



## New Research Directions in the Northeast

Over the past few decades, archaeology in the Northeast has seen an increase in innovative methods, including residue analysis, drone use, 3D modeling and printing, metal detection, stable isotope tests, chemical evidence for tobacco use, geomorphology, and new directions in consultation. This year's conference highlights several of the novel methods explored throughout the region. This theme builds upon last year's focus on the *curation crisis* facing our discipline and includes continued discussions of the researcher's role in responsibly dealing with archaeological data.

### Conference Schedule

#### Morning Session

- 9:00 Registration and coffee
- 9:30 Introduction: Brennan Gauthier, Chair
- 9:45 **Sean Rafferty:** *New directions in Northeast archaeology: methodology and archaeometry*
- 10:15 **Ora Elquist:** *The utility of residue analyses at Northeastern archaeological sites*
- 10:45 **David E. Leslie & M. Gabriel Hrynick:** *Stable isotope applications to season of occupation at archaeological sites: a view from the Maritime Woodland*
- 11:15 **Zachary Singer:** *3D scanning and 3D printing technologies for documenting archaeological materials*
- 11:45 Questions and Discussion
- 12:15 Poster viewings and Lunch (on your own)

#### Afternoon Session

- 1:45 Business Meeting
- 2:00 **Kevin McBride and David Naumec:** *Battlefield and landscape archaeology: problems and prospects of metal detector surveys*
- 2:30 **Nathan Scholl:** *Soils and geomorphology: understanding sites through geoarchaeological research perspectives*
- 3:00 **Peter A. Leach:** *Geoarchaeological applications of ground-penetrating radar and consumer-grade drones in New England archaeology*
- 3:30 **Brennan Gauthier:** *Landscapes and LiDAR: the future of section 106 review at the Vermont Agency of Transportation*
- 4:00 **VT Agency of Transportation:** *Video Presentation: Unmanned Aircraft Systems in Transportation*
- 4:30 Questions and Discussion

Poster presentations listed on back cover.

# *New Research Directions in Northeast Archaeology*

Sarah Sportman and Jaclyn Nadeau

For over 35 years, the Conference for New England Archaeology (CNEA) has provided a forum for professional and academic archaeologists, as well as students of the discipline, to discuss important themes in the archaeology of our region. Recent conferences have addressed the diverse topics of Paleoindian research, Black archaeology in New England, Native American consultation and collaboration in 21st century archaeological practice, and most recently, the vitally important issue of the archaeological curation crisis. This year, we chose to focus on new directions in archaeological research in the region. This topic arose out of the sense that, despite the long and rich tradition of archaeology in the northeastern United States, we need to bring archaeology in the region up-to-date, to reinvigorate the field, conduct research that can be more broadly relevant, and more widely disseminate it.

This issue is tied to serious obstacles currently facing archaeology in northeastern North America: funding challenges and the troublesome decline in graduate programs over the last few decades. The options for undergraduate students interested in pursuing a graduate degree in archaeology with a focus on the pre-contact period in the Northeast are now limited to a handful of programs, meaning that in the near future there will very likely be a shortage of qualified, experienced, young pre-contact archaeologists with graduate degrees. As many of our seasoned and dedicated archaeologists reach retirement age, this issue has the potential to seriously impact the ability of the region's archaeological firms and state agencies to meet Section 106 and state and local regulatory obligations. It will also result in a shortage of experienced academics who can train future generations of archaeologists in the Northeast.

Historically, much of the work carried out in the Northeast has been provincial and focused on local and regional issues like trade networks, settlement patterns, regional typologies, and local Native groups. Our regional data sets, however, are also applicable to broader anthropological themes such as human dispersals, adaptations to rapidly changing environments, the spread of formal socioeconomic exchange systems, transitions from foraging to horticultural and agricultural economies, and indigenous responses to colonialism. Such topics transcend regional boundaries and are of interest to the global archaeological community. In order to increase our competitiveness for funding at the university level and justify the cost

*"We need to bring archaeology in the region up-to-date, to reinvigorate the field, conduct research that can be more broadly relevant, and more widely disseminate it."*

of analysis in Cultural Resource Management budgets, we must highlight the research potential of the archaeology of the Northeast region.

