIDE** A total of 28 2-liter soil samples were collected in the field during feature excavation - these were secured from unscreened fill collected from across the base of stratigraphic levels. Two distinct and prevalent feature types were sampled: 16 fire-cracked-rock (FCR) features and 11 basin features. In addition, 1 sample was taken from a fluvial geomorphic deposit as a control. **SLIDE** Soil samples were individually processed using a Flote-tech system. Recovery rates for small seeds averaged 87%.

**RESULTS: SLIDE** Flotation processing of 56 liters of feature fill yielded 6.17 grams of carbonized plant macro-remains, or an average density of 0.11 grams of archeobotanical material per liter of cultural fill. The samples secured from basin features were most productive. Recovered plant remains included native deciduous wood, hickory and walnut-family nutshell, a single carbonized seed, non-carbonized seeds, unidentifiable amorphous charcoal and unidentifiable rind-like fragments.

**SLIDE** Wood charcoal was generally fragmented and eroded - but over 55% of the sub-sample selected for identification was identifiable to the genus level. Upland hardwood species were predominant - hickory over 60%, oaks dominated by white oak group (27+%), black walnut, American chestnut, maple or birch species, black cherry. All species identified were native to project area, all represent useful taxa - for fuel, construction. The assemblage is composed entirely of canopy species; understory taxa are absent. The nutshell remains (hickory 96%, walnut family 4%) are consistent with the wood assemblage, and suggest that hickory tree resources were locally available and abundant. (- its good to know that the site is appropriately named)

**DISCUSSION:** One area of interest at Hickory Bluff is the relationship between functional areas as defined by feature type - particularly basin and FCR features. **SLIDE** The paleoethnobotanical data reveal some patterns: Based on calculation of percentage-presence of

nuts in both feature types, nuts are 2.5x's more common in FCR features than in basin features - perhaps indicating that these features were associated with wild plant food processing and consumption: more likely, the predominance of nutshell within FCR features results from these features being directly associated with burning processes - and perhaps the intentional use of high-oil hickory nutshell to produce hot, smokeless fire. Overall, carbonized remains occur more frequently in FCR features - wood charcoal occurs 1.4x's, misc. plant remains 1.6x's more frequently.

Non-carbonized and non-indigenous seeds occurred within 85% of the sampled features. Their presence is a cause for concern because plant remains not preserved by burning could not persist archaeologically, and it is probable that the recovered seeds are modern in origin and intrusive into archaeological deposits. The species recovered indicative of disturbed open-field, forest edge and wooded wetland environments. **SLIDE** Their presence may be explained by a number of factors, foremost by the stratigraphic complexity of the site, where sediments appear to have permitted the transport of organic materials through soil strata. Rodent activity, fluvial processes or the action of root growth and decay may also explain the introduction of these specimens into archaeological contexts. The presence of non-carbonized European, Asian and tropical American seed species at Hickory Bluff is similar to the pattern observed at other Delaware sites, including Puncheon Run, Carey Farm, Leipsic and Pollack.

Non-carbonized seeds are more abundant and ubiquitous in FCR features (*1.25 times as often, based on percentage pres.- ~3.5x's more abundant based on average fragments per sample*) than in basin features, perhaps indicating that the basin features have more integrity.

**SLIDE** Radiocarbon dates were obtained on floral material from 7 of the analyzed flotation samples - spanning Late Archaic through Late Woodland periods.

Clear subsistence data is absent from the Hickory Bluff assemblage - aside from hickory nuts, no comestible taxa were recovered. Wild plant foods are under-represented, and we found no evidence of plant cultivation at Hickory Bluff. Evidence for horticultural development in the middle Atlantic is sketchy, and there is no evidence for concerted plant cultivation on the coastal plain much before A.D. 800 with the adoption of maize horticulture. The Coastal Plain of Delaware is particularly lacking in clear chronology for plant cultivation - much of what we know has been inferred based on tools rather than clear archeobotanical data. Preliminary examination of the artifact assemblage from Hickory Bluff identified no agricultural implements and few (if any) tools associated with plant food processing. There is also a paucity of storage-pit-type features such as those associated with plant food caching.

