

The Bulletin

Journal of the New York State
Archaeological Association

NUMBERS 131-132

2017-2018

ISSN-1046-2368

Centennial Edition





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The Bulletin

Journal of the New York State Archaeological Association

David R. Starbuck, Editor

ISSN 1046-2368

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Published by the New York State Archaeological Association.

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Or downloaded from the NYSAA website <http://nysarchaeology.org/nysaa/>

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Layout and Printing Mechanical Prep, Publishing Help by Dennis Howe, Concord, New Hampshire

Printed by Speedy Printing, Concord, New Hampshire.

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Front Cover Photographs

The collage of photographs on the front cover are taken from several of the articles in this issue of *The Bulletin*, which are devoted to the growth and development of the New York State Archaeological Association (NYSAA) over the last hundred years. The collage is a small representation of the many men and women from diverse disciplines who made major archaeological discoveries, established scientific approaches to archaeological studies, and contributed to the formation of NYSAA. The photographs can be found on the following pages with text that identify them and describe their contributions.

Editorial

After many years of dedicated service to *The Bulletin*, Charles Hayes III and Martha Sempowski have now earned a well-deserved “retirement” and passed on the reins of our journal. This must truly be bittersweet for them because they have made *The Bulletin* of the New York State Archaeological Association one of the finest state journals in the country, and they have created a legacy of professionalism and dedication to scholarly research that is truly enviable. As the incoming editor, I am totally indebted to Charles and Martha for the very high standards they have established and maintained, and we are all most grateful to the Rochester Museum & Science Center for the many years they have provided an institutional “home” to our journal.

Transitions, of course, take a bit of time, and it became necessary to make this a double issue of *The Bulletin* for the years 2017 and 2018, rather than feverishly trying to rush out a volume at the end of 2017. A quick 2017 journal might have pleased some of our members, but no incoming editor wants to be remembered for unedited, non-stop bloopers!

In charge of layout we now have publisher Dennis Howe of Concord, NH, who has worked with me in preparing journals and newsletters for other archaeological societies for over 35 years. Dennis is an experienced professional who will work hard to make this as attractive a journal as possible, and perhaps our most immediate and obvious change is to introduce a color cover for each issue.

Turning now to the contents of the 2017-2018 *Bulletin*, the first four articles were presented at the Centennial Meeting of the New York State Archaeological Association at the Woodcliff Hotel & Spa in Rochester, New York, on April 15-17, 2016. It thus is appropriate to call this a “Centennial” publication of NYSAA. These opening articles are followed by a series of general submissions, covering many aspects of both prehistoric and historical archaeology throughout our state. There truly is “something for everyone” in this volume.

With this return to our normal publishing schedule, the officers of NYSAA are eager to share with you the results of archaeological research in our state, and we look forward to providing you with lively, scholarly articles for many years to come!

David R. Starbuck

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Centennial Reflections on the Growth and Transformation of the New York State Archaeological Association, 1916-2016*

Sherene Baugher, Cornell University,
President NYSAA (2010-2018),
Finger Lakes Chapter

This article is a reflection on the growth and development of the New York State Archaeological Association (NYSAA) over the last hundred years. In 1916, NYSAA was formed. The NYSAA, through its programs, preservation activities, and publications, has been able to share the members' enthusiasm and interest in local archaeology with the public. With each passing decade chapters were added to NYSAA. Membership expanded and NYSAA welcomed people from diverse disciplines and encouraged them to join the growing numbers of professional and avocational archaeologists. By the late 1960s and early 1970s American archaeology was changing with the advent of historical archaeology, Cultural Resource Management (CRM) work, and NAGPRA. NYSAA membership, chapters, and programs reflected these changes.

Introduction

The history of the New York State Archaeological Association (NYSAA) is intertwined totally with the people and events that have transformed archaeology within New York State. The archaeologists who played key roles in unearthing major discoveries and expanding the research questions often were members of the NYSAA. Some of these key professional archaeologists in the first fifty years of NYSAA were Arthur C. Parker, William Ritchie, Marian White, and Robert Funk. But amazing archaeological achievements over the past 100 years were not made by just a small handful of individuals but by a large community of professional and avocational archaeologists working throughout the state. The NYSAA has played a pivotal role in disseminating archaeological information to colleagues and to the public through chapters, conferences, and publications.

Robert Funk (1997) and Paul Huey (1997) have written two excellent overview articles on the general development of research in prehistoric and historical archaeology in New York State since the colonial period. However, this article will provide a perspective on the role played by the NYSAA over the past century. The first half of this article will cover 1916 up to 1966 with a focus on the formation and activities of the early chapters. The second half of the article will cover ma-

jor turning points over the past fifty years in both New York State archaeology and in the NYSAA because they are interconnected. This second half of the article will briefly discuss major changes in New York State archaeology through federal, state, and municipal legislation, the creation of cultural resource management firms, and its impact on the NYSAA and its chapters. It will also cover the United States Bicentennial, celebrations and research on wars including the War of 1812 and the French and Indian War, which all involved NYSAA members.

Beyond military sites, the excavation and interpretation of historic sites has become an increasing part of the research and publications of NYSAA members. While NYSAA's early years focused on excavating sites in rural areas, the past 40 years has seen the growth of urban archaeology. The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) changed the way NYSAA members approached both Native American sites and interact with any descendant community. Over the past 100 years, NYSAA conferences, chapter lectures, excavations, and publications have reflected these broader changes in the field of archaeology, and the expansion in the research beyond pre-contact Native American archaeology has included the historical archaeology of diverse ethnic and racial groups. But first we will start with the historical background and events leading up to the creation of NYSAA in 1916.

Background to the Creation of NYSAA

The 19th and early 20th centuries were a time when New York State community members became very interested in local history. Local historians began compiling the history of their towns and counties, such as W. W. Clayton's *History of Onondaga County* (1867), or I. N. Phelps Stokes' (1915) 6-volume opus *The Iconography of Manhattan Island, 1498-1909*. In the late 19th and early 20th centuries dedicated avocational archaeologists also were unearthing and recording the prehistory of New York State. In western New York, Frederick Houghton, an educator, a principal in Buffalo public schools, and a lecturer in education at the State Normal and Training School (now known as SUNY Buffalo State) was an active avocational archaeologist for almost three decades (Anthropology Buffalo State 2016). His focus was on Iroquoian sites in

*This article was peer reviewed. We are grateful to the reviewers for their helpful input.

western New York and some of his early articles were: "The Indian Occupancy of the Niagara Frontier" (1909a), "Report on the Neuter Cemetery, Grand Island, New York" (1909b), and "The Characteristics of Iroquoian Village Sites of Western New York" (1916). Houghton systematically studied Seneca sites and tried to arrange them in a chronological sequence (Funk 1997:9). In central New York Episcopalian minister Reverend William Beauchamp became very interested in local archaeology, history, and American Indian cultures. The New York State Museum published many works by Beauchamp on American Indian history and culture. His numerous archaeological publications included: *Aboriginal Chipped Stone Implements of New York* (1897a), *Polished Stone Articles used by the New York Aborigines Before and During European occupation* (1897b) and *Perch Lake Mounds* (1905). Beauchamp's *The Aboriginal Occupations of New York* (1900) was "the first comprehensive survey of Indian sites within the state's borders" (Funk 1997:7). In New York City, William Calver and Reginald Bolton, two engineers who were avocational archaeologists, carefully excavated and published their work on Native American and European American sites, including Revolutionary War sites. Some of their early 20th century articles from the quarterly bulletin of the New-York Historical Society were later republished in a book, *History Written with a Pick and Shovel* (1950). Other people, sometimes called "relic collectors," worked in various parts of the state. Examples were Robert Hartley and Percy Van Epps, farmers near Amsterdam. They were involved in local government as town historians, and both worked on sites in the Mohawk Valley (Bernhardt 2016:4-8). Both Hartley and Van Epps wrote articles about their discoveries and about Native American artifacts for local newspapers, but they were collectors and did not keep records of their excavations (Bernhardt 2016:4-8).

In the early 20th century, the few professionally trained archaeologists working in New York were usually affiliated with museums. For example, the American Museum of Natural History supported the archaeological work of Alanson Skinner (1909) on Staten Island. Over the years, Skinner's work was primarily focused on coastal New York (Funk 1997:8), although Skinner did produce a work on Iroquoian archaeology (Skinner 1920). The Peabody Museum funded excavations in 1903 by Mark Raymond Harrington and Arthur C. Parker on Seneca sites in western New York (Colwell-Chanthaphonh 2009:68-83). Both Skinner and Harrington left New York to work in other states, but Parker focused his research on New York. Arthur C. Parker, a Seneca Indian on his Father's side and European American on his Mother's side, was the "first Native American to be a professional archaeologist" (Colwell-Chanthaphonh 2009:5). In 1906, Parker was hired as the first full-time, salaried, archaeologist for the New York State Museum in Albany (Fenton 1968:18; Funk 1997:8). Parker's earliest archaeological publication was in 1907 and thus began a long and successful archaeological career. In 1922, Parker produced his major pioneering effort, *The Archaeological History of New York*. This work, which is still referred to, is



Figure 1. Arthur C. Parker (photo courtesy of Rochester Museum and Science Center).

Parker's major synthesis of New York State's prehistory (Funk 1997:9). In 1924, he became the Director of the Municipal Museum in Rochester, later renamed the Rochester Museum & Science Center, a post he held until his retirement in 1945 (Sullivan 1992:4). Parker's prominent role at both the State Museum and the Rochester Museum & Science Center helped in the formative years of the NYSAA (Figure 1).

The major achievement resulting from the growing public interest in New York State's archaeological heritage was the establishment of the New York State Archaeological Association (NYSAA) in 1916. Parker was the professional archaeologist who worked with avocational archaeologists, such as Alvin Dewey, the general manager of the Lake Ontario Water Company, to create the NYSAA (Kapches 2017:7). In 1915, Parker "envisioned the formation of an archaeological society which would gather together all archaeologists, professional and non-professional, as well as collectors within the state, into one organization" (Ripton 1966a:58). The goal was to create an organization where professional and avocational archaeologists could work together to study, preserve, and protect New York's archaeological sites (Ripton 1966b:1). After meeting for six years, the NYSAA filed with the Board of Regents of the

University of the State of New York to become an educational corporation (NYSAA 1922a). In 1922, NYSAA was granted a provisional charter, and in 1927 NYSAA received its permanent “Absolute” charter from New York State (NYSAA 1922b, 1927). The goals of the organization were (NYSAA 1922a):

- 1) To promote the study of New York State archaeology;
- 2) To encourage the cataloguing and preserving of archaeological collections;
- 3) To record the results of the scientific excavations;
- 4) To preserve and protect archaeological sites within New York State; and
- 5) To create a public appreciation of New York State’s archaeological resources.

These goals have continued to be NYSAA’s goals throughout the organization’s 100-year history.

The Early Years of NYSAA, 1916-1950

With the founding of NYSAA, there was a hope of having chapters of the organization in various parts of the state. In 1916, the first NYSAA chapter was formed in Rochester. It was named after a famous Rochester citizen, Lewis Henry Morgan, the “Father of American anthropology” (Ripton 1966b:2). By 1921, the chapter members included prominent citizens such as the Mayor of Rochester, Clarence Van Zandt, and George Eastman, the founder of the Eastman Kodak Company, avocational archaeologists such as Frederick Houghton and William Beauchamp, and professional archaeologists Arthur C. Parker and William Ritchie (Sempowski 2005:1).

The Morgan Chapter in Rochester was not only the first chapter, but for many years they were the NYSAA. From 1916 until 1950 the Morgan Chapter acted as the organizational center for the NYSAA with the goal that other chapters would form throughout the state (Ripton 1966b:5, 6, and 16). Morgan Chapter members promoted excavation, research, and publications in local archaeology, and their influence extended beyond the borders of New York. Alvin Dewey, President of the Morgan Chapter, and Arthur C. Parker, founder and later President of NYSAA, encouraged Rowland Orr, Director of the Ontario Provincial Museum, to form Ontario’s version of NYSAA (Kapches 2017:7). The Ontario Archaeological Association, formed in 1919 and modeled after NYSAA, was short-lived and was officially terminated by the Province of Ontario in 1932 (Kapches 2017:7-8). Fortunately, Parker, Dewey, and other Morgan members were more successful in encouraging New York State archaeologists to form chapters in other parts of the state. The method that was used was to encourage a group to form a chapter, to hold meetings, and to later apply to become an official chapter of NYSAA. In 1918, an archaeological group in Cooperstown, calling themselves the Leather Stocking Chapter, was short-lived, never achieving legal membership as a chapter of NYSAA (Ripton 1966b: 9, 12). In 1923, there was a Franklin Benjamin Hough group working

in the Watertown area (Ripton 1966b:12). In 1927, it became a chapter of NYSAA, and at the official first chapter meeting the speakers included Arthur Parker and M. Raymond Harrington (*Watertown Daily Standard* 1927:16). While there is not much written information about this chapter, it was still active until the 1970s (Tim Abel, personal communication 2018). Starting in the 1930s other chapters were established, became legal chapters of NYSAA, and remain active today.

Two of the successful early chapters were the Van Epps-Hartley Chapter and the Long Island Chapter. In 1931, Parker encouraged avocational archaeologists and people with an interest in local archaeology to form a NYSAA chapter in Schenectady (Bernhardt 2016:1-2). Perhaps Parker actively promoted this chapter because the short-lived Cooperstown chapter had floundered. From the beginning of NYSAA’s formation Parker was interested in reaching out to collectors to “establish a register of collectors, students, and collection sources and records” (NYSAA 1922; Ripton 1966b:1). Two well-known collectors, Percy Van Epps and Robert Hartley, were founding members of this new chapter and later were honored with the chapter being named after them (Bernhardt 2016:2-4). This chapter quickly became a legal chapter of NYSAA in 1931.

The road to becoming a legal chapter of NYSAA was much longer for the Long Island Chapter. In 1925, in eastern Long Island a group of avocational archaeologists began meeting as an archaeological organization, but they did not become an official chapter of NYSAA until 1932 (Barcel 2016:1). The Long Island Chapter, like the Morgan and Van Epps-Hartley chapters, had public lectures and encouraged people to be involved in their local history with a special focus on the Native American sites in their community (Barcel 2016). The Van Epps-Hartley Chapter even designed and built an exhibit on Mohawk archaeological sites for the 1939 World’s Fair in New York City (Bernhardt 2016:14; Snow 1995:147).

The focus of NYSAA’s chapters in these early years was on excavating Native American sites and learning more about the American Indian heritage of New York. The Morgan Chapter had tours of archaeological sites, and some of the members such as Charles Wray were involved in William Ritchie’s excavations with the Rochester Museum (Ripton 1966b; Saunders 1992). Between 1932 and 1942 the Van Epps-Hartley Chapter members (Figure 2) were involved in multi-year excavations of three pre-contact sites, the Turnbull site, the Schermerhorn site, and the Van Orden site (Bernhardt 2016:15-17). World War II brought a halt to many of the activities of the NYSAA as some members were serving in the military overseas and others were involved in the war effort on the home front (Bernhardt 2016:1).

The Growth of NYSAA with the Addition of Thirteen Chapters, 1950-2005

After the war and the rebuilding of the country, the 1950s brought a renewed growth in NYSAA. NYSAA expanded and



Figure 2. Van Epps-Hartley members on a lunch break in 1934. Notice the clothing they are wearing for excavating (photo courtesy of Van Epps-Hartley Chapter).

added three chapters:

- 1950 Chenango, Norwich, NY
- 1951 Auringer-Seelye, Saratoga Springs, NY
- 1958 Incorporated Orange County, Middletown, NY

The chapters continued to encourage the public to become involved in local archaeology. The yearly chapter reports in the NYSAA *Bulletin* during the 1950s notes that chapters were sponsoring excavations. The members excavated Native American sites from all time periods including post-European-contact Iroquoian sites. The Long Island Chapter members were often doing salvage archaeology by excavating sites that were facing development (Barcel 2016).

The Van Epps-Hartley members took on a multi-year project with the excavation of a Mohawk site known originally as the Veeder site (named for the property owner) but later renamed Caughnawaga near Fonda (Figure 3). The Mohawk

Village was associated with Kateri Tekakwitha, the Catholic Church's first Native American saint (Saint Kateri Tekakwitha Shrine 2017). Most of the chapter's excavations were undertaken between 1950 and 1956, although initial testing was in 1943 (Snow 1996:149). Chapter members were involved in washing and cataloguing the artifacts from the site and presenting their findings to the public in displays in the Mohawk Caughnawaga Museum (Snow 1996:149-150). NYSAA chapters also were reaching out to the public through talks and exhibits. For example, the Van Epps-Hartley Chapter encouraged children and teenagers, such as young Fred Stevens and Wayne Lenig, to become involved and thus continued the effort to train the next generation of archaeologists that started with the Morgan Chapter.

With the improvement of the economy in the 1960s and more leisure time to pursue outside interests, more people became involved in archaeology. In the 1960s five more chapters



Figure 3. Van Epps-Hartley members at the Caughnawaga site in the 1950s. Posts mark the location of Mohawk long-house post molds (photo courtesy of Van Epps-Hartley Chapter).

were added:

- 1961 Frederick M. Houghton, Buffalo, NY
- 1961 Metropolitan, New York City
- 1961 Mid-Hudson, Kingston, NY
- 1967 Incorporated Upper Susquehanna, Otego, NY
- 1967 Triple Cities, Binghamton, Endicott, and Johnson City, NY

The 1970s and early 1980s saw only two chapters added:

- 1974 William M. Beauchamp, Syracuse, NY
- 1980 Louis A. Brennan Lower Hudson Valley, Croton on Hudson, NY

The period 1990 to 2005 was when three chapters were added, bringing the NYSAA to a total of 16 chapters:

- 1992 Adirondack, Fort Edward, NY
- 1994 Thousand Island, Watertown, NY
- 2005 Finger Lakes, Ithaca, NY

The 16 chapters are spread throughout the state from Suffolk County, Long Island, to Buffalo. Throughout its history, NYSAA chapters and membership expanded. As the ranks of professional members grew, NYSAA continued to welcome individuals from diverse disciplines and encouraged avocational archaeologists to become NYSAA members. Over the past century many NYSAA members have expanded the study of Paleo-Indian, Archaic, and Woodland period sites in New York State. These works include a book by Parker (1922), and later with books by Ritchie (1965), Ritchie and Funk (1973), Tuck (1971) and others, and with numerous articles published in NYSAA's *The Bulletin* by NYSAA members. Since the 1980s there has been an increasing number of books by NYSAA members on Iroquois/Haudenosaunee archaeology such as those by Niemczyski (1984), Bradley (1987), Snow (1994), Sempowski and Saunders (2001), Funk and Kuhn (2003), Engelbrecht (2003), and Jordan (2008). Throughout this time there have been numerous articles by NYSAA members published in *The Bulletin* as well as in other publications. These books and articles discuss in detail many of the important discoveries that have transformed the understanding of both pre-and post-European contact Native American archaeology in New York State.