Archaeological thought and archaeological methods are moving in new directions. There is an ever-expanding list of analytical procedures, theoretical paradigms, and data gathering techniques. This is exciting for the field in general as it means we have access to the types of information that can lend real insight into past lifeways. It is important that we integrate what we can where it is appropriate. Whether in academic research or technical reports, we are responsible for staying current, for doing more than counting, weighing and storing artifacts. Incorporating these techniques also gives us the opportunity to test old models and refine our current understanding of the prehistory of northeastern North America often with the help of previously excavated collections. For example, Elquist's presentation considers the efficacy of protein and microresidue analysis for enhancing our understanding of ancient diets in New York and New England. Stable isotope analyses, like the one presented here by Leslie and Hrynick, further expand our knowledge of seasonality and subsistence practices. These are two specific uses but, as Rafferty will discuss, the use of functional studies in archaeometry is a field with broader implications. This principle extends beyond artifact studies. Leach, Scholl, McBride and Naumec will examine the utility of employing metal detectors, drones, ground penetrating radar and other tools to improve the assessment of geomorphology, site context, and interpretation. We can even use digital techniques to make archaeology and archaeological data available to a wider audience a point which Singer will later make in his talk. In brief, these methods are out there, we should use them, we should make them part of any report or research agenda because they deepen our comprehension.

The goal of this year's conference is to showcase new research methods and results, while also educating the archaeological community about the accessibility, cost, and broader applicability of those methods. We are all aware of the limitations placed on our work by budgetary concerns. As you listen to and consider the methods and results presented here today, we ask you to keep an open mind and consider the possibilities these methods offer for your own projects and areas of interest. While some of the methods and analyses discussed may prove prohibitively expensive, others are surprisingly affordable. There was a time when analyses like radiocarbon dating and petrographic analyses seemed excessive and expensive, but today they are regularly included in research designs and project budgets. It was the demonstrated usefulness and success of such methods that resulted in their eventual standard application.

***“While some of the methods and analyses discussed may prove prohibitively expensive, others are surprisingly affordable.”***

## *New directions in Northeast archaeology: methodology and archaeometry*

Sean Rafferty

Associate Professor, University at Albany

Recent decades have seen a host of methodological developments for archaeology. Many of these involve high-tech applications for the analysis of archaeological residues and materials. This paper summa-

rizes the most promising of these applications, discussing relevant case studies and future directions. Specific attention is paid to those applications that can help determine the function of prehistoric material culture.

## *The utility of residue analyses at Northeastern archaeological sites*

Ora Elquist

Project Archaeologist, PAL Inc.

Protein residue and other microresidue analyses are not new techniques, but they are infrequently used on archaeological assemblages in New England. Frequently cited reasons for this are the general belief that the technique doesn't work, and other practical considerations such as cost. Given the poor preservation at Northeastern archaeological sites, such techniques show

substantial promise and utility for capturing classes of otherwise invisible data. Examples of the application of such technique from the Old Place Neck Site in Staten Island, New York, and other sites in New England demonstrate the usefulness and practicality of such techniques for gathering important data on diet and seasonality.

## *Stable isotope applications to season of occupation at archaeological sites: a view from the Maritime Woodland*

David E. Leslie (University of Connecticut) and M. Gabriel Hrynicky (Bates College)

Paper read by Sarah Sportman

Stable isotope ecology has the potential to provide archaeologists with detailed seasonal information about human habitation in the past, this is particularly true when

stable isotope methods are teamed with sclerochronology. Past work on the transition between the Middle and Late Maritime Woodland Periods in the Quoddy Region of Maine and New Brunswick, a diverse ecological setting, has resulted in two models of human subsistence practices. Sanger (1996) proposes the Quoddy Tradition, suggesting the region was predominantly occupied by

*Stable isotope applications continued*

cold season, broad spectrum foragers focused on shellfish collection and the exploitation of other marine resources. Black (2002) proposes a more dynamic subsistence strategy with increased logistical mobility focused on insular forays. Stable isotope data from shell middens at Devil's Head, a Middle/Late Maritime Woodland site in Washington County, Maine, are examined to shed additional light on subsistence practices during this period.