Our research considers landscape context a key factor in site settlement. **SLIDE** The Hickory Bluff site is situated on a gently sloping Coastal Plain upland forest - the site enjoys proximity to a variety of other micro-environmental zones including wooded bottomlands, fertile floodplains, fresh-water marshes, and open water habitats. Settlement at HB was probably focused on traditional gathering economy which would have capitalized on the productive potential of all of these ecological zones on a seasonal basis.

**CONCLUSIONS: SLIDE**

- < analytically significant sample from securely dated contexts
- < assemblage shows focus on upland resource
- < limited subsistence data (*edible wild plants under-represented, no evidence of plant cultivation*)
- < landscape context should be considered to advance our interpretation of the full range of potentially important wild plants
- < assemblage concurs with regional pattern (mediocre preservation, slim subsistence data, presence of non-carbonize/non-native seeds, paucity of cultivated plant remains).

invite questions/discussion after the session

**THE HICKORY BLUFF LITHIC ASSEMBLAGE:  
STONE ARTIFACTS IN  
AN OUTCROP DEFICIENT ZONE**

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## INTRODUCTION

**(Title Slide)** The Delaware Coastal Plain, and Delmarva as a whole, has long been viewed as a lithic poor zone. Underlying formations consist of unconsolidated sands, clays and gravels. In such a setting, vein and nodule lithic outcrops are lacking. Also apparently lacking are larger clast cobble beds seen in streams along the western shores of the Maryland and Virginia Coastal Plain. Given this apparent scarcity of lithic resources, procurement models for Coastal Plain Delaware have focused, in part on known quarry sites in the Piedmont section of the state. At Hickory Bluff, however, direct evidence is seen for the extensive utilization of local pebbles for the manufacture of points and other tools, including possibly, Adena-like forms. This paper examines the utilization of these pebble resources at Hickory Bluff. Also examined is evidence of how certain on-site behaviors, such as utilization of fire-cracked rock and the curation of cobble tools, may have been influenced by the relative scarcity of larger clast stone. Some unusual ground stone artifact finds, including two incised gorgets and an ulu or semi-lunar slate knife are also presented.

Excavations at Hickory Bluff recovered nearly 40,000 lithic artifacts. Detailed analysis of this vast assemblage is ongoing and full data is not yet available. **(Slide of Pebble, Core and Pebble Point)** However, several key attributes were clearly recognizable during excavation. One of these was the occurrence of small bipolar cores. Also present were split pebbles, primarily of jasper. Together these finds suggest the on-site utilization of local pebbles for tool manufacture. More direct evidence of pebble utilization is seen in a small, stemmed point form common on Hickory Bluff. Many of these points exhibit pronouncedly curved cortex on their bases.

**(Slide of Backhoe trench)** Potentially usable pebbles, primarily of jasper, quartz, and quartzite, occur in abundance within the Columbia sub-strata. The Columbia Formation consists of heavily reworked Pleistocene-age sand and gravel deposits, and is present across the region just below the surface soils. Columbia formation gravels were identified on site in a backhoe trench excavated along the edge of the bluff. **(Slide of J.T. Sorting)** A study of the local gravels was undertaken at Hickory Bluff to assess their suitability as raw material. Gravel samples were retained from the backhoe trench and from nearby streambeds. **(Slide of Jasper Histogram)** This graph demonstrates that as a whole, jasper bifaces easily fall within the size class of the locally available pebbles. The bottom histogram charts the size class frequency of finished jasper points. Results of the gravel study show that many Hickory Bluffs points fall within the size parameter of local material. Further, the suitability of this material for knapping was amply demonstrated by the production of replica points from gravels retrieved from the Puncheon Run streambed located on the opposite St. Jones bank. (Keith Googins: personal communication) Full results of the Hickory gravel studies, synthesized with an analysis of the site lithics, will be incorporated in the final site report.