Since 1966, there have been major changes not only in New York State archaeology but in the archaeology of the United States itself. This included the growth of CRM archaeology, historical archaeology, urban archaeology, and the passage of NAGPRA. The second part of this article discusses the impact of these changes on the NYSAA and its chapters.

Federal, State, and Municipal Legislation's Impacts on Archaeology

The 1960s brought many changes to archaeology nationally. The most important piece of federal archaeologically-related

legislation was and still is the 1966 Historic Preservation Act, which has had many amendments over the years. Briefly put, Section 106 of the National Historic Preservation Act (NHPA) requires a review process "to evaluate federal actions affecting National Register properties" (Tomlan 2015:101). In terms of archaeology, if the project triggers federal permits and/or uses federal funds, there must be an evaluation to determine what impact new construction will have on archaeological sites on the property, and if any of the sites are eligible for listing on the National Register (McManamon 2000). Another key federal law was the 1969 National Environmental Policy Act (NEPA) that requires federal agencies to prepare environmental impact statements (including archaeological assessments) for projects using federal funds. Staff members at the State Historic Preservation Office in Albany review projects triggered by these two acts.

In 1975, New York State passed the State Environmental Quality Review Act (SEQRA), which was modeled on the 1969 National Environmental Policy Act (NEPA). SEQRA requires the consideration of environmental factors (including archaeological evaluations) as part of the review of state-funded projects or projects requiring state permits. This authority to review projects requiring discretionary permits is given to state agencies and to units of local government (NYS Dept. of Environmental Conservation 2015). In 1977, SEQRA regulations allowed local governments to establish their own environmental review procedures as long as they were as protective as the state procedures. For example, New York City government used this prerogative to establish the City Environmental Quality Review (CEQR) (NYC Mayor's Office of Environmental Coordination 2015). In the 1970s, the legally mandated archaeological work was often called "public archaeology" or "contract archaeology" (McGimsey 1972). Today it is known as "Cultural Resource Management."

These laws ushered in new employment opportunities for archaeologists. No longer were archaeologists almost exclusively employed in colleges, universities, museums, national parks, and state parks. Students were finding expanding employment opportunities with Cultural Resource Management (CRM) companies and also with the state, federal, and municipal agencies that oversee the laws and evaluate the compliance work of CRM companies. With each passing decade, more archaeological sites were being excavated by CRM firms. In 2009, the Advisory Council on Historic Preservation (2009:2) estimated that more than 90 percent of the archaeological excavations in the United States were undertaken because of the 106 regulations.

Because CRM involved private, for-profit companies, there became a separation of professionally-trained archaeologists and avocational archaeologists. In the first half of the 20th century, avocational and professional archaeologists worked together to salvage archaeological material from endangered sites. With the 1960 and 1970 laws, CRM companies were now salvaging key material from endangered sites. The big difference was that volunteers were no longer part of these

archaeological crews. Only paid staff undertook CRM work because these companies were and are on tight deadlines to complete their surveys and testing of sites before the sites are destroyed by construction projects.

For many years there also has been a separation of the public from CRM work with only occasional projects receiving publicity. Usually the high-profile projects were closed to the public. No public tours were given. The reports from these projects were written only for the reviewing agencies and there were rarely any reports written for the general public. The NYSAA and the chapters brought the research and discoveries from CRM projects to a wider audience. Chapter talks, the annual conferences, and NYSAA publications highlighted the work of CRM archaeologists. Over the past half-century, some CRM archaeologists have been very active members of NYSAA, often serving as officers of both local chapters and the state organization. CRM firms often make donations to help sponsor the annual conferences. In turn, NYSAA members, especially the avocational archaeologists, often act as preservationists by alerting government agencies of the potential damage to specific sites by proposed development projects.

One of the great challenges that faces archaeology is what to do with the increasingly large collections generated by CRM projects. The New York State Museum and some colleges and universities have accepted many of these collections, as well as collections from museum, college, and NYSAA chapter excavations. However, as existing storage space becomes filled, new repositories will need to be found. In 2014, New York City opened a repository for CRM collections, the Nan A. Rothschild Research Center (Sutphin 2016). But these collections should not be considered to be in “dead storage.” Through their website, the New York City Landmarks Preservation Commission is letting researchers, students, and educators know about the diverse CRM collections available for study in their Manhattan repository (NYC LPC 2018). NYSAA members also are re-examining and analyzing material in repositories throughout the state (e.g., Abel 2018; Veit and Huey 2014). This work demonstrates the research value of older collections.

Leadership of NYSAA members in Creating Other Organizations

With the growth of federal, state, and municipally-mandated archaeology, NYSAA member and Fellow Marian White helped create the New York Archaeological Council (NYAC) and served as its first president from 1972 through 1974 (Bender 1992:19). Because of White’s concerns about the quality of reports from the newly emerging field of CRM archaeology, she wanted NYAC to act as an action organization to preserve both standards for CRM work and to protect endangered sites (Bender 1992:19). NYAC continues to have a complimentary function to NYSAA and has overlapping interests with NYSAA (NYAC 2018).

Throughout NYSAA’s history our members have played key roles in the creation of other professional organizations

and held major leadership positions. Arthur Parker was one of the founders of the Society for American Archaeology and served as its first president in 1935 (Colwell-Chanthaphonh 2009:157-161). Parker was also involved in the creation of the Eastern States Archaeological Federation (ESAF) in 1934 (Colwell-Chanthaphonh 2009:154; Reid et al. 2003). Throughout ESAF’s history many NYSAA members have served as officers, including William Ritchie, Marian White, and Ed Lenik serving as presidents (Reid et al. 2003). In addition, NYSAA members, such as Ed Lenik, Charles Hayes III, Gordon DeAngelo, and Paul Huey, were actively involved during the formative years of the Council for Northeast Historical Archaeology (Wilson 1986:16).

The Growth of Historical Archaeology within NYSAA

Another big change for NYSAA over the past 50 years has been the growth of historical archaeology. For the first half-century of NYSAA’s history, its members primarily researched pre-European contact Native American cultures. However, while not calling their work “historical archaeology,” some chapter members were excavating post-contact sites when they worked at sites such as Ganondagan, previously called the Boughton Hill site, or Caughnawaga, previously known as the Veeder site (Huey 1997:79-80). NYSAA members have continued to analyze numerous post-European contact Mohawk, Oneida, Cayuga, Onondaga, Seneca and Mahican sites (e.g., Bradley 2007; Engelbrecht 1994; Jordan 2003; Lenig, D. 1965; Lenig, W. 1999; Wray 1983; Wray et al. 1987).

While some early 20th century archaeologists, such as Calver and Bolton in New York City, excavated military sites, it was the American bicentennial that created a growing fascination for or about military history in military site contexts. Leading up to the bicentennial, the government funded grants and contracts for archaeological projects (Salwen 1983:4). There were major excavations at sites such as Fort Stanwix (Hanson and Hsu 1975). Bert Salwen (1983:4, 6) wrote that after the bicentennial funding terminated there was a decrease in involvement in Revolutionary War sites archaeology. However, a number of NYSAA members have continued to be involved in the excavation of Revolutionary War sites such as Fort Montgomery, New Windsor Cantonment, and Saratoga Battlefield (e.g., Fisher 1983, 2004; Kirk and DiVirgilio 2016; Starbuck 2016; Stull, Rogers, and Tantillo 2016). The interest in military sites has expanded beyond Revolutionary War sites. Adirondack and Auringer-Seelye Chapter members have worked with David Starbuck and his students on the excavations on French and Indian War sites at Fort William Henry, Rogers Island, and at the Sutlers’ site at Fort Edward (e.g., Starbuck 2002, 2004, 2010, 2014). Other chapter members, such as Tim Abel, Susan Maguire, and Douglas Pippin and their students, have excavated War of 1812 sites (e.g., Abel 2015; Maguire 2015; Pippin 2010).

NYSAA member Paul Huey and his research team’s 1970-

1971 excavation of Dutch Fort Orange in Albany demonstrated that remnants of early Dutch sites were still preserved beneath modern urban landscapes (e.g., Huey 1988, 1991, 2005). The growth of legally mandated archaeology has led to an increase in urban archaeological excavations, especially in New York City and Albany (e.g., Cantwell and Wall 2000; Fisher 2003). Not surprisingly, some of the urban chapters, such as the Metropolitan Chapter in New York City, have a strong focus on urban archaeology.

The 1960s brought a growing interest in all types of historical archaeology, especially with the creation of the Council for Northeast Historical Archaeology in 1966 and the Society for Historical Archaeology in 1967. The interest in a wide range of colonial sites grew with a focus on Dutch as well as English sites. NYSAA members have excavated domestic, commercial, institutional, religious, and military colonial sites for decades with excavations in New York City, the Hudson River Valley, and Albany (e.g., Baugher 2001; Huey 1984; Janowitz and Dallah 2013; Rothschild 1990).

The growing interest in historic sites has expanded beyond colonial sites. Archaeological work by NYSAA chapter members includes the sites and material culture of the Dutch, English, French, Germans, Irish, Africans, and the whole range of late 19th and early 20th century immigrants (e.g., Geismar 2015; Linn 2010; Rothschild and Wall 2014). NYSAA members have analyzed trade networks, consumer behavior, the growth of capitalism, as well as issues of class, race, ethnicity and gender (e.g., Baugher 2010; McQuinn 2015; Wall 1994, 1999). NYSAA members' work also has focused on rural 19th century communities and farmstead archaeology (e.g., Hart and Fisher 2000). With the major discoveries made in historical archaeology, NYSAA conferences and chapter talks have highlighted excavations of these 17th, 18th, 19th and early 20th century sites.

Native American Graves Protection and Repatriation Act, 1990

Many 19th and early 20th century archaeologists excavated Native American graves. Museum curators were especially interested because graves provided a diverse collection of intact tools and ceramics versus village sites, which contained primarily broken and discarded artifacts. These early archaeologists, including Parker, often regarded the excavation of any burial ground purely from the scientific perspective. This was commonplace and researchers including Parker tended to consider the excavation of burial sites to be a purely scientific and objective way of gaining information. However, Parker (1922:166) did note there was American Indian opposition to the excavation of Native burials. Parker, a trained anthropologist writing for a European-American audience, emphasized what the burials and grave goods revealed about American Indian spirituality and reverence for the dead (Parker 1922:520-521). In contrast, European-American archaeologists excavating post-contact Native American burial sites in the

northeastern United States often focused on issues of status, subsistence, warfare, and trade, as well as spirituality.

Throughout most of the 20th century there was a lack of protection nation-wide for Native American burial grounds in spite of protests by American Indian communities. The Native American Graves Protection and Repatriation Act (NAGPRA) was enacted in 1990. NAGPRA radically restructured not only the way archaeologists interact with Native American communities regarding the discovery and treatment of burials but also how archaeologists work with other descendant communities and their cemeteries (Poirier and Bellantoni 1997:231-232). Prior to NAGPRA, the accepted approach for United States archaeologists working on burial sites was to excavate the site without consulting Native Americans and then send any human remains and burial goods to a university or a museum to become part of permanent collections (Klesert and Powell 2000:200-201; Quick 1985). This procedure was also used for the excavation of any burial of any person found in an unmarked grave outside of an actively used cemetery. The excavation of unmarked graves was not limited to Native American graves but also involved the excavation of slave cemeteries, pauper burial grounds, and abandoned cemeteries. Descendant communities were not notified, and human remains and grave goods became part of permanent collections. They were not repatriated to the descendant community, nor were the bodies reburied.

The ethical concerns for the protection of cemeteries and repatriation of human remains are not limited to the excavation of Native American burials. Other racial and ethnic groups have been concerned about the protection and preservation of their ancestors' graves. There have been high-profile excavations, such as the African Burial Ground in New York City, which pitted descendant community members against government officials and/or CRM companies (Harrington 1993; LaRoche and Blakey 1997).

As a result of NAGPRA and the African Burial Ground in Manhattan, 21st-century archaeologists realize that with any excavation of a grave there are legal, religious, and ethical issues that must be addressed, and efforts must be made to contact descendant communities. Archaeologists are now addressing diverse questions before excavation begins, such as: What happens after the excavation is completed? Is there a time limit to the scientific study of the bodies? Will the bodies be reburied after the study is completed? What about the grave goods? Should they be reburied too? In the 21st century, most excavations of burial grounds in New York State take place only if a cemetery faces destruction because of development projects. NYSAA members working for CRM companies have been involved in some high profile, positive examples of burial ground excavations. For example, NYSAA members have presented papers at chapter meetings and at the annual conferences on the pauper burial ground associated with the Erie County Poorhouse in Buffalo (Byrnes et al. 2013; Muller 2015) and the excavation of an African American slave burial ground near Albany (Huey 2016). One hopes that coopera-

tion and collaboration between archaeologists and descendant communities will be the hallmark of future bio-archaeological research in New York State cemeteries.

Continuing Partnership Between Professional and Avocational Archaeologists

In the 1920s and 1930s when Arthur C. Parker and William Ritchie were both at the Rochester Museum, they trained young people in archaeology and continued to promote co-operative work with avocational archaeologists. For example, in 1928 Ritchie was so impressed that an eight-year-old boy named Charles Wray had located the Meadowood site that Ritchie began training young Charles, and by the time Charles was 15 he was a skilled crew member on Ritchie's summer excavations (Saunders 1992:21, 23). Wray became a geologist with a life-long interest in New York State archaeology, especially in Seneca sites and Seneca material culture (Hayes 1987:2). Because of his geology background he became an expert on lithic types, sources, and trade routes (Wray 1948, 1957). Charles Hayes (1987:2) noted "never were archaeology and geology so well interrelated," enabling Wray to locate numerous sites. Wray's major research interest was in the early historic Seneca village sequence (Wray and Schoff 1953). He published 19 sole-authored articles and 4 co-authored in journals such as NYSAA's *The Bulletin* and the *Pennsylvania Archaeologist*. Because of the quality of his publications, Wray was voted to become a Fellow of NYSAA (Figure 4). He was also a Morgan Chapter president and later became the president of NYSAA.

The NYSAA has an award called the Theodore Whitney Commendation for lifetime achievement in New York archaeology. NYSAA member Ted Whitney, like Charles Wray, also brought a lifetime of active involvement in New York State archaeology (Figure 5). Whitney was a public-school teacher who was an avocational archaeologist. He worked on exca-



Figure 4. Charles Wray (right) and Monte Bennett (photo courtesy of Chenango Chapter).



Figure 5. Theodore Whitney (right) with Stanford Gibson and Fred Chasebus in 1970 (photo courtesy of the Chenango Chapter).

vations with William Ritchie, Bob Funk, Marian White, and others as well as being a founding member of the Chenango Chapter (Hayes 1999:35). He was an enthusiastic, active and skilled leader of many Chenango Chapter projects. He skillfully edited 97 issues of the Chenango Chapter's archaeological bulletin as well as writing numerous articles on his excavations and research for the chapter's bulletin (Hayes 1999:35). Like Charles Wray, Ted Whitney was recognized for his publications and was elected to become a Fellow of NYSAA.

Happily, Charles Wray and Theodore Whitney were not unique, and there continue to be many NYSAA members like them throughout the state. For example, Gordon De Angelo (Figure 6), a landscape architect by training, Louis Brennan, an editor, and Gregory Sohrweide, a dentist, have been involved in archaeological fieldwork and laboratory analysis, and have published their research (e.g., Brennan 1956, 1967; Sohrweide 2001). NYSAA members also have written about the important contributions of avocational archaeologists (e.g., DeAngelo 1992, 1996; Gorall 1996).

Avocational archaeologists and professional archaeologists have worked in partnership on sites throughout the state. In Orange County, the NYSAA members have excavated rock shelters and even excavated a mastodon at the Keeton site. Robert Funk (1996:23) noted that the Incorporated Orange County Chapter members have "contributed enormously to our knowledge of Paleo-Indians and ancient environments in the lower Hudson Valley" through their excavations of the Dutchess Quarry caves. The caves were excavated between 1964 and 1984 (Funk 1996:23). Beauchamp Chapter members have been excavating and studying Onondaga sites near Syra-



Figure 6. Gordon DeAngelo surveying on Rogers Island in 1997 (photo courtesy of David Starbuck).

cuse. In Buffalo, Houghton Chapter members have excavated and studied various archaeological sites. In the Norwich area, Chenango members have been excavating sites associated with the Oneidas and their ancestors. The Upper Susquehanna Chapter has been excavating at the Sullivan/Cukierski site, which is the mission site of St. Francis Xavier Church, 1660-1677 (Cukierski 2017). The Louis A. Brennan-Lower Hudson Valley Chapter has undertaken archaeological excavations in Mt. Kisco to uncover the location, construction, and use of a colonial church and a 19th century church. The Thousand Islands Chapter members have excavated a wide range of sites from thousands of years ago to the early 20th century.

Public Archaeology and Community Outreach

But not all archaeology is about excavating and analyzing sites. In the 1990s professional archaeologists in the Society of American Archaeology (SAA) and in the Society of Historical Archaeology (SHA) started to discuss the importance of what was now being called “Public Archaeology” with a much different meaning from the 1970s term that was synonymous with CRM work. Since the 1990s, the term “Public Archaeology” is used for various types of public outreach and community collaborations (Jameson 2004). Journal articles and book chapters stress the need to reach out to the public, to reach out to people in allied disciplines, and to work with community members (e.g., Derry and Malloy 2003; Jameson 1997; Little 2003; and Merriman 2004). The NYSAA has been doing “public archaeology” throughout its history – perhaps NYSAA was just ahead of its time. NYSAA, through its chapter programs, preservation activities, and publications, has been able to share its enthusiasm and interest in local archaeology with the public. In 1918, NYSAA began its first publication series called *Research and Transactions*, and in 1958 the first of its



Figure 7. Chenango Chapter display at the Guilford Community Fun Fest in 2011. Gail Merian, now NYSAA secretary (left) and David Moyer, now NYSAA vice-president (right) (photo courtesy of Chenango Chapter).