Stable isotope values ( $\delta^{18}\text{O}$ ) were derived from powdered archaeological shell sampled at the terminal growth band. These data provide useful estimates of season of occupation, sea surface temperature, and the paleoecological setting of the Devil's Head site.

*3D scanning and 3D printing technologies for documenting archaeological materials*

Zachary Singer

PhD. Candidate, University of Connecticut

Archaeologists study material culture to gain insight into human behavior in the past. Some material culture, however, can only be studied on a restricted basis due to issues with material degradation, fragility, rarity, and privacy concerns. 3D scanning and 3D printing technologies can pro-

vide researchers and the general public with enhanced opportunities to study material culture by creating digital repositories and printed models. I will present a case study of methods used to document archaeological materials via 3D scanning and 3D printing and explore the benefits of these technologies.

**Morning  
Session**

*Battlefield and landscape archaeology: problems and prospects of metal detector surveys*

Kevin McBride and David Naumec

Metal detectors have long been recognized by battlefield archaeologists as relatively simple, effective, and inexpensive remote sensing tools of significant value for identifying and assessing battlefields. Their utility has not been as widely accepted by non-battlefield historical archaeologists and few archaeologists employ them on a regular basis for site surveys and examinations. Part of this reluctance may in part be due to the notion that metal detectors are associated with looters or unethical amateur detectorists such as the National Geographic Channel's "Diggers" Television

Show, or the technology is unreliable without extensive experience and training. Widespread use of various metal detector technologies and methods by the Mashantucket Pequot Museum and Research Center has clearly demonstrated the utility of these technologies in battlefield surveys. Battlefield surveys have also recovered hundreds of non-battle related objects that give a perspective on past land use activities that documents alone cannot.

**Afternoon  
Session**

**Afternoon  
Session**

*Soils and geomorphology: understanding sites through geoarchaeological research perspectives*

Nathan Scholl

Principal Investigator, Gray and Pape, Inc.

In conjunction with archaeological investigations, a geomorphological study performed on landforms and their contexts within a landscape can add significant interpretive value and understanding of an archaeological site. Many geomorphological and geoarchaeological studies involve the descriptions of the soil and sediment profiles that compose the landform (or landforms) an archaeological site may be found on or within. Geologic profiles can be obtained from various sources, including the wall profiles of archaeological excavations, hand driven soil core profiles, or mechanically obtained soil and sediments cores. This information provides context to the landform, or landforms, on which a site had developed over time, and how these tapho-

logic processes have shaped the archaeological record. The information gleaned from the geologic profile of a site can be used to better define the nature of both surficial and buried geological deposits (including cultural deposits), examine the depositional history of a site's landforms, and compare them to similar landforms within the region. This talk will focus on how geomorphological investigation prior to and during archaeological investigation can produce better site contexts and increase interpretive narratives.

*Geoarchaeological applications of ground-penetrating radar and consumer-grade drones in New England archaeology*

Peter A. Leach

Department of Anthropology, University of Connecticut

This talk will focus on geoarchaeological mapping of New England archaeological sites, landscapes, and subsurface environments. I will discuss ground-penetrating radar on New England archaeological sites to demonstrate the scale and resolution of this

non-invasive method. Numerous examples of GPR surveys on historical sites and cemeteries will highlight the applicability of GPR surveys to a wide range of environments and site types. I will also detail recent low-flown, consumer-grade drone surveys in New Hampshire coastal environments and a large, topographically complex historical cemetery in Connecticut. I will show examples of sub-cm resolution,

*GPR and drones continued*

georeferenced digital elevation models and aerial photograph mosaics derived from digital photogrammetric methods. UAV data will then be compared with publically-available LiDAR and ortho-

photography to demonstrate the strengths and weaknesses of each method.

*Landscapes and LiDAR: the future of section 106 review at the Vermont Agency of Transportation*

Brennan Gauthier

Vermont Agency of Transportation

The Vermont Agency of Transportation (VTTrans) is beginning to utilize emerging technologies to identify and document cultural resources in advance of highway infrastructure projects. VTTrans, in response to Tropical Storm Irene, is now proactive in acquiring LiDAR data for large swaths of Vermont roads, and has a system in place for on-demand UAS acquisition. These datasets are inval-

uable resources for the identification and documentation of previously unknown historic period archaeological sites and landforms within a generalized roadway APE. This approach has led to a reduction in project turn around, and the information gathered during the surveys are useful to a range of archaeologists, historic preservation specialists, planners, engineers and geomorphologists.