The investigations at Hickory Bluff, and the Puncheon Run excavations, provided ample evidence of the utilization of abundant local gravels for tool manufacture. **(Slide of Pebbles)** We see, therefore, the title of this paper notwithstanding, that the Hickory Bluff environs are lithic poor in a relative sense only. Certainly in comparison to other coastal regions such as the lower Virginia Eastern Shore, the Atlantic Barrier Islands and the outer reaches of Carolina Sounds, much of Delaware, with its abundant pebble resources, should perhaps be considered lithic rich.

## NON-LOCAL LITHICS

The full lithic analysis of the site has not been completed. In brief, jasper, quartz and quartzite dominated the assemblage. A significant portion of this material is thought to have been derived from local gravel beds. Argillite and rhyolite are present as minority types. These source materials are generally not resilient enough to remain intact in reworked fluvial contexts, and are therefore likely to have been brought to the site. The occurrence of these non-local materials, as well as occasional exotic cherts, is indicative of long distance transport, trade or site visits by peoples from outside the Delmarva Peninsula—or perhaps most likely, a combination of these factors.

**(Slide of Pebble Point Lineup)** The small contracting stemmed point assemblage at Hickory Bluff is of interest for reasons beyond their apparent pebble manufacture. Morphologically, these points overlap with the widely distributed, Middle Archaic Morrow Mountain type. In Delaware, however, these contracting stemmed points can confidently be placed in the Woodland period. At the Whitby Branch Site, in New Castle County, contracting stemmed points been recovered in feature context radiocarbon dated to calibrated range of 790-400 B.C (Jacoby et al. 1997:38). A suite of Middle Woodland radiocarbon dates, with collective calibrated range of 75 B.C.- 410 A.D., were obtained on the Puncheon Run Site complex, located on the St. Jones directly opposite Hickory Bluff. On the Puncheon Run Site complex, contracting stemmed specimens, colloquially referred to as “pebble points,” were the dominant type (The Cultural Group Louis Berger & Associates, Inc.1998:10). At Hickory Bluff, the contacting stemmed points seem to correlate with Wolf Neck and clay-tempered ceramic types, the dates for which span the Early/Middle Woodland transition. The interesting observation is that these points bear certain similarities to the Adena type. Attributes reminiscent of Adena points are the curvate blade form, together with moderately pronounced, sloping shoulders. Stems range from the lobate form of the classic Adena, to a more narrow, tapered configuration. Despite being manufactured on pebbles, secondary flaking is usually fairly precise and symmetrical. Overall, the Hickory Bluff examples grade from being reminiscent of classic Adena points, to what might be considered distant variants, with intermediate forms also represented. As a group, the points may well be derivative of, or influenced by the Adena tradition, and their form resultant of the Adena template being subjected to the limitations of a pebble-based reduction industry.

Lacking from the Hickory Bluff assemblage are items such as Blocked-end pipes, Flint Ridge blades, hematite cups or similar exotic finds known to be associated with Delmarva Adena mortuary locations. However, **(Slide of Gorgets)** two fragmentary gorgets were found and these *may* represent an Adena connection. One specimen is a medial segment with incised triangular shapes and cross-hatching on one face. The second is split lengthwise across the perforations and is damaged at both ends. It is notched and incised on the long edge. The biconical perforations clearly show use-wear. Interestingly, some of the breaks on both gorgets are polished. **(Slide of Gorget Edge)** One broken edge also has been ground, possibly to create a notch to be used with the one remaining hole. In form, the Hickory Bluff gorgets differ from those reported from the nearby St. Jones Adena site. However, notched and incised gorgets were found at the Sandy Hill Adena Site on the Maryland Eastern Shore (Ford 1976:82). Gorgets that appear intentionally broken or symbolically killed are sometimes found in mortuary contexts. However, the ground and polished breaks on the Hickory Bluff specimens suggest that they continued to be handled or worn after the damage had been incurred.