Figure 8. Incorporated Orange County Chapter's elaborate displays at their 50th anniversary archaeological symposium. The public event was held at the Orange County Community College in Middletown, New York, in 2008.

Note the flintknapping demonstration in the center of the photograph
(photo courtesy of Incorporated Orange County Chapter; photographer Clifton Patrick).

Occasional Papers was published (Hayes 1992:44). In 1954, NYSAA created a yearly journal, *The Bulletin*; most of the back issues are available on the NYSAA website. Ever since 1916, NYSAA has been committed to bringing archaeological lectures and outreach activities to the general public. Two of the chapters also own and manage museums—the Long Island Chapter has the Southold Indian Museum in Suffolk County, and the Upper Susquehanna Chapter has the Roland B. Hill Indian Museum in Otego. In 1994, the Long Island Chapter purchased Flint Mine Hill in Cocksackie, New York, in order to preserve the archaeological site from development (Barcel 2016).

All of the chapters sponsor archaeology lectures that are for a public audience. In addition, the chapters continue to be involved in other outreach activities. Here are a few examples of NYSAA's continuing diverse efforts in public outreach. The Chenango Chapter in Norwich has been active in being a presence at community events by bringing displays and artifacts (Figure 7), and they also have an educational coordinator who gives presentations at the local public and private elementary schools (Chenango Chapter 2016). The school programs are creating an interest in archaeology among young children. Reaching out to youth is an important step if archaeology, as a profession, is to stay vibrant. One of the two largest chapters, the Incorporated Orange County Chapter, offers flintknapping and other demonstrations at various community events, and

they regularly give site tours of rock shelters and other sites (Figure 8). Some chapters continue to undertake archaeological excavations and encourage community members to join and learn more about archaeology. For example, the Morgan Chapter hosts annual archaeology days in the summer to allow community members to join chapter members in excavating a site (Figure 9). The chapter members teach and train these volunteers. Just as our predecessors trained children in the 1950s, NYSAA chapters are continuing these efforts.

Conclusion

For a century, the NYSAA has been an organization that promotes the scientific study of New York State's archaeological sites. The chapter members continue to be both professional and avocational archaeologists. Members include people from diverse disciplines, including history, engineering, geology, teaching, biology, landscape architecture, medicine, dentistry, and business. The NYSAA and its chapters continue to actively promote the study of New York State archaeology, and to catalogue and preserve archaeological collections excavated by its members. To fulfill the goal set in 1916 to record the results of scientific excavations, NYSAA publishes three newsletters per year and a yearly journal called *The Bulletin*. In addition, some chapters produce their own newsletters and journals, and on the NYSAA website one can see examples of



Figure 9. Morgan Chapter members teach excavation techniques to volunteers at the Alva Reed site in 2015 (photo courtesy of Morgan Chapter).

these publications.

Another century-old goal has been focused on education and outreach. For a century, NYSAA chapters always have offered public lectures. Hands-on experiences through excavations and laboratory work are ways that chapters have partnered with the public. Working with children enables chapter members to bring the excitement of discovery, the love of history, and the pride in heritage to a broad audience. While only a very small percent of the children will choose archaeology as a career path, many may grow up with an interest in archaeology, history, historical museums, and restoration centers. Chapters also engage the public through site tours, exhibits, and demonstrations at community events. Through all of these outreach efforts the chapters are fulfilling the century-old goal of creating a public appreciation of New York State's archaeological resources.

NYSAA has had an advocacy role in order to preserve and protect archaeological sites within New York State. With the current political climate increasingly becoming anti-preservation and pro-development, NYSAA must create allies and supporters outside of archaeology. The challenge is how to create grassroots support for archaeology and community heritage. We can develop these alliances through successful outreach. NYSAA tries through its education and outreach activities to reach these current and future stakeholders. The adults involved in archaeological experiential education also enjoy the joys of discovery whether in the field or the lab, and some of the adult students will become active in preserving their own

community's cultural resources.

For 100 years, the NYSAA members have examined, recorded, analyzed, and disseminated the information from excavations to the public. Members represent diverse professions, are young and old, and are from all the various regions of the state. As NYSAA looks toward the next hundred years, professional and avocational archaeologists will continue to work together to investigate, study, protect, and preserve the rich and diverse archaeological and cultural heritage of New York State.

Acknowledgements

I wish to thank Martha Sempowski, Gary Bernhardt, and Sissie Pipes for reading and commenting on an early draft of this article. I thank the three anonymous reviewers of this article for their very helpful suggestions. I greatly appreciate the various chapter members who have looked through their files of photographs to find images of their chapters from "the old days". Chapters who provided photographs for this article are: the Chenango Chapter, Incorporated Orange County Chapter, Morgan Chapter, and Van Epps-Hartley Chapter. David Starbuck kindly provided the photograph of Gordon DeAngelo. I also thank the Rochester Museum and Science Center for permission to reprint the photograph of Arthur C. Parker.

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The Legacy of the Rochester Museum: A Framework for New York State Archaeology and the Evidence on Which It Rests

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Over the course of its 100-year history, research undertaken by staff members and associates of the Rochester Museum, many of whom were also active NYSAA members, has resulted in an invaluable contribution to New York State archaeology—construction of a basic framework for understanding much of the state's prehistory. Critical to that legacy are the museum's extensive archaeological collections and site records which underlie the framework, and the series of publications through which the archaeological evidence was disseminated. This discussion focuses on the two major components of that legacy: the ambitious Parker/Ritchie research program during the first half of the century, aimed at identifying and outlining the sequence of pre-Iroquoian occupations of the state; and second, the equally single-minded pursuit of the sequence and chronology of Seneca Iroquoian sites first proposed around mid-century by Wray and Schoff, and later modified and refined by Charles Wray and associated researchers. The latter now serves as a comparative baseline for many Iroquoian studies across the state. Through the years, the Rochester Museum provided a key supporting role for much of that research, particularly in its willingness to build and curate the sizeable bodies of archaeological evidence required to refine and test the proposed frameworks, now and in the future, as well as in its longstanding commitment to publication of the research results.

Introduction

Construction of a sound chronological framework is the essential first step in understanding the archaeology of any region. New York State is no exception. Yet despite a long history of interest in Native American culture and knowledge of many archaeological sites in the state (e.g., summaries by Beauchamp 1900; Houghton 1912; Parker 1916), when the New York State Archaeological Association (NYSAA) was founded in 1916, there was little in-depth understanding of the cultural or sequential order of the known sites in the state, let alone the periods of time during which each was inhabited.

Over the subsequent 100 years of NYSAA history, which we celebrate with this volume, the "Rochester Museum," known sequentially as the Rochester Municipal Museum (1912-1930), the Rochester Museum of Arts and Sciences (1930-1968), and the Rochester Museum & Science Center

(1968-present), played a very significant role in addressing that lack of fundamental archaeological understanding (Figure 1). Personnel associated with the museum, including staff, avocationals, and independent researchers, many of whom were also NYSAA members, made enormous progress by:

- 1) Creating the basic frameworks for both the pre-Iroquoian and the Iroquoian periods of New York State archaeology;
- 2) Building the archaeological record that supported those frameworks;
- 3) Disseminating the specifics of those frameworks to professional and public audiences.

To this day, all subsequent archaeological research in New York State has relied to a greater or lesser extent on these basic frameworks—or subsequent modifications and refinements of them. One certainly cannot ignore the contributions made by other individuals and institutions to this endeavor; rather, the goal here is merely to highlight the incomparable legacy of the



Figure 1. The Rochester Museum of Arts and Sciences, 657 East Avenue. Original color photo taken by William Frank in the 1970s. (<http://mcnygenealogy.com/pics/picture.php?/1330>). Accessed January 26, 2017.

Rochester Museum and those associated with it.

Two periods are identifiable in the museum's archaeological research efforts. The first encompasses the first half of the 20th century, the so-called "Parker/Ritchie era," when the basic groundwork was laid for the entire cultural/temporal framework for the prehistory of the state. The primary focus was on the pre-Iroquoian periods of occupation. The second includes the second half of the century when attention turned to establishing a more precise framework for the late prehistoric and early historic Iroquoian occupations, primarily through refining the sequence and dating of Seneca Iroquois sites.

First Half of the 20th Century

Arthur C. Parker had close connections with the Rochester area from early in the century when he urged the creation of the NYSAA and its initial chapter—the Lewis Henry Morgan Chapter. So when he accepted the position of Museum Director at the Rochester Museum in 1924, he already had many local contacts, friends, and associates. Among them was young William Ritchie, who was working as an aide at the museum. According to Robert Funk, Parker's move to Rochester and his collaboration with Ritchie shifted "the intellectual momentum" in New York State archaeology from Albany to Rochester (Funk 1997:10) (Figure 2). They were off and running. The synergy created by Parker's archaeological background and connections, his knowledge of sites across the state, and his control of museum resources, combined with Ritchie's youth, prodigious intellect, and boundless energy, ignited a daunt-

ing program of archaeological field work and publication that would continue at the museum for the next quarter century.

The reigning chronological paradigm of the time was Parker's four-period chronological schema for New York State (Parker 1922, 1929): an Algonkian period, an Eskimo-like period, a mound-builder period, and finally an Iroquoian period. The Parker paradigm set the stage for Ritchie's problem-oriented approach to field work, with its ambitious goal of working out the chronological framework for New York State by excavating and examining materials from countless sites across the state. It involved comparing artifact assemblages, and searching for stratigraphic relationships that would indicate the relative chronology of the sites (Ritchie 1974:14). As such, it represented a major departure from the museum norm of the day, which was collecting artifacts and building collections for exhibit purposes.

This paper is not intended to be comprehensive, but merely to highlight some of the more significant sites investigated during that frenetic early period, and their relevance to the "big picture" for which Parker and Ritchie were striving. These were tough financial times, and museum resources did not always cover basic expenses of labor, equipment, transportation, food and lodging. Ritchie and his crew made do, using their own cars, paying for gas, and camping out (Figure 3). Many enthusiastic young volunteers and NYSAA members worked right alongside Ritchie during those early years, getting their initial field training, and providing free labor to the operation (Ritchie 1974:14) (Figure 4). In reflecting back years later, Ritchie says of those early days:



Figure 2. Arthur C. Parker and William A. Ritchie at Frontenac Island (ca. 1939-40); scanned from Mort Howe scrapbook in Rock Foundation files. Photo courtesy of Rock Foundation Inc.



Figure 3. Morrow Site field camp (Photo # RM 243); from the collections of the Rochester Museum & Science Center, Rochester, New York.

...our energy was unlimited, we were driven by a burning desire to discover and interpret the mysteries of the past. In fact the morale was terrific, despite the hardships and long hours of driving labor, in rain, heat and cold, from dawn to dark, which my helpers willingly shared with me [Ritchie 1974:14].

Interestingly, the first real relief came with WPA (Works Progress Administration) funding in the 1930s which underwrote some of the basic costs of the field work (Ritchie 1974:14).

Building and Refining the Pre-Iroquoian Framework

The Archaic Stage

Ritchie's first big field operation began at Lamoka Lake (RMSC Site Files: Hpt 001) in Schuyler County in 1925 and continued for four field seasons (Ritchie 1932) (Figure 5). Lamoka, of course, became the basis for Ritchie's identification of it as the earliest "Focus" of his original "Archaic Pattern" (later termed "Archaic Stage") (Ritchie 1944:5, Plate 1). Ritchie and his crew were not standing still, however. Over the course of the following two decades, as they criss-crossed the state at a frenetic pace, they continued the search for Archaic sites similar to Lamoka, eventually identifying the Woodchuck Hill Site (RMSC Site Files: Roc 001) in Monroe County, and the Geneva Yacht Club Site (RMSC Site Files: Gen 001) in Seneca County (Ritchie 1936a), as well as what Ritchie called "novelty" in assemblages (1974). From then on, they were literally all over the map—geographically and temporally—working out the relationships of the staggering number of artifact assemblages that they examined.

Museum excavations in 1937 and 1938 at two sites—Robinson (RMSC Site Files: Syr 005) and Oberlander 1 (RMSC Site Files: Syr 004)—on opposite sides of the Oneida River near Brewerton in Onondaga County, added further substance to an understanding of his Archaic Stage (Ritchie 1940). Ritchie worked on the Brewerton sites over the course of five consecutive seasons (Ritchie 1974:15) (Figure 6). Then in 1939 and 1940 museum excavations were conducted at Frontenac Island (RMSC Site Files: Aub 004) in Cayuga County (Ritchie 1944;



Figure 4. Field crew, Partridge Site. William Ritchie standing, second from the right. (Photo # RM 393); from the collections of the Rochester Museum & Science Center, Rochester, New York.



Figure 5. Lamoka Lake Site excavations (Photo # RM 16H); from the collections of the Rochester Museum & Science Center, Rochester, New York.



Figure 6. Oberlander 1 Site field crew (Photo # RM 197A); from the collections of the Rochester Museum & Science Center, Rochester, New York.

1945) (Figures 7 and 8). Reflecting some twenty years later on the significance of Frontenac Island to construction of New York State's broad prehistoric framework, Ritchie wrote:

The Frontenac Island site stands in the forefront, among the small group of key stations which have contributed vital segments of information to knowledge of the cultural sequence, chronology and interrelations in New York prehistory [Ritchie 1965:103].

The Early Woodland Stage

Ritchie's introduction to what he eventually called the Meadowood phase of the Early Woodland (Ritchie 1965:179-200) was at the Meadowood Site (RMSC Site Files: Hne 015) in Monroe County, discovered in 1930 by eight-year-old Charles Wray on his family's estate along the Genesee River (Ritchie 1944:125). Ritchie generously included young Charlie in the museum excavations that followed that season, initiating Wray's lifelong devotion to archaeology and an association with the Rochester Museum that was to last a lifetime. Subsequently, Ritchie linked a number of other sites with the Meadowood phase (see Ritchie 1965: Figure 4: Numbers 37-44), including the Vinette (Oberlander 2) (RMSC Site Files: Syr 003), Riverhaven 2 (RMSC Site Files: Twa 003), and Morrow sites (RMSC Site Files: Hne 033) (c.f. Figure 3 above), based primarily on the presence of Vinette 1 pottery, classic side-notched Meadowood points, copper ornaments, birdstones, tubular ceramic pipes, and marine shell beads (see Meadowood phase artifacts, Ritchie 1965:Plate 60, p. 181). Meadowood phase sites reflect an emphasis on elaborate treatment of the dead and involve primarily cremation burials.

In 1937, Ritchie identified the Middlesex phase of the Early Woodland named for the Vine Valley Site (RMSC Site Files: Nap 007) in the Town of Middlesex in Yates County, New York. He postulated that this and other mortuary sites in the Northeast, with diagnostic artifacts such as the blocked end tubular pipe, grooved bola stones, and artifacts of flint ridge



Figure 7. Frontenac Island Site (Photo # RM 61F); from the collections of the Rochester Museum & Science Center, Rochester, New York.



Figure 8. Frontenac Island field workers, from left: William Ritchie, Charles Wray, Sheldon Fisher, John Swart (scan of unnumbered print); from the collections of the Rochester Museum & Science Center, Rochester, New York.

chalcedony and Ohio banded slate, reflected the infusion of Adena influences from Ohio into indigenous cultures in the region (Ritchie 1938a:100-103; 1965:200-201).

The Middle Woodland Stage

During the 19th- and early 20th-century, the exploration of mounds in western and central New York was largely the province of amateurs and collectors, resulting in a lack of detailed information with which to understand or interpret them. Nevertheless, Parker and others had pointed to Hopewellian influences from Ohio as a probable source of influence, if not actual migration (Parker 1922:83-93). To verify this hypothesis, Parker and Ritchie undertook excavations at the Squawkie Hill Mound (RMSC Site Files: Nda 001) in Mount Morris, Livingston County, in 1930, 1936 and 1937 under the auspices of the Rochester Museum (Ritchie 1938b). According to Ritchie:

... Squawkie Hill discoveries provided perhaps the first concrete evidenc of a definite Hopewellian linkage for the New York burial mounds... [Ritchie 1965:214].

The elaborate nature of both mound construction and the artifacts included in Mounds 1 and 2 at Squawkie Hill is evident in Ritchie 1938b: Plates 4 and 5. Diagnostic Hopewellian influences were also apparent in the artifact assemblages uncov-

ered by museum excavations at several other mound sites in the area, including the Geneseo Mound (RMSC Site Files: Cda 007) (Ritchie 1938b:19-35), and the Frog Mound (RMSC Site Files: Cda 012) (Figure 9) near the Genesee River.

Ritchie was unable to obtain permission in 1938 for the museum to excavate at the newly discovered Kipp Island Site (RMSC Site Files: Aub 012) in Seneca County. Nevertheless, the two amateur collectors who did work there that year allowed him to assess the details of the burials encountered and to photograph the artifacts (Ritchie 1944:132-143). That information, together with data from other sites in central New York, provided evidence relating to a late phase of the Middle Woodland stage (Ritchie 1965:233-253).

Lastly, based on evidence primarily from the Hunter's Home Site (RMSC Site Files: Wpt 003), Ritchie identified the Hunter's Home phase as transitional between the more ceremonial cultures of the Middle Woodland "Point Peninsula" cultures to Late Woodland Owasco cultures (Ritchie 1965:253-271). Citing Ritchie:

The progressive shift from late Kipp Island through Hunter's Home, into the Owasco pattern, involved both material and mortuary aspects. In the ceramic category, cord decoration on a cord-malleated surface rapidly succeeded the older dentate, rocker-stamped, and other styles which



Figure 9 (above). Frog Mound Site (Photo # RM 296); from the collections of the Rochester Museum & Science Center, Rochester, New York.