**Afternoon  
Session**

*Video Presentation: Unmanned Aircraft Systems in Transportation*

Presented by Brennan Gauthier

In collaboration with the UVM Spatial Analysis Lab, VTTrans is leveraging Unmanned Aircraft Systems for surveying, emergency response, bridge inspection, and environmental resource identification. This technology is saving time, saving money, and reducing the risk involved in approaching these

tasks on the ground. This presentation incorporates a recent video demonstrating the use of new UAS planes and the future of low level aerial photogrammetry in addition to upcoming VTTrans projects for the upcoming year.



# Research Abstracts

The CNEA encourages members to submit short research abstracts detailing recent and ongoing work in New England. These abstracts facilitate research interactions and conversations and have been an important part of the annual conference for 37 years.

To submit an abstract for the 2016-2017 newsletter, please send your title, text (~300 words), and any related figures to: [cnea.membership@gmail.com](mailto:cnea.membership@gmail.com).

## *Update on the Waterman Site House, Marshfield, Massachusetts*

### RESEARCH ABSTRACT

Ross K. Harper

AHS, Inc., Storrs, CT

Research and analysis of the buried 17th-century Waterman House site is near completion. The site was discovered by Archaeological and Historical Services, Inc. (AHS) during a cultural resource management survey in the town of Marshfield. Excavations indicate the house was an earthfast "hut" or "cottage," representative of the earliest dwelling forms in Plymouth Colony. Measuring approximately 20 feet

long and 14 to 16 feet wide, the somewhat trapezoidal-shaped house had a small cellar with an open and sunken hearth situated almost two feet below the ground surface. Other house features include a circular sub-floor food-storage pit, and a small enclosed porch entrance on the east side. The house was built with two construction techniques: post-in-ground framing for the main structure,

and palisade walls on the south side of the house and the porch, which were likely built to buffer the house from the prevailing winds and storms from Cape Cod Bay. The hearth was likely recessed as a wind-resistant measure. The house burned down after only a few years of occupation, a common fate of the period, and the site was never occupied again. Thousands of domestic and architectural artifacts were recovered. The house is attributed to Robert Waterman and his wife Elizabeth (Bourne), who married and settled in Marshfield in 1638. The house represents the only single-component First Period house from Plymouth Colony to be extensively excavated and is revealing new and detailed information on the architecture and lifeways of the period. A full technical report is forthcoming.

*"The house represents the only single-component First Period house from Plymouth Colony to be extensively excavated..."*

A crossmended redware pot/butter pot from the ca. 1638 Waterman Site in Marshfield, MA.





## *Food and Diet at Old New-Gate Prison and Copper Mine, East Granby, Connecticut, 1790-1819*

### RESEARCH ABSTRACT

Sarah Sportman

Senior Archaeologist, AHS, Inc., Storrs, CT

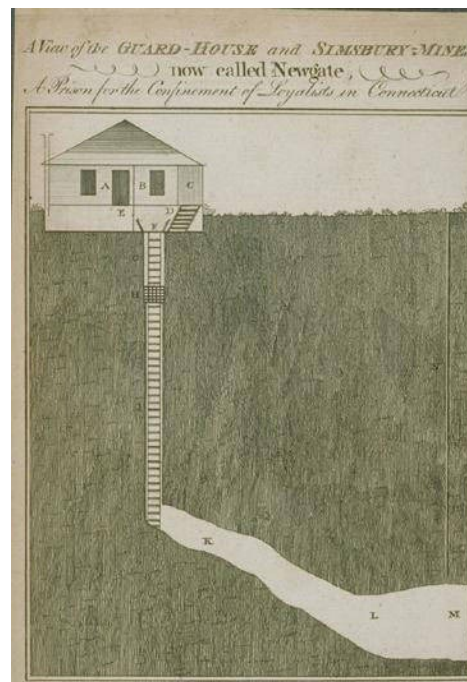
In 2013 Archaeological and Historical Services, Inc. (AHS) conducted a multi-phase archaeological survey at the National Historic Landmark Old New-Gate Prison and Copper Mine in East Granby, Connecticut, prior to planned repairs to the ca. 1790 prison guard-house. The excavations revealed stratified, state prison-era deposits dated to 1790-1819. These deposits contained nail-manufacturing debris, architectural items, domestic artifacts, and over 1200 well-preserved animal bones. The analysis of these materials is ongoing and includes a long-term research project to analyze the faunal material, which represents the vestiges of meals of inmates and guards.