The gorgets were recovered from the south-central portion of the site, roughly 8 meters from one another outside of any known features. Artifacts recovered in spatial association with the gorgets included mixed debitage, fire-cracked rock, and both Marcey Creek and clay-tempered ceramics.

**(Slide of Ulu)** A third ground slate artifact found at Hickory Bluff is a semi-lunar knife, or ulu. The term ulu comes from the contemporary Eskimo semi-lunar blade tool. In the past, the striking similarity of the slate semi-lunar knife to a known Eskimo material trait spawned extensive *speculation* ranging from Arctic migrations to the Northeast, to a connection to the Maritime Archaic or even an ancient pan-Arctic or circumpolar culture. What *is known* is that slate ulus have a rare but widespread occurrence along the Atlantic Coast from Labrador through the Carolinas (Turnbaugh 1977:91). Ritchie originally defined semi-lunar knives as a Laurentian trait. Interior finds of ulus, however, are now seen as peripheral to their more prevalent coastal distribution (Turnbaugh 1977: 92).

The greatest number of reported finds have been from between New Jersey and Massachusetts (Turnbaugh 1977:87). Locally, we are not aware of any other examples from Delmarva. However, McCary (1974:55-58) and others have reported their occurrence in coastal southeastern Virginia and along the Dismal Swamp margins. Good excavation contexts for ulus are exceedingly rare. At the Bent Site in the Mohawk Valley an ulu was associated with a Normanskill horizon, ca. 2000 B.C. (Turnbaugh 1977:87). At the Wapanucket #6 site in Plymouth County, Massachusetts, an ulu was recovered from a cremation burial radiocarbon dated 2350 B.C. (1977:89). Another ulu was reported for this site which yielded a second radiocarbon date of ca. 2300 B.C. from a hearth feature context (Ritchie 1965:35).

Based on its narrow outline in comparison to other complete examples, the Hickory Bluff ulu appears to have been extensively used and resharpened, and it retains a sharply ground, beveled edge. The spalls and potlids suggest that its fragmentation was due to burning. The ulu was recovered in the same site vicinity as the gorgets, and in spatial association with a small fire-cracked rock cluster (Feature 296). This feature returned a Late Woodland date. Also recovered in close spatial association with the dated hearth was a large, untyped, stemmed projectile point. It is likely that point, ulu, and hearth are representative of two or perhaps three separate cultural deposits.

**(Slide of FCR excavation )** While local pebble resources were undoubtedly utilized on Hickory Bluff for tool manufacture, the scarcity of larger clast stone is likely to have influenced some on-site behaviors. As a general observation, fire-cracked rock on Hickory Bluff was small and highly fragmentary. It appears that some fire-cracked rock was repeatedly utilized until it was too fractured to be of practical use before being discarded. **(Slide of F-296)** Interestingly, carbonized material from three of four fire-cracked rock hearths subjected radiocarbon testing, yielded Late Woodland dates. This, despite the Late Woodland occupation being relatively minor in scope. These dated features consisted both of small FCR clusters, and a large, formal platform hearth. **(Slide of F-46)** Hickory Bluff essentially constituted a surface site. Assuming that the dates are correct, it is plausible that the fire-cracked rock used in constructing the Late Woodland

hearths was scavenged from earlier features associated with dominant site components. An in-situ Late Woodland reuse of the large platform hearth should also be considered a possibility.

**(Slide of F-229)** Another interesting behavioral aspect the Hickory Bluff site lithic assemblage is the apparent caching of both raw materials and finished tools. Feature 229 consisted of a concentration of 70 unmodified quartz and jasper pebbles. The pebbles lay on single plane representing a prehistoric surface that had narrowly escaped plowing. In size and material, the component pebbles matched what is available in local gravel beds.