Figure 10 (below). Sackett Site Excavations (Photo # RM 362); from the collections of the Rochester Museum & Science Center, Rochester, New York.

had been in vogue from Early Point Peninsula into early Kipp Island times [Ritchie 1965:254].

Most of the elements of the old mortuary ritualism, some part of which had endured into the Kipp Island phase, suffered extinction during Hunter's Home times [Ritchie 1965: 257].

The Late Woodland Stage

The Lakeside Site (RMSC Site Files: Aub 017) on Owasco Lake in Auburn, Cayuga County, New York, was the name source for the Owasco Culture as identified by Parker ("Owasco Algonkin Site") during his tenure at the New York State Museum (Parker 1922:340-342). During the late 1920s and the 1930s, excavations undertaken by Rochester Museum staff, directed by Parker and Ritchie, helped to elucidate this early period of what Ritchie was to call the Late Woodland stage in New York (Ritchie 1944:29-101; 1965:271-300). The first of these excavations was at the Levanna Site (RMSC Site Files: Aub 001) in 1927, which, like the Lakeside Site, was also located in Cayuga County (Ritchie 1928). This investigation was followed in 1934 by that of the Sackett (Canandaigua) Site (RMSC Site Files: Can 001), Ontario County (Ritchie 1936b) (Figure 10). Further museum explorations at the St. Helena (RMSC Site Files: Nda 002), Clark (RMSC Site Files: Bgh 002), Bainbridge (RMSC Site Files: Una 001), and Castle Creek Sites (RMSC Site Files: Bgh 001) (Ritchie 1965:272) helped in differentiating several phases or temporal sub-divisions within the Owasco culture (see Ritchie 1965:Plates 92 and 97-99).



A proponent of the *in situ* theory of Iroquois occupation of New York State, Ritchie (Ritchie 1965:299-301) postulated that the Owasco cultural traditions, based on a reliance on agriculture and larger sedentary villages, led directly into the prehistoric Iroquoian era and ultimately to the historic Iroquois cultures first encountered by Europeans during the 16th and 17th centuries. During his time at the New York State Museum, Arthur Parker had shown a great deal of interest in late prehistoric and historic Iroquoian sites, and building on the work of Beauchamp (1900) and Houghton (1912, 1922) published several synopses of existing archaeological information at the time (Parker 1916, 1918, 1919, 1922, 1926). Although members of the Lewis Henry Morgan Chapter of the NYSAA mounted several small excavations at Iroquoian and pre-Iroquoian sites (e.g., the Fort Hill LeRoy (RMSC Site Files: Bgn 001), Richmond Mills (RMSC Site Files: Hne 005), Factory Hollow (Hne 007), and Dann (RMSC Site Files: Hne 003) Sites, this period of New York State archaeology does not appear to have been a priority of the Rochester Museum during this era. A notable exception is the museum's extensive explorations at the Dutch Hollow Site (RMSC Site Files: Hne 001) in 1934 under Parker's oversight and Ritchie's field direction (Ritchie 1954).

The Pre-Iroquoian Framework: Its Documentation and Dissemination

Throughout this early period in the Rochester Museum's history, thousands of artifacts were cleaned, catalogued, and classified by museum staff, many of them the part-time volunteers who were working each summer on the museum's excavations. Year after year, Ritchie painstakingly analyzed these materials within the context of the mountains of field records and photographs that were accruing each field season. This resulted in an unrelenting stream of publications by Parker and Ritchie, underwritten by the Rochester Museum's *Research Records Series* and the Morgan Chapter/ New York State Archaeological Association's *Researches and Transactions* series. Artifact typologies and seriation comprised the primary analytical methods underlying their formulations.

In his role as Curator of Archaeology, William Ritchie also helped design and install many creative new exhibits that translated and interpreted the latest archaeological findings into a visual format accessible to the general public (Figure 11). These efforts were in keeping with Parker's definition of museums as "a university of the common man" (RMSC website 2016). By 1944, the Rochester Museum had published Ritchie's magnum opus, *The Pre-Iroquoian Occupations of New York State*, for its time, the definitive cultural and temporal framework for New York State archaeology.

By 1949, when Ritchie and Parker had both left Rochester, an invaluable legacy of primary archaeological evidence—huge assemblages of well-provenienced artifacts, together with carefully organized photographs, slides, and site records—had been left in place at the museum for testing and refinement of the framework. And, of course, that is exactly what happened.



Figure 11. Arthur C. Parker and William A. Ritchie (scanned from unnumbered print); from the collections of the Rochester Museum & Science Center, Rochester, New York.

When radiocarbon dating emerged in the 1950's, allowing more scientifically-based dating of materials from key sites in the framework, an ongoing process of temporal refinements to the original framework was undertaken by Ritchie and his colleagues, as well as many other archaeologists to this day.

Second Half of the 20th Century

Building and Refining the Iroquoian Framework

Iroquois Settlement Pattern Studies

During the second half of the 20th century, there was a shift in focus at the Rochester Museum—from the Pre-Iroquoian period of Native occupation that had previously seen so much attention—to the Iroquoian period. A new generation of Rochester Museum staff now turned their attention to historic and late prehistoric Iroquoian sites, but consistent with the dominant focus in archaeology at the time, the emphasis was on house and settlement patterns, rather than site chronologies. Alfred Guthe (Figure 12) and others, including Marian White, explored the Hummel Site (RMSC Site Files: Can 023) and the Factory Hollow Site (RMSC Site Files: Hne 007) in the 1950s (Guthe 1955, 1957, 1958). Charles Hayes undertook explorations at the Footer Site in the 1960s (RMSC Site Files: Can 029) (Hayes 1963); Hayes also uncovered evidence of a longhouse at the Cornish Site (RMSC Site Files: Hne 009) (Figure 13) (Hayes 1964, 1966, 1967b), as well as at the Richmond Mills (or Reed Fort) Site (RMSC Site Files: Hne 005) (Hayes 1967a). During the 1970s to the 1990s, settlement pattern excavations



Figure 12. Alfred Guthe on right, with unidentified individual (scanned from unnumbered print); from the collections of the Rochester Museum & Science Center, Rochester, New York.

were conducted as field schools through the museum's School of Science and Man at a number of late prehistoric and historic era sites: Footer (RMSC Site Files: Can 29); Tram (RMSC Site Files: Hne 006); Cameron (RMSC Site Files: Hne 029); and Power House (RMSC Site Files: Hne 002). These were directed by George Hamell, Mary Ann Niemczycki and Lorraine Saunders.

Seneca Site Sequence and Chronology

Meanwhile, avocationalists in the region continued to concentrate on defining the sequence of the known Iroquoian sites in the region. Probably because of the strong intellectual influence of Ritchie—during more than 20 years of field and lab training under his supervision—Charles Wray was convinced that a firmly established site sequence was a prerequisite for answering any higher order anthropological questions. By 1953, building on the insights of Beauchamp (1900), Houghton (1912, 1922), and Parker (1922, 1926), Charles F. Wray and his colleague, Harry Schoff, published "A Preliminary Report on the Seneca Sequence in Western New York, 1550-1687" (1953). This seminal publication formally launched the second major thrust of archaeological research in the Rochester area—building and refining a framework for historic Seneca Iroquois sites—a focus that was to continue for the next 50 years. It would eventually include and incorporate the research of avocationalists, professionals, and students, most of whom were associated with the Rochester Museum, and/or the NYSAA.



Figure 13. Charles Hayes in front of truck, with unidentified individual (scanned from unnumbered print); from the collections of the Rochester Museum & Science Center, Rochester, New York.

To all who knew him, Charlie Wray was a genial and charismatic individual (Figure 14). He had gotten an early start under Ritchie's paternal tutelage. Much of his youth had been spent working with Ritchie under the auspices of the museum. Unable to follow his archaeological calling because of a commitment to his family's business, Charlie went on to earn a graduate degree in geology from the University of Rochester. His interest in archaeology never slackened, however. He seemed somehow to have inherited the same dogged determination as his mentor. Weekends were spent exploring known sites, often with other Morgan Chapter NYSAA members, locating new sites, and processing an ever-growing body of artifacts and field notes. Twenty years after enunciating his first hypothetical sequence of Iroquoian sites in the region, Wray proposed a chronology for twenty-five known Seneca sites occupied during the period from about 1550 to 1730 (Wray 1973:8).

Wray's sequence and chronology were based on a set of assumptions and a rationale first put forward by Frederick Houghton in 1922, namely that, following first contact with Europeans, the quantities of trade goods on Seneca sites would steadily increase as access became progressively greater. Thus, proportionately larger quantities of European-made goods would indicate later occupations, and proportionately smaller quantities earlier ones. The historically-based paradigm of two large contemporary Seneca villages moving regularly as villages were abandoned and relocated (JR 44:21, 49:259, 54:78-123, 56:58-69, 57:27; 57:190-201)(Coyne 1903:25) (O'Callaghan

1855:3:251-252; 9:358-369) (Olds 1930:9-52) (Squier 1851:90-95) was crucial to Houghton's 1922 formulation.

These assumptions, then, combined with Wray's extensive knowledge of Iroquoian sites in the region, and the types and frequencies of artifacts found on each of them, allowed Wray's preliminary formulation of the dual eastern and western sequences of Seneca villages (Wray and Schoff 1953). Assigning actual dates to the sites was a more formidable challenge. The date of 1687, when DeNonville attacked and destroyed four Seneca villages including the Ganondagan (Boughton Hill) Site, became the anchor. Working backward with an estimated 20-year average site occupation, and the assumption that first contact with Europeans occurred sometime in the mid- to late-16th century, allowed Wray to fill in the framework with approximate dates for each pair of major villages in the Seneca sequence (Wray 1973:8). Contrary to the way in which the Seneca chronology has sometimes been used over the years, Wray never intended these dates to be viewed as absolute beginning and ending dates for the sites' occupations; rather, he saw them as working approximations. His proposed formulation, however, laid the groundwork for the intensive process of research and refinement of the Iroquoian framework that was to take place in subsequent years (see below).



Figure 14. Charles F. Wray, 1980s (scanned from unnumbered print); from the collections of the Rochester Museum & Science Center, Rochester, New York.



Figure 15. Chief Corbett Sundown, Charles Hayes, Charles Wray, and Donald Cameron at time of acquisition of Rock Foundation collections, 1977 (scanned from unnumbered photo); from the collections of the Rochester Museum & Science Center, Rochester, New York.

Seneca Iroquois Archaeology and the Rochester Museum & Science Center

Seneca archaeology took on new life at the museum in 1977 when Charles Wray's enormous collection of catalogued artifacts, field notes, maps, and photo records attracted the attention of the Rock Foundation, a philanthropic entity with an interest in local Iroquois archaeology. Wray's collections of artifacts, notes and photos, and a smaller body of artifacts held by Donald Cameron, were moved to the Rochester Museum & Science Center on long-term loan (Figure 15). Incorporating these materials into existing site collections and archival records proved a daunting task, ably carried out by museum staff, including Curators George Hamell and Betty Prisch. The Rock Foundation also provided funding for conservation and research on the acquired materials, creating a dynamic new momentum for Iroquoian archaeological research centered at the museum, and coordinated by RMSC Research Director, Charles Hayes III.

Widespread awareness and interest in the museum's Seneca archaeological collections immediately spurred new research and museum publications on the materials (e.g., Prisch 1982; Niemczycki 1984). It also precipitated a series of vibrant and well-attended research conferences focused on specific types of artifacts, such as pottery (Hayes 1980), glass beads (Hayes 1983), trade guns (Puype 1985), marine shells (Hayes 1989), smoking pipes (Hayes et al. 1992), and human interactions across Iroquoia (Hayes 1981; Hayes et al. 1994). Rock Foundation funding also allowed Wray to systematically save private collections from across the region, bringing them under the umbrella of the RMSC's protection. The extraordinarily large and well-documented collections, the conferences, and the publications that resulted brought national and international attention to the RMSC for the first time, and engendered new research by literally hundreds of students and professionals.

Seneca Archaeology Research Project

When Charles Wray retired in the early 1980's, he took up "residence" in the museum to publish his life's work, and with the help of Rock Foundation funding, assembled a group to help him: physical anthropologist, Lorraine Saunders; artist Gene Mackay; illustrator/photographer, Tricia Miller; computer specialist and ceramic researcher, Gian Carlo Cervone; and Mexican archaeologist/cum fledgling Iroquoianist, myself.

Sadly, Charlie died on a hillside at the Power House Site in 1985, while many of us were attending that year's annual NYSAA meeting in Norwich, New York. The group was forced to reorganize as the Seneca Archaeology Research Project, adding more personnel along the way, including Annette Nohe, Ralph Brown, Dale Knapp, and ceramic specialist, Kathleen Allen. Many other individuals, too many to enumerate, offered their time, expertise, insights, and professional advice during the years that followed. Support from the Rock Foundation, National Science Foundation (Grant # BNS 8706178),

National Endowment for the Humanities (Grant # RK 20039-93), and the RMSC, allowed the group to undertake a projected ten- to fifteen-year project of documenting the voluminous body of early historic Seneca site materials housed at the museum; testing the validity of Wray's proposed site sequence and chronology from multiple vantage points and diverse avenues of inquiry; and ultimately proposing refinements where indicated.

Project Results re: Wray Seneca site sequence and chronology

Now, more than 30 years later (and presumably somewhat the wiser), I will briefly summarize some of the more significant results that emerged from the project's efforts. These are more completely elaborated in our three major publications (Wray et al. 1987; Wray et al. 1991; Sempowski and Saunders 2001). It should be said at the outset that of the twenty-five sites encompassed by Charlie's 1973 formulation, we only managed to publish comprehensively on nine sites: six major village sites, and three small satellite sites, before we ran out of steam. How naïve we were about the magnitude of the collections and the enormity of the task we had taken on! Having said that, here are some of the conclusions that we view as most significant:

First, with regard to our primary goal of testing and refining the validity of Wray's dual sequences for those nine sites, we found largely consistent artifactual, demographic, mortuary, and osteological evidence confirming the relative contemporaneity and order of the paired villages in the eastern and western sequences that Charlie had intuited in 1953 (Figure 16) (see Wray et al. 1987:252-254; Wray et al. 1991:400-412; Sempowski and Saunders 2001:713-722). It should be noted, however, that the Cameron Site represents one apparent exception to confirmation of the original formulation; many discrete lines of evidence—osteological, artifactual and demographic—suggested that the Cameron occupation (RMSC Site Files: Hne 029) had been placed in the wrong sequence. These data suggested that the Cameron Site fit better in the eastern rather than the western series of sites (Wray et al. 1991:385-387; 409-411), a hypothesis that was supported by data from subsequent sites in the series (Sempowski and Saunders 2001:720-722). This implied, however, there was likely to be another, unconfirmed site in the western series. A site on the Brisbane farm (see Figure 16 above) in Livingston County appears to represent a good possibility, based on a small collection of artifacts in the museum and informal reports on the types of artifacts found there.

Slight adjustments were also necessary in the approximate occupation dates of these early sites, based on the above alteration in the two sequences, and on the arguments made by Kenyon and Fitzgerald in 1986 concerning glass bead horizons in New York and Ontario. We argued that the Adams (RMSC Site Files: Hne 030) and Culbertson (RMSC Site Files: Hne 104) sites, the earliest in the area with European trade goods, were probably not occupied until around 1570/75 AD and that the latest of those we studied—Dutch Hollow (RMSC Site

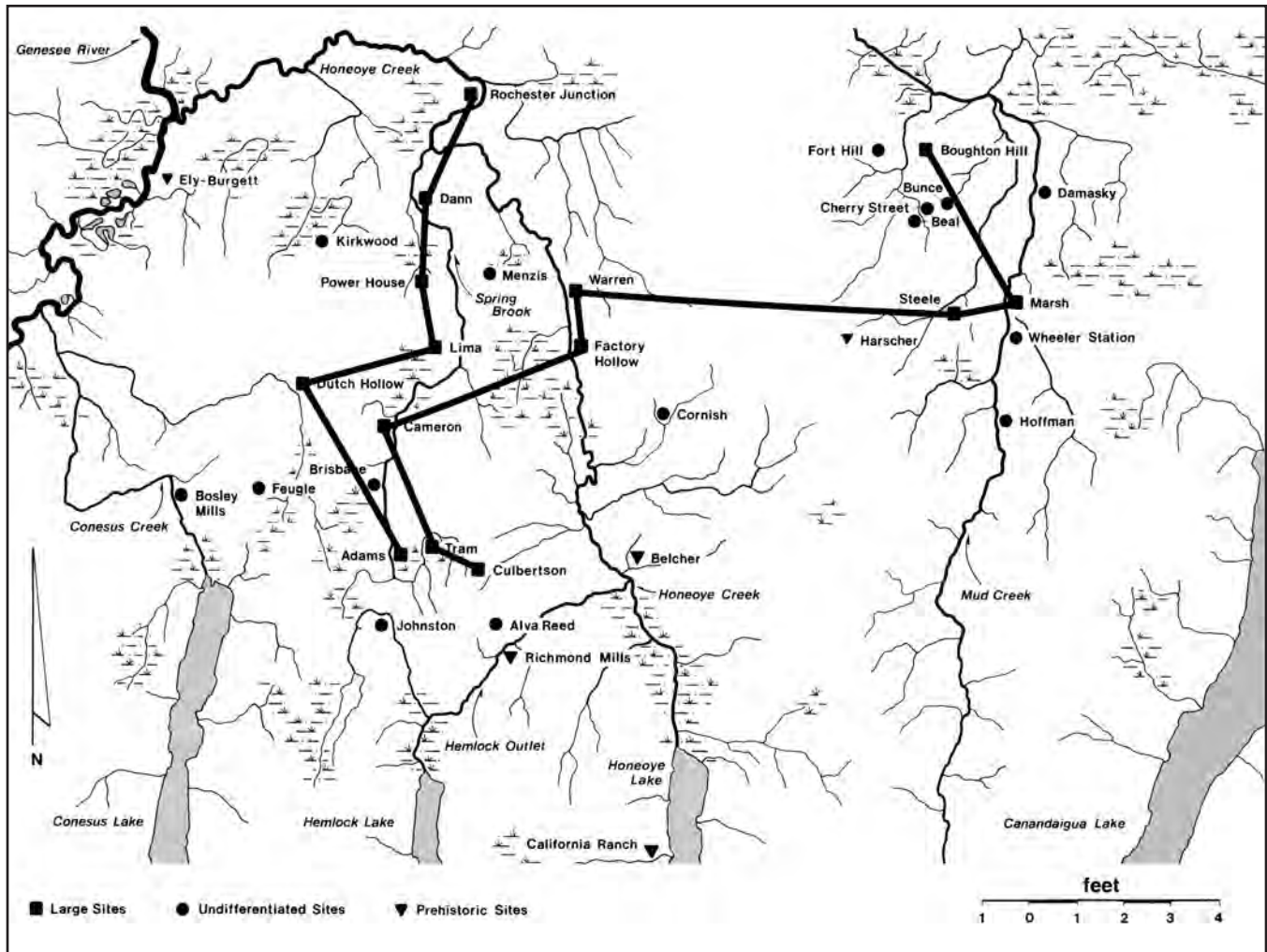


Figure 16. Revised Seneca Site Sequence based on Seneca map drawn by Charles F. Wray (1973) (after Sempowski and Saunders 2001:6, Figure Intro-2); with permission of the Rochester Museum & Science Center, Rochester, New York.