The initial stage of the faunal analysis focused on taphonomy, species representation, the food procurement system, and the quality of the prison diet. Preliminary analyses indicate that as expected, the bulk of the diet was derived from domestic animals that arrived on site as preserved or butchered cuts of meat. However, while documentary sources indicate a diet comprised primarily of beef and pork, the faunal remains indicate that mutton played a similar role in the diet. The assemblage also included small numbers of other species including cod, unidentified fish, chicken, pigeon, dove, and squirrel.

Contemporary first-hand accounts from state-appointed inspectors and visitors suggest that the prisoners' diets were inadequate and of poor quality and some inmate accounts complain of near starvation. The preliminary analyses of the fauna suggested that the assem-

blage exhibits signs of intensive processing, including multiple types of butchery marks on individual specimens and percussion marks and fracture patterns related to marrow-extraction. Such patterns are characteristic of food-stress and/or starvation conditions. Analysis of the faunal remains is ongoing and will address the rate of fragmentation in the assemblage, the frequencies of processing marks per fragment, evidence of multiple processing events, and the types and angles of fractures. This data will help to clarify the extent of processing and, in conjunction with the documentary record, elucidate the dietary conditions at the prison.

**“Such patterns are characteristic of food-stress and/or starvation conditions.”**



**New-Gate guardhouse and mines, 1781  
(photo from CT Historic Illustrated).**

## *UMass 2015 Summer Field School in Historical Archaeology*

### RESEARCH ABSTRACT

Eric S Johnson

Research Assistant Professor and Director, Archaeological Services

University of Massachusetts Amherst

The UMass Summer Field School in Archaeology lives again! This past summer, UMass Archaeological Services, the UMass Department of Anthropology, and the Emily Dickinson Museum sponsored a summer field school. We investigated four areas of the Emily Dickinson Museum property in Amherst, Massachusetts.

At the site of a former conservatory (a nineteenth century version of a greenhouse addition) attached to the Dickinson Homestead, we excavated a trench extending from the edge of the present building, through the conservatory footprint into the south (front) yard in order to better understand the stratigraphy and construction and landscaping sequences in this area. The trench recovered part of a small trash pit or concentration of artifacts predating construction of the ca.1840 east

house ell. The latter find will warrant further excavation to determine its extent and integrity before the conservatory is rebuilt.

We began exploring the area behind the house for evidence of a former barn that the museum would like to rebuild as a visitors' center. Although the barn foundation has remained elusive to this point, the 2016 field school will excavate further here with the goal of pinpointing the foundations and exploring various work areas within and around the former structure.

In the southeast corner of the property, we tested the site of an early twentieth-century (post-Dickinson) tennis court in order to assess its archaeological potential because the museum plans to recreate an heirloom fruit orchard there. Excavation confirmed the area's use as a tennis court (a tennis court marking pin and the remains of a clay surface were recovered), and indicated that all A and B soil horizons had been removed. It was concluded that the planting of the heirloom fruit orchard is unlikely to affect significant archaeological resources.

Testing in the wooded area northwest of the existing garage indicated minimal disturbance and revealed artifacts including a shoe shank that may be from trash deposits associated with the Dickinson family. Further systematic investigation of this portion of the property may identify and delineate discrete refuse deposits or other features such as outbuildings and garden beds.

*"The 2016 field school will excavate further [the barn] with the goal of pinpointing the foundations and exploring various work areas within and around the former structure."*



## *Public Engagement Award for the Pethick Field School*

### RESEARCH ABSTRACT

Jessica Watson and Sean Rafferty

University at Albany

The Schoharie Archaeological Field School at the Pethick site in Central Bridge, New York is a long-term collaborative project between the University at Albany (UAlbany) and the New York State Museum (NYSM) that recently (2015) completed its 12th consecutive field season. This spring, the program was awarded UAlbany's President's Award for Exemplary Public Engagement, a prestigious honor that recognizes the hard work of the site's principal investigators and field directors over the years.