**(Slide 1 of F-202)** Feature 202 represents a completely different type of cache. This feature consisted of a small pit, partially lined with ceramic sherds and containing two small cobble tools. A granite block capped the pit itself. **(Slide 2 of F-202)** Distinctive wear on the cobble tools indicated that they were likely utilized in tandem as a platform and pestle. This wear was very delicate and precisely placed. A specialized function for these items, such as an apothecary kit for preparing medicines or pigments, seems reasonable.

**(Slide of F-294)** A third type of cache consisted of a cluster of three larger cobble tools. Wear on these examples was rough and fairly random, suggesting they had been utilized for general hammering and/or grinding purposes.

In presenting these feature as different types of caches, a strict functional interpretation is implied. The very word cache means to store for later use. As archaeologists, we often tend to look at behavioral residue only in economic terms. Assistant chief Charlie Clark, our Nanticoke partner in the Hickory Bluff endeavor, has been quick to take issue with this. Charlie Clark, citing Native American reverence for the earth and the role it plays in traditional views, has suggested that the act of burying artifacts may actually have carried powerful symbolic or religious meaning. In this context, Feature 202, with its carefully interred cobble tools comes to mind. The pit's partial lining with ceramic sherds may have been meant to package some perishable material. It is plausible that the whole of the feature constituted an offering of some sort. More importantly perhaps, Charlie Clark has reminded us that in the traditional Native world, spiritual/ceremonial concerns, and everyday economic activities may be closely intertwined. The acts of taking of an animal or the scheduling a berry harvest may have had imbedded in them, certain ritual elements. In that regard, seemingly mundane features such as this grouping of cobble tools could be reflective of a ceremonial behavior or religious belief. Most archeologists would interpret the feature on the screen as useful cobble forms having been stored in a shallow pit in anticipation of a return site visit. A Native American observer may see the same stones as having been returned to their rightful place after following their use, and that the person who performed this act may have been, in a small way, reaffirming his or her relationship with the earth. These two viewpoints, as divergent as they may seem, should is no way be seen as mutually exclusive. In fact, they could well compliment each other.

On a personal note, I must say that having a Native American voice on the Hickory Bluff project has proved to be stimulating and rewarding in ways I could not have anticipated. While Charlie Clark and myself may have our differences in what we see on site, I feel that listening to his ideas and views has, in a very real way, made me a better archaeologist.

**(Slide of Delmarva Map)** In summation, the Delmarva Peninsula has long been considered to be a lithic poor zone. Previous lithic procurement models for the area have focused in part on relatively distant, point sources. The undertaking of such medium and long-range lithic procurement trips carries with it implications for group mobility, territory and other considerations. By contrast, the findings at Hickory Bluff provided ample direct evidence for the utilization of local and abundant pebble resources. Given the diverse and productive ecological environment of the Delaware Coastal Plain, the scarcity of larger cobbles and absence of vein or nodule lithic outcrops should in no way be seen as a determining consideration in prehistoric settlement. A simple reminder should be that food is more important than specific lithics. Peoples of the area adapted quite well to the local conditions. In that regard, a number of behavioral interpretations can be drawn from the Hickory Bluff lithic assemblage. One of these is the apparent caching or curation of useful cobble forms. Some recycling and reuse, particularly of fire-cracked rock, may also have been practiced. Long distance trade or transport is evidenced by the presence non-local lithics and the occurrence of ground slate, and exotic cryptocrystallines. We also see direct evidence for the employment of a pebble-based lithic technology specifically adapted to the parameters of the locally available raw material. Finally, but not least importantly, we have been reminded that in the traditional Native American world, economic activities and the religious and ceremonial realms may have been intertwined. Ceremonial behavior, therefore, may well have played a part in shaping even the more mundane aspects of the archaeological record.

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