Files: Hne 001), Factory Hollow (RMSC Site Files: Hne 007), and Fugle (RMSC Site Files: Hne 032)—were probably abandoned some 50 years later, around 1620/25 AD (Figure 17). This meant a reduction in estimated site occupation periods from twenty-year intervals to fifteen-year (Sempowski and Saunders 2001:41-47, 720-722).

Despite these minor modifications to the early part of the Wray framework, we still see it as the most valuable comparative baseline for Iroquoian sites across the Northeast for two reasons:

- 1) the relative completeness of the Seneca sequence (i.e., no major breaks); and
- 2) the extraordinary size and breadth of the collections that underlie it.

Absolute occupation dates will, of course, remain somewhat elusive, given the inadequacy of radiocarbon dating due to the margins of error for sites of this relatively recent time frame. For the time, however, it is generally regarded as a critical benchmark as a reliably dated sequence of historic Iroquois sites, and thus a highly used comparative baseline for Iroquoianists across the Northeast.

Other Significant Project Results

The Wray framework—the relative sequence and approximate dates of early historic Seneca sites—provided a basis upon which Seneca project personnel drew some significant conclusions regarding processes of cultural and social change during that critical early period of contact between Europeans and Native Americans, including the following:

- 1) Process of village formation - During the last quarter of the 16th century, prior to indications of any sustained European presence in the region, two large, closely-situated Seneca villages appear to have formed from the consolidation and amalgamation of a number of small scattered populations in an area north of the Bristol Hills. Osteological, demographic, ceramic, and mortuary evidence suggest that these two groups were culturally and socially heterogeneous (Wray et al. 1987:242-248; Sempowski et al. 1988). The population of the Adams Site is particularly informative as to the possible process of village

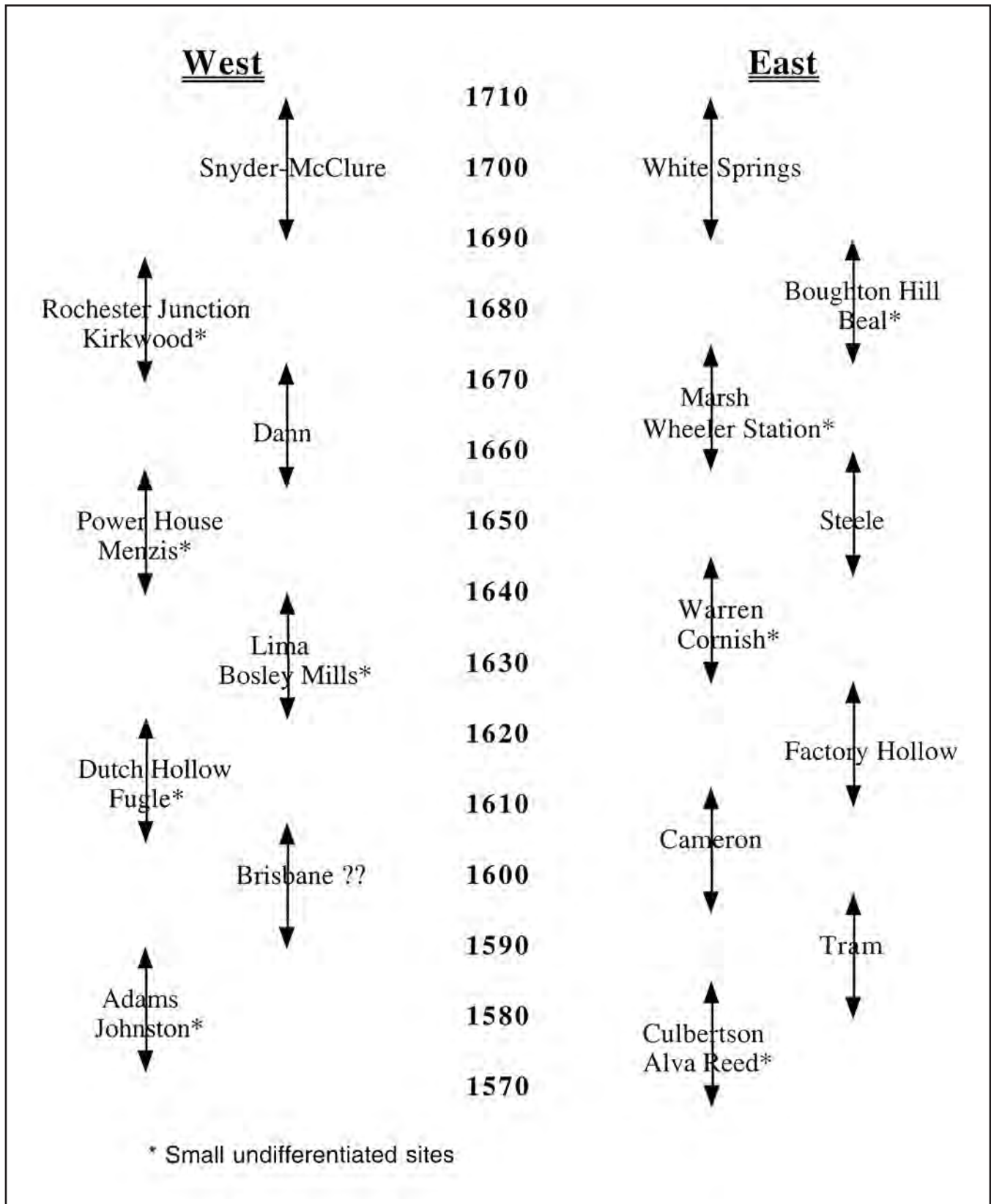


Figure 17. Revised Seneca Site Chronology (A.D. 1570-1710) (after Sempowski and Saunders 2001: 3, Figure Intro-3); with permission of the Rochester Museum & Science Center, Rochester, New York.

consolidation, in that a strikingly disproportionate number of females in the burial population suggests the incorporation of female war captives. Ceramic styles point to the derivation of at least some of these women from west of the Genesee River (Sempowski et al. 1988:104).

2) Alterations in mortuary practices - The earliest influx of European manufactured goods and other value-laden exotics into the area appears to coincide with an increased incidence of all sorts of material goods, both Native- and European-made, buried in mortuary contexts (Wray et al. 1987:251-252). At the same time, there is a rather striking alteration in the orientation of graves from predominantly easterly- to westerly-heading graves, as compared with evidence from earlier sites in the region (Sempowski 1991). It is far from clear, however, that the introduction and availability of trade goods was a precipitating factor underlying either of these changes in mortuary ritual and behavior.

3) Infant mortality - The incidence of infant and child mortality (death at less than 6 years of age) appears to have been “atypically” high among the Seneca for a period during the early 17th century. The highly unusual pattern, unprecedented at previous and later Seneca sites, is noted primarily among burial populations at the “overlapping” Cameron and Dutch Hollow sites and to a lesser degree in one cemetery at the Factory Hollow Site which followed Cameron in the eastern series (Wray et al. 1991:193-195, 391-392, 402; Sempowski and Saunders 2001:28-32, 327-31, 714). This observation appears to indicate some type of environmental process, such as infectious disease or diseases, to which infants and young children lacked any acquired immunity. This might suggest an earlier episode during which older individuals had been exposed and acquired immunity. Or it may simply be that infants and young children were more vulnerable, as they are known to be, to whatever the specific disease process was.

4) Disjunction in the Senecas’ exchange network - An abrupt shift in the trade and exchange network in which the Senecas participated occurred early in the 17th century—away from a southeasterly network involving Susquehannock and Ontario Iroquoian groups (Wray et al. 1987:250-251; Wray et al. 1991:393-394) to one linking them with their Iroquoian neighbors to the east (Sempowski 1994; Sempowski et al. 2001:687-689).

5) Easterly network and trade goods - The onset of the Senecas’ involvement in the easterly exchange network resulted in an exponential increase in the quantity of trade goods and other exotics available to them. Again, the majority of these goods appear to have been destined for mortuary contexts, resulting in another noteworthy escalation in mortuary gift-giving and ceremonial behaviors at this time (Sempowski and Saunders 2001:305-307, 579-582).

6) Changes in native technologies - Unprecedented alterations in native technologies took place during the first decades of the 17th century. Some traditional items—stone axes and oval chert bifaces—dropped precipitously in numbers. Other tools and utilitarian items were altered in size and form (e.g., chert projectile points became smaller and more equilateral in shape, and serration became more common on many different types of chert tools) (Sempowski et al. 2001:694-702). Both of the latter trends are noted across the Northeast at around this time. Yet other native technologies, such as the manufacture of ceramic smoking pipes, antler combs, and carved maskettes, show a fluorescence at this time, as well as a significant increase in frequency.

7) The League of the Iroquois - Finally, sometime around the beginning of the 17th century, several lines of evidence (increased numbers of smoking pipes, striking new emphasis on condolence rituals, including an abundance of material grave offerings and another increase in the frequency of westerly-oriented bodies in graves) suggest that the Senecas affiliated with an expanding alliance of their easterly neighbors. A clay source analysis of a sample of ceramic pipes from Seneca sites of this period alongside earlier ones shows that at this time, at least some of the Seneca pipes actually originated in the Mohawk area (Kuhn and Sempowski 2001). We concluded that this reflected interactions of a political or ceremonial nature involving pipe smoking and exchange between the Seneca and Mohawk. Further, we suggested that despite the likelihood of earlier alliances among neighbors to the east, this evidence of Seneca affiliation may have marked the earliest appearance of the League of the Iroquois *in its classic Five Nations form* (Kuhn and Sempowski 2001:312; Sempowski et al. 2001:710-713).

Summary

In overview, then, these two frameworks—Ritchie's for the Pre-Iroquoian period and Wray's for the Iroquoian—form the most fundamental structures underlying today's New York State archaeology. With the refinements to the original formulations that have occurred over the years, chronological control has become ever more secure and now allows fruitful inquiries into abstract processual questions that would have been impossible to pose, and potentially answer, without an understanding of the temporal site relationships that guided and shaped their investigation. Equally invaluable, however, are the well-curated RMSC collections (now numbering over 800,000 artifacts), and the vast trove of related records that support the postulated frameworks; for therein lies the potential for testing and refinement of the basic assumptions made by those who built them.

Acknowledgements

Three individuals on the staff of the RMSC provided invaluable assistance in scanning the photos and negatives used in illustrating the talk that I presented at the NYSAA Centennial Conference, as well as this paper. To Kathryn Murano Santos, Lauren Tagliaferro, and Elizabeth Pietrzykowski, I express my appreciation for their time and expertise.

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Above Ground Archaeology: Archaeologists Studying Cemeteries and Gravestones in New York State*

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The above-ground archaeology of historic cemeteries has been a major theme in North American historical archaeology since the 1960s. This article examines the transformations in gravestone studies within New York State. These markers, some of which date back to the 17th century, have been studied using various theoretical perspectives, from Deetz and Dethlefsen's tripartite evolutionary schemes as well as through Marxist, consumerist, and art historical lenses. Archaeologists have analyzed New York State gravestones in terms of ethnicity, race, class, gender, religion, occupation, materiality, trade networks, and consumer behavior. This article provides an overview ranging from colonial gravestone carvers to the modern necropolises associated with New York City. It also points towards future research directions worthy of investigation.

Introduction

A common image that people have of archaeologists is Indiana Jones excavating a tomb. In reality, 21st century archaeologists often do "above-ground" archaeology studying gravestones, memorials, statuary, mausoleums, and even cemetery landscapes. Some archaeologists excavate burials, but it is usually only done when a cemetery is threatened by a development project or is inadvertently discovered. Much has changed in the last hundred years regarding the archaeological study of cemeteries and burial grounds. In the early 20th century, the American archaeological interest in cemeteries was not on the "above ground" markers, but on the buried grave goods. Throughout the country archaeological interest focused on American Indian burial grounds, not on African American or European American cemeteries. There was a widespread perception, happily proven wrong, that American Indian cultures were rapidly disappearing. As salvage ethnographers worked to document changing societies, archaeologists funded by museums, such as the American Museum of Natural History, the Museum of the American Indian – Heye Foundation, the Peabody Museum, the University of Pennsylvania Museum, the Field Museum, and the U.S. National Museum (Smithsonian) sponsored excavations of American Indian burial grounds. In the early 20th century the question of the pro-

tection of sacred sites and the rights of Native Americans to protect their burial grounds was not a legal or an ethical issue for archaeologists. This changed in 1990 with the passage of the Native American Graves Protection and Repatriation Act (NAGPRA) which provided legal protection for these sites and led to increased collaboration between Native American descendant communities and archaeologists.

Also, in the late 20th century, many states passed laws protecting historic cemeteries from excavation without the assent of descendant populations (Price 1991). Before these legal protections, many early cemeteries of diverse ethnic, religious, and racial groups were destroyed as cities expanded, and cemeteries on valuable urban tracts were lost to development. Some cemeteries with missing gravestones or ephemeral wooden markers were simply forgotten and lost. In the 21st century, abandoned burial grounds continue to be uncovered during construction projects, and CRM archaeologists are regularly called on to excavate burial grounds and remove the bodies. Examples of 21st century CRM burial excavations in New York State include the Spring Street Presbyterian Burial Ground in Manhattan (Mooney et al. 2008; Morin 2010); the pauper burial ground associated with the Erie County Poorhouse in Buffalo (University at Buffalo 2014); and the excavation of an African American slave burial ground near Albany (Huey 2016).

Using modern bioarchaeological techniques, archaeologists can learn much about historic populations. Skeletal markers provide information about stature, gender, age, habitual activities, and health of deceased individuals, as well as injuries they suffered during their lives. Coffins, grave goods, clothing, and jewelry can provide information on social status, class, occupation, and sometimes religious affiliation. Forensic anthropologists can identify certain diseases (such as tuberculosis, anemia, and syphilis), note congenital illnesses, record evidence of trauma, reveal information about diet, and sometimes determine where individuals lived. For example, isotope tests for carbon, lead, strontium, and oxygen from drinking water (but embedded in teeth) can indicate where an individual spent their childhood and later lived as an adult (Kelso 2006:128-129). Chemical analysis can also provide information on a person's diet. In the excavation of three individuals from a colonial cemetery in Albany, New York, chemical analysis from the bones revealed that two males consumed more

*This article was peer reviewed. We are grateful to the reviewers for their helpful input.

root crops; while the female ate more leafy vegetables; and one of the males consumed more meat and shellfish, which may reflect a different, higher, social status (Fisher 2003:67). DNA studies of bones can provide data on a person's ancestry. For example, the DNA samples from thirty-two individuals from the African Burial Ground showed similarities to populations in Benin, Nigeria, Senegal, Niger, and other parts of West Africa (Mack and Blakey 2004:11). While much can be learned from human remains, there is happily a growing awareness among archaeologists that ethical concerns need to be addressed, descendant communities need to be consulted, and reburial should be part of a discussion with community members (Baugher and Veit 2014:34).

The African Burial Ground project in New York City is an excellent example of collaboration between descendant community members and archaeologists (LaRoche and Blakey 1997). The politically active descendant community helped shape how the African Burial Ground was protected and was/is interpreted to the public (Baugher and Veit 2014:30). The burial ground was designated a New York City Landmark in 1993 (Harris et al. 1993). It was also designated as a National Historic Landmark in 1993; and in 2006, the site became part of the National Park System as the African Burial Ground National Monument (Statistical Research 2009:20, 34). Although the African Burial Ground project is arguably the most famous archaeological study of a burial place in New York State, historians, genealogists, art historians, and, of course, archaeologists, have a long history of investigating the above-ground remains of New York's burial grounds.

Gravestones, part material culture, part document, dated and associated with known individuals, provide a useful data set both for testing archaeological theories like seriation and for studying past societies. Moreover, unlike other artifacts that need to be washed, cleaned, and curated, gravestones often remain *in situ* and do not need to be permanently housed in a museum. In the 1960s archaeologists James Deetz and Edwin Dethlefsen wrote a series of important articles about the research value of gravestones as artifacts (Deetz and Dethlefsen 1965, 1967, 1971; Dethlefsen and Deetz 1966, 1967). Archaeologists in New York have gone beyond Deetz and Dethlefsen's initial study of gravestones as markers of religious doctrinal changes and have analyzed markers in terms of ethnicity, race, class, gender, occupation, materiality, trade networks, and consumer behavior. Other archaeologists have examined mausoleums, statuary, and the landscape design of 19th- and 20th-century cemeteries. This article examines the themes archaeologists have explored in the "above ground" study of New York State's burial grounds and cemeteries.

Early Interest in Gravestones

New York State's colonial gravemarkers have inspired researchers and authors since the early 19th century. Washington Irving's classic tale "The Legend of Sleepy Hollow" is set adjacent to the Old Dutch burial ground in Tarrytown, and

the peripatetic historian of the American Revolution Benson Lossing illustrated several New York State gravemarkers in his *Field Book of the American Revolution* (1852). Genealogists and historians spent considerable effort documenting early burial grounds; however, it was during the 20th century that interest in the material culture of commemoration grew significantly. Initially, it was art historian Harriet Merrifield Forbes' *Gravestones of Early New England and the Men who made them, 1653-1800* (1927) who approached gravemarkers as an art form to be catalogued and studied in the way that art historians might study any type of material culture. She was able to demonstrate that New England's slate gravemarkers were produced by local craftsmen and were not imported from England, as was then widely believed. Her work shed considerable light on this early American industry. However, it was not until the 1960s that interest in the arts and industries of colonial America blossomed. It was at this time that art historians, artists, and folklorists rediscovered gravemarkers (Ludwig 1966; Parker and Neal 1963). But it was James Deetz and Edwin Dethlefsen who drew the attention of archaeologists to gravemarkers.