Dr. Sean Rafferty of UAlbany and Dr. Christina Rieth of the NYSM, Principal Investigators for the project, along with field directors Steve Moragne and Jessica Watson and past Technical Assistants Jaime Donta, Jaclyn Nadeau, and others, have taught over 100 students during fieldwork and the local community of public schoolchildren, Boy Scout troops, Schoharie County historical societies, and other area colleges.

The site is a multi-component village area that dates as far back as approx. 2500 BP and saw repeated use through the historic period. Academic research at the site has included lithic debitage studies, microartifact and activity area analyses, faunal reports, ceramic classifications and sourcing, and GIS work. Many of these have been published in *Northeast Anthropology* and will be discussed in this year's poster session of the CNEA.

One of the key strengths of the program is the public engagement and community service opportunities, the likes of which are becoming more and more common at sites around New

England. Each season, the program dedicates two full days to public outreach and invites the local community to witness archaeology in action. The program encourages community members to bring personal artifacts to the site for identification and to assist program students with excavation. These open houses are a major event for the field school, drawing in diverse crowds that include students' families, local residents of all ages, and even the former Commissioner of the Education Department and Deputy Secretary of Education, John King. During her 2014 visit, State University of New York Chancellor Nancy L. Zimpher praised the program, stating "this is what we should do in every domain, work with our partners to advance knowledge, prepare professionals" (Bazille 2014). Since 2006, over 2,000 people have visited Pethick during the public days, and many others visit throughout the season, providing abundant public outreach opportunities. Numerous newspaper articles and online blog posts cover the open houses each year, boosting attendance and awareness.

The Pethick archaeological field school will continue in 2017.

**"This is what we should do in every domain, work with our partners to advance knowledge, prepare professionals."**

**Nancy Zimpher,  
SUNY Chancellor**



**Field students at the 2015 Pethick site excavations, Schoharie, NY.**

## Posters

1. Chloe Bazinet, UMass Amherst. *Kampoosa Bog: Forest Management in the Northeast.*
2. Meghan Cole (Geoscience Undergraduate) University of Southern Maine. *Malaga Island Geochemistry; Sedimentology of a Historic Archaeological Matrix Dating 1865-1912*
3. Ora Elquist, PAL. *Preliminary Analyses of the Susquetonscut Brook 4 Site: A Late Archaic Residential Base Camp in Eastern Connecticut.*
4. Erin Flynn, PAL. *An Archaic House Structure in Southern New England: Insights from the Halls Swamp Site and Beyond.*
5. Kristen Jeremiah, PAL. *Resource Processing and Procurement Down by the Brook: Archaeological Excavations at the Susquetonscut Brook Site 11, Lebanon, Connecticut.*
6. Pauline LaBelle (BA in Geography-Anthropology) University of Southern Maine and GIS Master's Program University of Edinburgh, UK. *Reconstructing the First French Settlement in North America*
7. Jaclyn Nadeau, University at Albany. *An Analysis of Eastern New York Debitage Assemblages: Combining Stage Models and Flake Attribute Data*
8. Jaclyn Nadeau, Jessica Watson, Steve Moragne, Sean M. Rafferty, and Christina B. Rieth, University at Albany and New York State Museum. *Archaeology in the Schoharie Valley: The Pethick Archaeological Field School.*
9. Hayley Trickey, UMass Amherst. *Anthropology Answers Questions You Didn't Know You Had: How can a Bus Shelter be more Interesting than a Fountain.*
10. Joseph N. Waller and Alan Leveillee, PAL. *Villages, Horticulture, and the Narragansett: Native American Settlement and Resource Exploitation along the Southern Rhode Island Coast ca. AD 1300 to 1400.*
11. Erica Wolenccheck, UMass Amherst. *The Mount: The Home of Edith Wharton.*

### 2015-2016 Steering Committee

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For general inquiries to the CNEA Steering Committee, please contact [cnea.membership@gmail.com](mailto:cnea.membership@gmail.com)

*Many thanks are given to the Vermont Archaeological Society for hosting the 2016 CNEA meeting.*

We're on the web!



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