Using gravestones and cemeteries in Massachusetts, Deetz and Dethlefsen outlined a fieldwork procedure, consisting of photography of all stones, accompanied by recording of inscriptions and photography of iconographic details that most subsequent archaeologists have emulated. Deetz and Dethlefsen demonstrated that in a colonial cemetery one finds a clear seriation pattern in the iconography on the tombstones. They presented a tripartite evolutionary scheme, in which there were three major iconographic forms represented on the gravemarkers: death's heads, cherubs (winged human faces); and urns and willow trees. They demonstrated that gravemarkers provided a ready-made laboratory for archaeologists studying material culture.

Their articles were summarized in Deetz's classic introduction to historical archaeology, *In Small Things Forgotten* (1977). There Deetz laid out a series of coherent eloquent arguments regarding the evolution, distribution, and research potential of early American gravemarkers and modeled a rigorous research methodology that formed the foundation for decades of subsequent scholarship. Deetz also stressed the link between gravestone images and changing religious doctrines. He argued that the fading popularity of the grim death's head image and its replacement by the more cheerful cherub image was associated with a shift from Puritan/Calvinist theology to the religious ideology of the Great Awakening. Deetz also believed that the urn and willow motif, popular in the late 18th and early 19th century, was linked to a secularization of religion. Deetz (1977:72) noted that the urn and willow motifs are also symbols of commemoration with the phrases "In Memory of" and "Sacred to the Memory of" as memorial statements. Some of these memorial gravestones are for individuals buried elsewhere, including burials at sea.

Deetz and Dethlefsen made profound contributions to gravestone studies and inspired a whole generation of archae-

ologists, including many archaeologists in New York, to view gravestones as above-ground artifacts worthy of study. For many archaeologists, Deetz and Dethlefsen's work provided a model to be tested in other locations within the Atlantic English colonial world, as well as assumptions to be challenged. A number of New York archaeologists using Deetz and Dethlefsen's methodology found different and surprising results in the multi-cultural cemeteries in New York State.

The Study of Colonial Gravestones in New York State

Inspired by Deetz and Dethlefsen, New York scholars began studying gravestones. Many applied the same careful models of recordation and photography pioneered by Deetz in New England. In 1983, Sherene Baugher and Frederick A. Winter presented the results of their examination of colonial New York's three largest surviving cemeteries: Trinity in Manhattan, St. Andrew's on Staten Island, and Gravesend in Brooklyn. Because New York City had a much more ethnically diverse population than colonial New England, this study allowed them to test some of Deetz' religious assumptions about gravestones and to see if Deetz and Dethlefsen's seriation pattern of iconography from death's heads to cherubs to urns and willows worked. Trinity Church is the earliest and largest surviving colonial Anglican English burying ground in New York and was associated with the city's elite (Figures 1 and 2). St. Andrew's is an Anglican Cemetery in Richmondtown, Staten Island, which served the English, Dutch, and French settlers in the village. Gravesend in Brooklyn is a nonsectarian cemetery and served rural, farming, English and Dutch families (Baugher and Winter 1983:48, 53).

The neat seriation pattern plotted by Deetz and Dethlefsen did not exist in New York. There were no death's head images in Gravesend and no urn and willow motifs in Trinity cemetery, although the range of gravestones in both cemeteries more than covers Deetz' tripartite evolutionary range of 1720-1829. The earliest stones in Gravesend were simple fieldstone gravemarkers with initials for the deceased. At Gravesend the fieldstone markers were followed by stones with cherubs. The absence of death's head iconography could be related to a noticeable gap in the dated gravestones at Gravesend with most of the stones dating post-1760.

At both the Trinity and St. Andrews cemeteries there was the expected evolution from death's head images to cherubs, but there were no clear-cut correlations between the decoration of the gravemarkers and the age and sex of the deceased (Baugher and Winter 1983:52). Other patterns were found at the same time as the cherubs. In St. Andrew's cemetery floral designs were found only on the gravestones of individuals with French and Dutch surnames (Figure 3). In Trinity cemetery masonic symbols and cannons appear on men's graves.

Gravesend tombstones contained both English and Dutch language inscriptions. There was little difference between the English inscriptions found on stones with either English or



Figure 1. The rear image of the Richard Churcher headstone in Trinity Churchyard, New York, is the oldest in New York City and dates from 1681. It is ornamented with a mortality image consisting of a skull and cross bones, and a winged hourglass (photo: Adam Heinrich).



Figure 2. The inscription of the Richard Churcher headstone in Trinity Churchyard. Churcher died when he was only five years old (photo: Adam Heinrich).



Figure 3. This floral marker, likely carved by Ebenezer Price of Elizabethtown, New Jersey, stands in the Moravian Cemetery on Staten Island (photo: Richard Veit).



Figure 4. A cherub carved by Ebenezer Price of one of his apprentices in Elizabethtown, New Jersey, commemorates. It is located in the Moravian Cemetery on Staten Island (photo: Richard Veit).

Dutch surnames. In fact, the same carver created cherub stones for Dutch families in Gravesend cemetery and for English families in Trinity cemetery (Baugher and Winter 1983:51, 53). The similarities between markers for individuals of English and Dutch descent and of Anglican and Dutch Reformed faiths led Baugher and Winter (1983:53) to suggest that the iconography on gravestones may reflect a shared Western cultural tradition rather than a specific religious ideology (Figure 4).

Historians have questioned the link between gravestone iconography and religious doctrines. Historian David Hall (1976:23, 29) stated bluntly that the death's head image was not related to Puritanism but to a much earlier memento mori concept. Scholars have noted that the Great Awakening was a complex religious reaction to the Enlightenment and to social changes, not a reaction against Puritan ideology as Deetz assumed (Bridenbaugh 1966; Bushman 1971). Deetz (1977:69-71) was correct in noting that the Great Awakening involved

evangelical religious revivals where people experienced an emotional religious experience. However, this emotionalism did not imply a liberal theology that Dethlefsen and Deetz (1966:508) believed was a "focus on the joys of life after death and resurrection of the dead." Jonathan Edwards is Deetz' example of one of these revivalist preachers. However, Jonathan Edwards in his most famous sermon, "Sinners in the Hands of an Angry God," was preaching a return to early 17th-century ideals of Puritanism with the stern emphasis on judgment and mortality (Miller 1971:290-293). The Great Awakening was actually a series of religious revivals that lacked a uniform message (Howard 2001:171).

Archaeologists found further examples disproving the association of cherubs to the Christian "Great Awakening" movement. In fact, David Gradwohl (2007) found cherubs on gravestones of Sephardic Jews buried in the cemetery associated with Touro Synagogue in Newport, Rhode Island. In the

21st century, historical archaeologist Adam Heinrich (2014) provided an alternative explanation of the tripartite evolution of colonial gravemarkers first noted by Deetz and Dethlefsen. Building from art historical studies, he argues that the designs seen on colonial gravemarkers relate more to changing artistic styles than to religious revivals. Indeed, Heinrich attributes the shift from death's heads to cherubs to broader artistic shifts from grim medieval memento mori to flowery, curvaceous Baroque and Rococo designs. Heinrich convincingly demonstrates that the image of cherubs on gravestones was simply an appropriation of a Rococo artistic tradition that was used in paintings, on furniture, and on buildings rather than a direct reflection of the Great Awakening, as Deetz had postulated. Heinrich (2014:61) linked the use of the cherub on gravestones to consumer behavior in which people would use the latest artistic fashions "to conspicuously express their social standing through the iconography on their own or family member's gravestones."

New York archaeologists realized that gravestones could reveal a wealth of information beyond the more restrictive view of gravestones reflecting changes in religious ideology. The first systematic regional study of New York gravemarkers was performed by Gaynell Stone (Levine) for her MA thesis in anthropology. She focused on Long Island's colonial burial grounds. Long Island was an excellent location for this type of study as it is lacking in quarryable stone. Stone's thesis looked at colonial trade networks and built on the growing body of research about colonial carvers. By identifying the products of carvers' workshops she was able to track "the depth and direction colonial trade between Long Island and the lower Hudson Valley and New England" (Levine 1978:56). Stone (Levine) found that 99% of the extant gravestones came from nine production centers: New York City; Newark and Elizabeth, New Jersey; Boston and Plymouth, Massachusetts; Providence and Newport, Rhode Island; Coastal Connecticut; and the Connecticut River Valley (Levine 1978a:51, 56). She noted that social and family connections and perhaps most importantly economic ties seem to have influenced gravestone choice, not religious shifts due to the Great Awakening (Levine 1978a:53, 57).

Stone would subsequently go on to complete a massive study of Long Island's colonial cemeteries for her Ph.D. dissertation (1987). Here she looked at a wide variety of variables that shaped the historic cultural landscapes of Long Island. She photographed and inventoried more than 4,300 grave markers from 164 cemeteries, and coded them for 44 variables. Stone went beyond her initial study of trade to examine these markers in light of issues of ideology, ethnicity, settlement hierarchy, social organization and geographic setting. She found that Long Island was part of two different culture spheres located between British New England and the "Dutch" culture sphere of New Amsterdam/New York" (Stone 2009:142). Stone (2009:152) also noted that the Dutch language was used on stones until 1817, evidence of the persistence of Dutch culture long after the English takeover of the colony in 1664. Indeed,



Figure 5. This extraordinary marker was carved by John Zuricher for Altje Brinckerhoff, who died in 1749 at the age of 22. It is located in the Fishkill, Dutch Reformed Burial Ground (photo: Richard Veit).

Dutch language markers are also common throughout the Hudson Valley (Figure 5). The inscriptions on gravestones also revealed ethnic and gender differences for Dutch and English women. Only a small portion of gravestones of high status English wives contained the information "wife of" and "daughter of" whereas the gravestones for Dutch women noted the woman's family of birth by using her natal name and then her husband's name (Stone 2009:152-153). Stone remains one of the most active researchers of New York State gravemarkers and has shared her results through a series of publications (Levine 1978a, 1978b; Stone 1987, 2009).

Historians also made major contributions to our understanding of the gravemarkers of colonial New York. In 1972, art historian Emily Wasserman compiled the first book focused on the gravestones of colonial New York and New Jersey. Shortly thereafter, Richard Welch began working to identify northern New Jersey, New York City, and Long Island's carvers, and followed this up with a well-illustrated anthropologically-informed examination of early Long Island gravestones (Welch 1983, 1987).

More recently, Brandon Richards (2007) studied Dutch gravestones in the Hudson Valley and adjacent parts of New Jersey. Richards notes that the earliest surviving Dutch grave markers from the late 17th and early 18th centuries were sim-



Figure 6. This marker by John Zuricher, colonial New York's best-known carver, is located in the Fishkill, Dutch Reformed Burial Ground. While most markers are signed on the face near the bottom of the marker, this one is signed on the side (photo: Richard Veit).

ple fieldstone gravemarkers that were rough hewn and appeared much like wooden planks. Richards (2007:38) characterized these early markers as plank, post, and trapezoidal or pointed markers and were rarely decorated. He notes that these early stone markers appear to be simple versions of 17th-century gravestones in the Netherlands, and some of the colonial Dutch markers even resemble Medieval runestones (Richards 2007:27). Richards (2014) expanded his study of Dutch markers in New York to include cemeteries from Albany to the eastern tip of Long Island. He, like Gaynell Stone (2009), found that Dutch married women often retained their maiden names (Richards 2014:19). He also found that the Dutch language was used on the majority of stones in pre-1770 cemeteries in the Hudson River Valley (Richards 2014:16). The persistence of the Dutch culture can also be seen in studies of individual carvers. For example, New York City carver John Zuricher carved stones in both English and Dutch. His stones found in cemeteries in Brooklyn are almost exclusively inscribed in Dutch, while those found in Trinity Church-

yard in Manhattan are inscribed in English (Baugher and Veit 2013). In gravestones, archaeologists have seen evidence of the maintenance of cultural boundaries and cultural separation in some of the Dutch stones with the use of Dutch language (Baugher and Winter 1983; Stone 1987, 2009; Baugher and Veit 2013; Richards 2014).

Richard Veit (2009) has examined gravemarkers through the lens of consumerism. At the end of the 18th century as the national economy improved, more and more gravestone carvers began to sign their work (Figure 6). Signed markers are common in New England, New York, and New Jersey (Levine 1978b; Veit 1996; Wasserman 1972; Welch 1973). Ethnic and socioeconomic connections played an important role in determining the carver's clients (Baughner and Veit 2013). Some families preferred certain carvers, for instance, Dutch settlers in New York and New Jersey commonly purchased gravestones from John Zuricher, a multilingual carver (Baughner and Veit 2013).

Archaeologists are not simply interested in colonial gravemarkers. Indeed, important work has been done on New York's 19th- and 20th-century memorials. Central New York State in the early 19th century was known as the Burned-Over District and was a center of the Second Great Awakening movement. Archaeologist LouAnn Wurst (1991) evaluated gravestones in Broome County for iconography associated with the Second Great Awakening. Wurst associated the following symbols with the Second Great Awakening: the index finger pointing upward, clasped hands, the laurel wreath, the anchor, the Bible, and a hand holding a broken rose or a broken chain (Wurst 1991:131-133). However, all of these symbols had multiple meanings and not just a religious one (Figure 8). For example, the image of the index finger (Figure 7) pointing upward can symbolize the number one, the best, or that Christ is the way to salvation (Olderr 1986:48). Some of the symbols Wurst associated with the Second Great Awakening had been used since Roman times, such as a laurel wreath for victory and triumph (Cirlot 1971:181). The laurel wreath, because of its military association with victory, is found on numerous 19th-century graves and memorials to fallen soldiers. Since these symbols have multiple meanings, Wurst used the epitaphs on the stones, such as "gone to heaven" and "at rest in heaven," to associate the stones with the Second Great Awakening religious movements. After examining 1,644 gravestones, she found only 119 stones, or just 7.24 percent of the total stones, had Second Great Awakening symbols with associated epitaphs, and the overwhelming majority of these "Second Great Awakening" stones were associated with the rural elite (Wurst 1991:127, 139). Because none of these symbols were found in the urban cemeteries, Wurst (1991:145-146) concluded that with these modest Second Great Awakening stones, the rural elite sought to minimize class differences while "the urban elite strove to accentuate those differences" with elaborate gravestones and mausoleums.

Archaeologists interested in 19th- and 20th-century memorials have focused on several different topics, including eth-



Figure 7. Although this finger pointing upward lacks any epitaph that would associate it with the Second Great Awakening, designs like this were part of the iconography of that social movement. The bronze gravestone is in the first Public Cemetery in Virgil in the Finger Lakes Area of Central New York (photo: Sherene Baugher).

nicity, class, and commemoration. Sherene Baugher (2012) has researched the Civil War cemetery in Elmira, New York, associated with a prisoner of war camp constructed by the Union Army to house captured Confederate soldiers (Figure 8). Although it only served as a POW camp for a little more than a year, 24.3% of the 12,000 Confederate soldiers imprisoned there died, most from malnutrition and diseases endemic to the camp, making the death toll second only to the infamous Andersonville Confederate POW camp in Georgia, which had a 29% death rate. Baugher's work has focused on how Union and Confederate dead were commemorated differently, and how those practices evolved over time. It is particularly interesting that John W. Jones, a slave who had run away to Freedom in Elmira, was the sexton for the Elmira POW cemetery. Jones kept a meticulous ledger noting the exact location of each Confederate soldier's burial with the individual's name, rank, unit, and state, enabling correct marble markers to be placed on the graves forty years later (Gray 2001:97, 162).

Other researchers have analyzed gravestones with a focus on ethnicity and class. According to Charles Orser (2004:251) "ethnicity refers to the characteristics a group accepts as pertinent to them." Ethnic identity can be internal or external, or a combination of the two. Archaeologists have long been interested in how material culture, including ceramics, tobacco pipes, buildings, and foodways, reflect and shape identities. Gravemarkers, which are often clustered in cemeteries associated with particular religious and ethnic groups and can be associated with known individuals, are especially useful data sets for archaeologists interested in understanding ethnicity. Ethnicity is, however, only one piece of identity which may relate to religion, gender, race, class, age, occupation and other variables, forming a web of interconnected variables that can profoundly affect the individual's life course. Anthropological



Figure 8. The Elmira Prisoner of War Camp Cemetery within Woodlawn National Cemetery, Elmira, New York. These stones mark the graves of Confederate POWs (photo: Sherene Baugher).

theorists write of intersectionality, and archaeologist Charles Orser (2004:258) notes that “class membership, gender roles, ethnic affiliation, and race are like strings of a net; they are interconnected and inseparable.”

In one of the first systematic studies of 19th-century memorials, Lynn Clark (1987:394) argued that the consumer choices of gravestone iconography reflected the “individual’s class standing, ethnicity, and the interaction between the two.” Indeed, the poor and indigent often lacked formal gravemarkers. Wooden markers or fieldstones may have sufficed in place of formal gravestones. Even today, New York City’s Hart Island is the largest potter’s field in the United States with over 1,000,000 interments, almost all of which are unmarked. At times, wealthier members of society purchased gravemarkers for servants, slaves, and other individuals. These purchases often tell us as much about the purchaser as the interred (Veit and Nonestied 2012). Randall McGuire (1988) and his students at Binghamton University have done important work on class and commemoration in late 19th- and early 20th-century Broome County, New York. In the 1980s McGuire employed a Marxist perspective to examine commemorative practices, and when most scholars were studying 18th-century

memorials, he turned his attention to late 19th and 20th-century gravemarkers.

Broome County was a largely agricultural county in rural central New York that would later become a center for the manufacture of cigars and shoes, and more recently, in the late 20th century, IBM (McGuire 1988:441). The region’s history, especially that of its major city, Binghamton, reflects that of many Northeastern cities, shaped by waves of immigrants in the 19th and 20th centuries, including Irish, Italians, Jews from eastern Europe, and eastern European Catholics and Lutherans (McGuire 1988:442).

A thorough researcher, McGuire gathered data from over two thousand gravestones in 27 cemeteries, urban and rural, Protestant, Catholic, and Jewish, and created an incredible database of information. McGuire argued that “the burial ritual is . . . an active part of the negotiation and struggle between the powerful and the powerless in society” (McGuire 1988:436). Interestingly, he found that in some periods the markers clearly reflected the social stratification in the society, while in others they tended to obscure and mystify society’s inequalities and power relations (McGuire 1988:436).

Much of McGuire’s work employs the concept of an ideol-



Figure 9. The Green-Wood Cemetery in Brooklyn is one of the nation’s first and finest examples of the Rural Cemetery Movement. This photograph shows some of the many outstanding mausoleums in the cemetery (photo: Richard Veit).

ogy that is used by the ruling class to maintain its dominance over subaltern communities (McGuire 1988:439). Although many scholars have dismissed the uniform gravemarkers of the early 20th century as uninteresting and lacking in artistry, McGuire posits that they reflect and affirm an egalitarian ideology that denied the very real inequalities in the community (McGuire 1988:440).

Generally speaking, the 19th century, in Broome County, as elsewhere in the Northeast, saw an evolution from simple gravemarkers, generally headstones and footstones, to formal three-dimensional monuments, at first primarily obelisks, columns, and urns, but later increasingly elaborate multi-piece memorials, carved from marble or granite. The transformation in memorials reflects an evolving cemetery aesthetic, as well as the employment of new technologies, especially steam power and pneumatic chisels in the carving of markers, and a burgeoning railroad network which made transporting large monuments considerably more efficient than in earlier periods. Graveyards, family burial grounds, and church-affiliated burial places were increasingly replaced by cemeteries, often located outside urban centers, incorporated by for-profit companies, and professionally landscaped. New York City was home to some of the first of these new cemeteries, with the creation of New York Marble Cemetery (1830) and the New York City Marble Cemetery (1831), both located in the East Village in Manhattan. Two years earlier, in 1829, a group of New York investors established the Jersey City and Harismus Cemetery, looking for more open land outside the confines of the city. These early cemeteries predate those of the rural cemetery movement and are generally smaller and lack the elaborate landscaping of the rural or picturesque cemeteries. Commercial cemeteries were laid out on a rectilinear grid and had individual plots that were sold to individuals who would own them in perpetuity (Upton 1994:95).

However, the commercial cemeteries soon became crowded and were replaced by picturesque cemeteries, which are often called rural cemeteries. They were meant to respond to the challenges posed by burgeoning cities in early America. According to historian Jeffrey Smith (2017:xi), they embodied several paradoxes: “they were ‘rural’ yet urban, sacred yet secular, burial places for the dead but used regularly by the living, natural yet manicured.” While they served as a site for commemoration, they also created large greenspaces in urban localities that were heavily used by visitors, and foreshadowed the parks of the late 19th century.

New York State’s first rural cemetery was not in New York City but was Mount Hope in Rochester (1836). In 1838, Green-Wood Cemetery in Brooklyn was New York City’s first example of the new Rural Cemetery movement that was just then starting to sweep the country. Green-Wood would become a showpiece and model for other cemeteries across the nation (Figure 9). Soon many of New York’s major cities had their own rural cemeteries, including Albany Rural (1841) the Sleepy Hollow Cemetery (1849), Spring Forest in Binghamton (1849), Woodlawn in Elmira (1858) and Oakwood in Syracuse



Figure 10. The Jewish Adler family mausoleum in the Beth Emeth section of the Albany Rural Cemetery in Loudonville, NY. A fine turn-of-the-20th century temple form mausoleum (photo: Sherene Baugher).

(1858).

McGuire’s fieldwork documented an increasing expansion in the variety and size of memorials that continued into the early 20th century, as families, perhaps inspired by the gospel of wealth, invested more and more heavily in family memorials. Often a single major monument bore the family name, while smaller individual markers in the same fenced plot marked the graves of individual family members (McGuire 1988:447). Many of these fences were made from cast iron. Too often they were lost to WWI and WWII scrap drives. The wealthiest individuals erected elaborate mausoleums, often in temple form, for their families (Figure 10). Mausoleums were most popular between 1880 and 1920 (Sloane 1991:225).

Some of McGuire’s most interesting insights have to do with the commemorative practices of new immigrant groups. Some, such as the Irish, emulated the memorial practices of the dominant group, though employing some Catholic iconography. Similarly, Jewish immigrants, especially upper-class German Jews, used markers that were visually very similar to those of upper-class Protestants, while eastern European working-class Jews employed markers with more religious symbolism, perhaps as a show of ethnic solidarity and a rejection of the dominant ideology (McGuire 1988:471).

Overall, McGuire saw early 19th-century gravemarkers creating an “appearance of equality among the dead . . . that masked the relations of power among the living” (McGuire 1988:458). This practice faded in the late 19th century as industrial capitalism led to growing inequalities in life that were also reinforced and reflected in gravemarkers.

By the second decade of the 20th century, mass production, and a growing middle class, made mass-produced granite



Figure 11. The use of porcelain disk pictures, so popular on Jewish tombstones from the early 20th century, is making a comeback in the 21st century. This stone is from the Beth Emeth section of the Albany Rural Cemetery in Loudonville, NY (photo: Sherene Baugher).

memorials and mausoleums available to many individuals. In McGuire's (1988:465) words, "the competition in memorials lost meaning as more individuals could afford elaborate memorials." Markers became more and more uniform; however, some groups, especially eastern Europeans and Italian immigrants, continued to invest very heavily in memorials, even in mausoleums which were increasingly eschewed by the Protestant elites (McGuire 1988:470).

Lynn Clark also examined central New York State's gravemarkers and focused on the intersection between ethnicity and class. Her focus was on 19th-century memorials, and she studied twelve cemeteries dating from the 1830s to 1980 and employed a statistical sample of 1,117 markers. Clark (1987:384) posited that "class limits the number of choices a consumer can make and also provides more options to choose from." At the same time, she believes that ethnicity can either limit or expand consumer choices. Clark studied markers of 20th-century Italians, Slovaks, and Jews. She found clear evidence that socioeconomic class impacted gravemarker choices. Not surprisingly, wealthier families erected mausoleums. Upwardly mobile families could emulate the elites in their choice of gravemarkers. Blue-collar workers employed a variety of memorials, sometimes emulating monuments of the English American upper and middle classes and sometimes making ethnic choices. For example, the Italians and Slovaks made use of complex religious designs, photographs, and mausoleums. Jewish stones contained Hebrew epitaphs and

other inscriptions as well as religious iconography, including the Star of David. Furthermore, some groups, such as Italian immigrants, persisted in using mausoleums, which had fallen from favor with the broader population, well into the 1960s, reflecting the prestige systems within their own ethnic group. Clark's study of 20th-century markers shows the complex interplay of ethnicity and class in determining consumer choices in cemetery memorials.

Sherene Baugher has also examined Jewish cemeteries in New York, with a focus on the New York City region. She found that the symbols on markers and mausoleums in the upper and middle-class German-Jewish cemetery of Salem Fields in Brooklyn were very similar to those used by Christians in secular cemeteries (Baugher and Veit 2014:184). Successful German-Jewish families displayed their material success through monuments and elaborate sculpture. However, they did employ Hebrew inscriptions, thus affirming a family's religious background. David Gradwohl (1993) studying 19th century Jewish cemeteries in Kentucky, Iowa and Nebraska found that the gravestones and mausoleums of Reformed Jews used similar iconography and design elements to those used by non-Jews in secular cemeteries.

David Gradwohl also found that pictures of the deceased, on small porcelain disks, were common on early 20th century gravestones in the Midwest (1993:14). Baugher found a similar pattern on Jewish gravestones in New York City (Figure 11). This pattern is also seen in Italian-American and eastern European gravemarkers during the early 20th century. It builds from traditions in Southern and Eastern Europe. John Maturri notes (1993:25) that "The photograph serves as a kind of window of imagination through which one can maintain a relationship with a deceased family member."

Richard Veit (1997:203) has documented unusual terra cotta gravemarkers found on Staten Island, New York, created and used by new immigrants from eastern and southern Europe employed in the ceramics manufactories of Staten Island and nearby Middlesex County, New Jersey. Dating from the late 19th and early 20th centuries, these unusual markers reflect the great skills of the ceramicists in the terra cotta industry and provided low-cost, colorful, and long-lasting memorials to these working-class communities. Other scholars, including Roberta Halporn (1993:147), have examined Russian Jewish cemeteries in New York, with a focus on the marvelous modern memorials often carved on black granite and displaying elaborate photo-engravings, often showing the deceased. John Maturri (1993) looked at Italian American commemorative practices in New York and New Jersey where cemetery plots are the focus of continued family interactions, sometimes lasting for decades.

Conclusions

New York State's historic burial grounds are important resources of information about the region's past. The archaeological excavation of Native American burial grounds, which

was once commonplace, has largely ended as archaeologists focus more on respecting the wishes of descendant communities and engaging in collaborative research. However, the excavations of burials do occur in advance of construction or when skeletal remains are discovered by accident. Examples of burial grounds excavated by CRM firms are the African Burial Ground in New York City, the Erie County Poorhouse in Buffalo, and an African American slave cemetery near Albany, New York.

Much of the archaeological research on New York's cemeteries has focused on above-ground archaeology and the analysis of gravemarkers. These markers, some of which date back to the 17th century, have been studied using various theoretical perspectives, from Deetz and Dethlefsen's tripartite evolutionary schemes as well as through Marxist, consumerist, and art historical lenses. They provide a rich record of historical, cultural, artistic, and genealogical information about New York State's residents. New York's five boroughs, Long Island, the Hudson Valley, and Broome County have been favorite areas for researchers. Many regions of New York State, and research topics, remain little studied. Future researchers might further examine the trade networks and artistic styles represented in colonial burial grounds. The markers erected in historic Native American cemeteries also deserve study and documentation. African-American and other ethnic burial grounds have seen little study relative to the immense cultural diversity represented in New York State. Twentieth century cemeteries also warrant study, especially as attitudes towards death and commemoration evolve in new directions. Comparative studies of cemeteries and their markers would also be very valuable, especially in the Borough of Queens, a veritable Valhalla for New Yorkers. So, grab your camera and notebook and head out on a New York cemetery safari. You won't be disappointed!

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Fighting on the Frontier: Military Sites Archaeology in New York

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Numerous British, French and American fortifications were constructed in what is now the State of New York, and a great many of these have left behind extensive archaeological remains that are the focus of modern research. Strategically-positioned forts were accompanied by large seasonal encampments, by specialized structures that included blockhouses and hospitals, and by battlefields where clashes occurred among the British, French, Americans, and their Native American allies. A century of military sites archaeology (recently termed "conflict archaeology") at literally scores of these forts and encampments has sought to understand the strategies, provisioning, foodways, and building techniques employed by soldiers and officers as they fought on the American landscape. Soldiers and officers came from diverse origins, and archaeology provides insights into their life styles that cannot be achieved from historical documents alone. All of these sites were tremendously important in opening up the interior of New York to settlement, and they were central in shaping the people we are today. In reviewing the exciting research that has been conducted at many of these military sites, this paper will unabashedly argue that New York State is home to many of the most significant and fascinating military sites in our nation.

Introduction

It is not unreasonable to suggest that New York State has more "great" 18th-century military sites than any other state in this country. If we were to include every fort, battlefield, encampment, cantonment, blockhouse, and stockade, and also every short-term outpost on a military road, then we would be looking at literally hundreds of military sites across New York State. Some of these sites were in use for only a matter of days or weeks, while others—especially Fort Niagara—were occupied by changing armies over a great many years. No doubt we all have a personal favorite among these many sites of conflict, a site that we would dearly love to explore.

Why are military sites so popular? Why have at least a third or a fourth of all the archaeologists in New York State conducted research at a military site at some point in their careers? How is it that we always seem able to attract a great many students and volunteers to dig with us at these sites?

Part of the answer may be that we are working on archaeological sites where the battles, the heroes, and the events were

critical in the formation of our country. We are studying the physical remains of military actions that helped to make us the free and independent nation that we are today. We can tell stories about men who were far from home, suffering from illness and loneliness. These were men who lined up in fields shooting their muskets in volleys, followed by bayonet charges; or perhaps they used rifles and fired from behind trees. All of this "action" took place as cannons fired and mortar bombs exploded, so these events have been extremely powerful in generating student and avocational interest today. Still, what for us are popular sites of heritage tourism were no doubt difficult and bloody settings in the 18th and early 19th centuries, a time when it was by no means certain that France would lose its empire or that America would separate from Great Britain and form what is now the United States.

Military sites epitomize hardship, violence, and earth-shaking events where thousands lost their lives on all sides. Military archaeologists are also conducting studies of daily life among men living on the frontier. And what about women at military camps? What was it like to be a nurse, a laundress, a wife, or a lady of ill repute in a military encampment (Starbuck 1994b)? Of course, if one's research questions involve class distinctions, then military sites are ideally suited to studies of status. We love looking for differences between officers and ordinary soldiers, seen through contrasts in housing types, food and foodways, clothing, weapons, plastered walls and glass windows. Military sites are also great indicators of the "lag effect" in artifact types, as new styles always appeared first in the large coastal cities and slowly drifted out to the frontier where the soldiers were encamped. Military sites contain a wonderful blend of the old and the new, progress and tradition, privileged and poor, men from many colonies and from Europe, all compressed together in a stressful setting where military men were either waiting to fight, or actually fighting, or recovering from sickness and wounds, and where the sheer monotony of "waiting" was no doubt driving them to distraction. Military events were a huge part of early America, and today we love visiting the spots where that action took place.

Of course, "military sites" can refer to a variety of things, including forts, blockhouses, encampments, cantonments, roads, and sutling houses (where civilians sold their wares to men who were tired of "regular issue"). And there were many

special categories of structures, including tents, huts, barracks, storehouses, kilns, ovens, sawmills, and hospitals.

It is possible to ask different research questions at every type of site. These might be questions about daily life, or armaments, or medical procedures, and archaeologists invariably want to see how actual practice differed from “the rule book,” the military manuals of the day. Did the soldiers ever do “their own thing,” e.g., go fishing, or did they strictly adhere to the rules created for European-style warfare?

The History of Research

Artifact collecting began almost instantly after each battle was over, or after each fortification was abandoned. For example, early newspapers in Troy ran advertisements from local shopkeepers promising to pay for artifacts found at the 1777 Saratoga Battlefield. Many of us would attribute the first serious reporting of archaeological sites and finds to Benson Lossing, who published his masterpiece, *The Pictorial Field-Book of the Revolution*, in 1855 (Figure 1). Actual archaeology began much later. A huge step forward came in the early 20th century when William Calver and Reginald Bolton and their friends

(the Field Exploration Committee of The New-York Historical Society) conducted many excavations and surface-collections at military sites all across New York State, including the British 17th Regiment camp on Dyckman Farm, Fort Washington, Fort Ticonderoga and elsewhere (Figure 2). They published a host of short articles, later pulled together by Richard Koke and published as *History Written with Pick and Shovel* (Calver and Bolton 1950) (Figure 3). This seminal volume is perhaps the greatest classic ever published in our field, and their broad-based research included sites from the Colonial Period, the American Revolution, and the War of 1812. I interviewed Richard Koke in 1998, and his memory of military digs in the New York City area was amazing (Starbuck 1999a). Koke died in 2008 at the age of 91, and he was a wonderful conduit of stories from the early days of military sites archaeology down to the present.

There are many others who are no longer with us who specialized in military sites, and we must acknowledge the exceptional work of John H. Mead (Jack Mead) and the Trailside Museum and their work at Fort Montgomery and the New Windsor Cantonment (Mead 1992); Gilbert W. Hagerty, the first Director of the Fort Stanwix Museum, and author of excellent syntheses in our field (Hagerty 1971, 1985) (Figure 4); and Gordon DeAngelo, a professional surveyor who mapped archaeological sites for many of us. Another pioneer we need to honor is Ralph Solecki, retired from Columbia University and Texas A&M, who conducted a great deal of research on Contact Period forts on Long Island. We must also praise the work of the late Charles Fisher at Crown Point State Historic Site, the New Windsor Cantonment and Fort Montgomery.

Much of the professionalism that has developed around military sites archaeology must be attributed to the New York State Office of Parks, Recreation and Historic Preservation, beginning in the 1970s. This state agency administers some exceptional military sites and has done field work at all of them. In that office we need to thank Paul Huey, Lois (Feister) Huey, Joe McEvoy, the late Charles Fisher, and others who have retired. We must also give credit to the New York State Museum; Philip Lord’s brilliant analysis of the Bennington Battlefield especially stands out (1989).

In recent years, we also need to acknowledge the great volume of work conducted by universities and college field schools at military sites. This is especially true of the State University of New York at Buffalo and the State University of New York College at Buffalo which have done so much work at Old Fort Niagara (Scott 1998; Scott and Scott 1990; Scott et al. 1991; Pena 2006; Maguire 2016). In eastern New York State, SUNY Adirondack has sponsored my own digs at military sites virtually every summer since 1991. Schenectady County Community College’s Community Archaeology Program, with Louise Basa, her colleagues and students, has done considerable work at military sites, and their current research in the Schenectady Stockade (setting for the Schenectady Massacre of 1690) is extremely significant. Jefferson Community College and Clinton Community College have sponsored Tim



Figure 1. Title page for *The Pictorial Field-Book of the Revolution*, Vol. 1, by Benson Lossing (1855).



Figure 2. "Fireplace, British Officer's Hut, American Revolution, Dyckman Farm, Inwood, New York City." *In History Written with Pick and Shovel* by William Louis Calver and Reginald Pelham Bolton (1950), page 11.

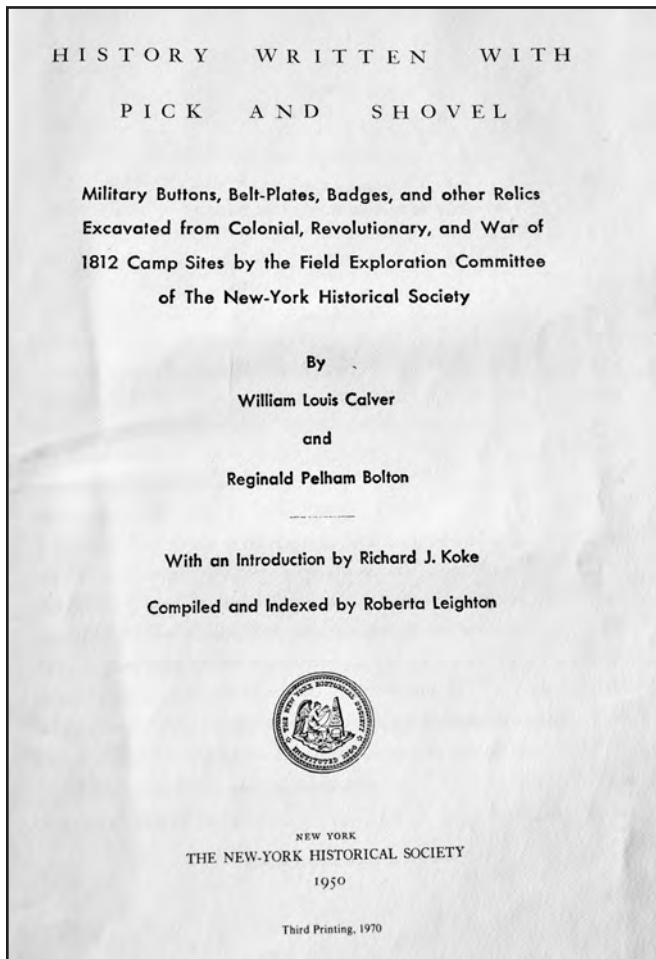


Figure 3. Title page for *History Written with Pick and Shovel* by William Louis Calver and Reginald Pelham Bolton (1950).

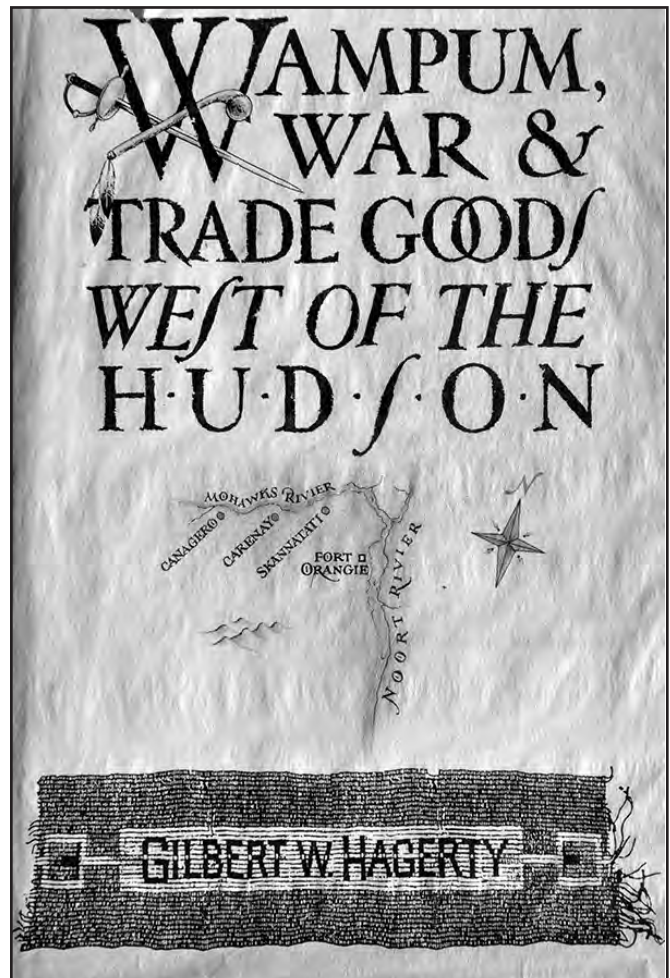


Figure 4. Book jacket for *Wampum, War and Trade Goods West of the Hudson* by Gilbert W. Hagerty (1985).

Abel's digs at War of 1812 sites, and the list goes on. Literally thousands of students and volunteers have had the opportunity to participate in military sites archaeology in New York State, and we are extremely fortunate to have such a large constituency that supports our work.

The Archaeological Sites

It would be useful to present every military site and archaeological project by time period and location, but that would be practically the work of a lifetime. Some forts and encampments reflect a single war or even a single day, and those are the sites where it is easiest to categorize them as "Contact Period," or "French & Indian War," or "American Revolution," or "War of 1812." But what about the military sites that spanned hundreds of years? Where do we place them? A supreme example of this is Old Fort Niagara (Figure 5). Old Fort Niagara and the surrounding region on Lake Ontario has had forts since the 1600s, beginning when the French built Fort Conti in 1679 and Fort Denonville in 1687. The French built the "French Castle" in 1726, they were replaced by the British in 1759, and by treaty the fort was given to the United States in 1796. This constant shifting of owners continued with the British recapturing the fort in 1813, the United States regaining control later in 1813, and with American army units continuing to be based there until 1963.

An absolutely enormous amount of field and laboratory work has been conducted at Old Fort Niagara, initially by Stuart Scott and Patricia Scott, beginning in 1979; later by Elizabeth Pena; and most recently by Susan Maguire. Together with their students, these scholars have made superb discov-

eries from throughout the fort's history. Obviously Old Fort Niagara cannot be classified as just French & Indian War, or American Revolution, or War of 1812 because it has military remains from virtually *every* time period.

Turning now to specific sites, it is clearly impossible to present here all of New York's military sites in detail, but what follows is a brief summary of some of the better-known sites (and projects) by time period:

Time Periods and Projects

Native American Contact Period Forts

The number of Native American forts was definitely increasing during the Late Woodland and into the Contact Period, and some of the Native designs for palisaded forts may well have influenced the European forts that followed. The work of Ralph Solecki with Contact Period forts in coastal areas of New York definitely stands out. As Solecki has pointed out, William Beauchamp "estimates that nearly 200 defensive works were noted by all observers in New York State" and Van der Donck,

"says that the Indians first laid down large logs along the ground in the outline desired, adding smaller logs in a heap. They set logs upon both sides of the heap in a kind of inverted 'V,' so that the upper ends crossed each other. The upper ends were joined together for stability. Finally, tree trunks were placed in the crossed upper ends, which solidified the whole structure in a firm bulwark. It did not require any buttressing or any excavation." (Solecki 1992-93:64-65)



Figure 5. Fort Niagara State Historic Site.



Figure 6. Stanley Gifford with his World War II minesweeper at Fort William Henry (early 1950s). Courtesy of Fort William Henry.

Solecki's surveys and excavations at Fort Massapeag and Fort Corchaug on Long Island continued for literally decades, revealing earthen embankments, bastions and artifacts from the Contact Period. His work has been excellent in providing evidence for trade and interaction between Native Americans and Europeans during this period, and his preparation of nominations for National Historic Landmark status for these sites is to be commended (Solecki 1985; Solecki and Grumet 1994; Solecki and Williams 1998; Williams 1972).

Dutch Forts

In 1970 Paul Huey discovered that a highway was going to be constructed through the remains of the 1624 site of Fort Orange on the west side of the Hudson River and underneath the streets of Albany. Fort Orange had been constructed by the Dutch West India Company and was immensely important in the early fur trade and up until 1664. The construction of Interstate 787 and a new Dunn Memorial Bridge would have destroyed whatever was left of Fort Orange, and this provided Huey with what must truly have been the opportunity of a lifetime. His salvage effort in late 1970 and early 1971 revealed much high-quality material, suggesting that employees of the

Dutch West India Company lived quite well on the frontier of America (Huey 1988, 1991, 1998, 2015).

Early 1700s (Pre-French & Indian War)

The 1712 site of Fort Hunter, built by English settlers on the south bank of the Mohawk River, is perhaps our best survival from Queen Anne's War. While taken down in 1820, the site is now part of Schoharie Crossing State Historic Site, and it has seen archaeology since the 1980s (Moody and Fisher 1989, Huey 2016), and with recent excavations directed by Michael Roets.

King George's War (1744-48) is poorly known archaeologically, but the one recent project at sites of this time period was an archaeological survey, with documentary research, conducted along the Crown Point shoreline by Ronald Kingsley and Harvey Alexander of the Community Archaeology Program at Schenectady Community College (Kingsley and Alexander 2005). Two 18th-century archaeological sites were found during their survey, which attempted to find evidence for a skirmish between the British and French in 1747.

The French & Indian War (The Seven Years' War)

The beginning of French & Indian War archaeology may perhaps be attributed to Calver and Bolton, followed by archaeology conducted at Fort William Henry (1755-57) on Lake George from 1953-54, directed by Stanley Gifford (Gifford 1955) (Figure 6). (Gifford had previously worked at Fort Ticonderoga.) Soon after, J. Duncan Campbell excavated the French village at Fort Ticonderoga on Lake Champlain in 1957 (Campbell 1958). On the Hudson River to the south, amateur digs began on Rogers Island in Fort Edward in the late 1950s, led by Earl Stott (Rogers Island Historical Association 1969). Then, a decade later, excavations began at Fort St. Frederic, directed by Roland Robbins (Kraovic 1971). Fort St. Frederic had been constructed by the French at the southern end of Lake Champlain to protect the movement of French settlers and traders into the Champlain Valley, and it was an amazingly important site between 1731 and 1759.

Many of these digs would not be termed "professional" by today's standards. For that we need to look at the emergency salvage excavation conducted at Fort Gage on Lake George in May and June of 1975, led by Paul Huey and Lois Feister, and working with members of the Auringer-Seelye Chapter of the New York State Archaeological Association (Feister and Huey 1985) (Figure 7). The last-minute excavation of Fort Gage was imperative because of the impending construction of a Ramada Inn in that spot, and the quality of the excavations and record-keeping easily exceeded everything that had come before in the Lake George area.

The largest of these early excavations was no doubt Gifford's work at Fort William Henry, the fort that became the basis for *The Last of the Mohicans* story (Cooper 1826). Gifford's excavation was intended as a prelude to reconstruction of the fort, which opened to the public in 1955, and his team recovered large numbers of artifacts from the northwest bastion of



Figure 7. Volunteers digging at Fort Gage (1970/71).
Courtesy of Carolyn Weatherwax.

the fort. Gifford also exposed numerous skeletons of soldiers both inside and outside the fort (Figure 8), and these human remains were later studied by forensic anthropologists just prior to being removed from public display in 1993 (Liston and Baker 1995, Baker and Rieth 2000) (Figure 9). Fort William Henry was then revisited in 1997 by Adirondack Community College (now SUNY Adirondack), and seven seasons of excavations (1997-2000 and 2011-13) have occurred since then, led by David Starbuck (1998, 1999b, 2002b, 2008, 2014). Fort

William Henry has seen intensive excavations in the cellars of barracks buildings in the parade ground (Figures 10-11), and much work in dumps located on the eastern side of the fort. Also, the fort's well, originally dug by Rogers Rangers in 1756, was excavated by archaeologists in 1997 (Starbuck 2001). With virtually nothing having survived above-ground after



Figure 9. Maria Liston (second from left) and Brenda Baker (third from left), together with students, cleaning and reassembling skeletons at Fort William Henry in 1993 after they had been removed from display.



Figure 8. Stanley Gifford exposing the skeletons of five massacre victims underneath the brick floor of the East Barracks at Fort William Henry (from *The Glens Falls Times*, Aug. 6, 1957).

Figure 10. Excavations inside the West Barracks of Fort William Henry in 1999.



destruction by the French in 1757, archaeology has become truly essential for the reconstruction and interpretation of this famous fort.

At much the same time as the recent excavations at Fort William Henry, an important cultural resources investigation was being conducted nearby, known as the “Birch Avenue Archaeology Project” (undertaken between 1993 and 1997). Located very close to the remains of Fort Gage on the western side of the Village of Lake George, this excavation by Collamer and Associates, directed in the field by Sarah Majot, exposed brief French & Indian War encampment sites across a broad area that was about to be modified by the construction of a substation for the Niagara Mohawk Power Corporation (Figure 12). The final report on this significant work was recipient of a 1998 New York State Historic Preservation Award, and this artifact collection is now housed at the New York State Museum.

Also in Lake George, military encampments and the ruins of Fort George—all located in the Lake George Battlefield Park—have seen five seasons of excavations since 2000 by SUNY Adirondack (Starbuck 2002a; Vandrei 2001). Thanks to excellent protection by the New York State Department of Environmental Conservation, the remains of barracks, huts and dumps are unusually pristine inside the Battlefield Park where one hut has even retained its brick floor (Figure 13). Inside the sole surviving bastion of Fort George (constructed in 1759), extensive stone walls have been exposed (Figure 14), suggesting more permanent stone architecture than has been found anywhere else in Lake George Village. The Lake George Battlefield Park contains the longest-lasting (1755-1780) and greatest variety of military sites in the Lake George area, and excavations in 2016 successfully located a major officers’ dump



Figure 11. Excavations inside the East Barracks of Fort William Henry in 1997.

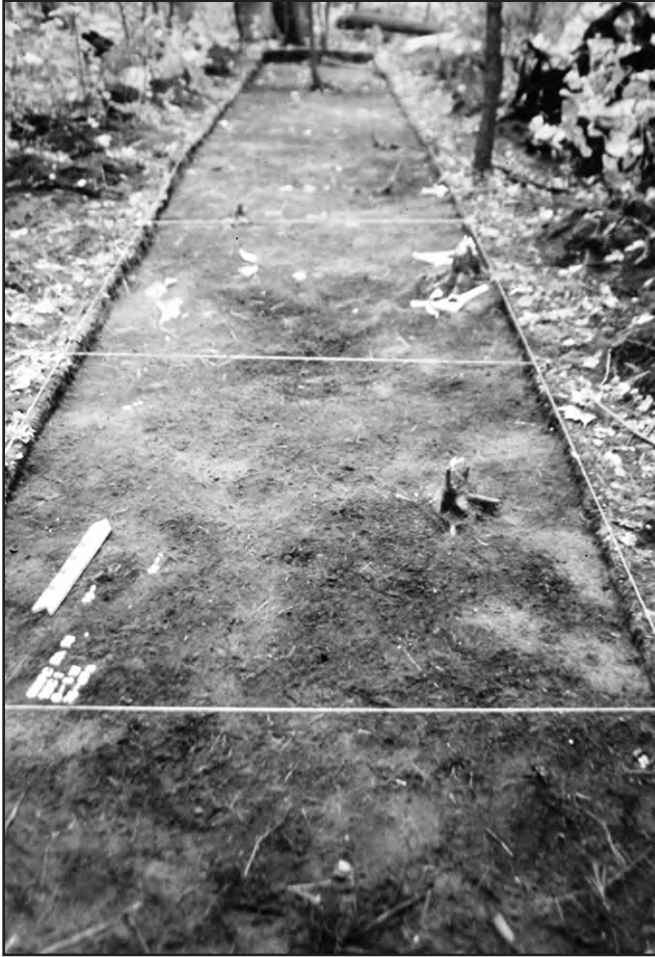


Figure 12. Initial stripping of a 5 x 50-foot section at the Birch Avenue Archaeological Site. Courtesy of Sarah Majot.



Figure 13. The stone walls of a small officers' hut at the Lake George Battlefield Park (2014). This is virtually the only brick-floored hut ever discovered at the southern end of Lake George.



Figure 14. Stone walls exposed within the southwest corner bastion of Fort George (2015).

Figure 15. A possible officers' hut on the western edge of the barracks complex on Rogers Island. The rows of nails would have anchored floor boards onto the joists underneath (1994).



Figure 16. The base of a two-sided barracks fireplace on Rogers Island (1994).



Figure 17. A row of eight-inch-square posthole stains outlining one side of the smallpox hospital on Rogers Island (1994).

from the 1760s, dating to the relatively peaceful period in-between the two major wars (Starbuck 2018:Chapter 3).

Just thirteen miles south of Lake George lies the village of Fort Edward on the Hudson River. In a spot that has long been known as “The Great Carrying Place,” soldiers traveling up the Hudson River from Albany landed in Fort Edward, trained on Rogers Island in the river channel, and then annually would portage to Lake George and its front-line forts. From there, British armies proceeded north up the lake to attack Fort St. Frederic and Fort Carillon (which later was renamed “Ticonderoga”). The enormous training camp and hospital base in Fort Edward was seasonally home to between 15 and 16,000 British and Colonial soldiers and officers, creating one of the largest cities in the American colonies.

The archaeological sites in Fort Edward, both on the mainland and on Rogers Island, have seen considerable research by SUNY Adirondack since 1991. This includes testing within the ruins of the fort in Fort Edward, and especially on Rogers Island where field schools have exposed the remains of huts (Figure 15), tents, barracks (Figure 16), storehouses and the only smallpox hospital (Figure 17) ever excavated in the United States (Starbuck 1994a, 1997a, 1997b, 1999b, 2004). Nearby, on the east bank of the Hudson River, the cellar hole of a sutlers’ house has also been excavated (Figure 18) where supplies were being sold by a civilian (Edward Best) to the

British army in 1757 and 1758 (Starbuck 2007, 2010; Truxes 2001:211). This is the only 18th-century sutlers’ house to have ever been studied through archaeology, reinforcing the quite special nature of early military sites in Fort Edward. Artifacts found in the cellar of the sutlers’ house suggest that alcohol, tobacco and buttons were probably the supplies most highly desired by soldiers on the frontier, and this structure was no doubt used as a tavern as well (Figure 19) (Phil Dunning, Personal Communication, 2014).

In the later stages of the French & Indian War, under General Jeffery Amherst, the British began construction of His Majesty’s Fort at Crown Point in 1759, adjacent to where the French had earlier built Fort St. Frederic. This enormously-important complex of archaeological sites—including exceptionally-intact barracks buildings (Figure 20) and earthworks—has seen many, many years of archaeology. While others began excavations here early in the 20th century, it was Paul Huey, Lois Feister and Charles Fisher who truly made this site their own, and they have published extensively on the remains. Feister has used archaeology to demonstrate status differences within the barracks buildings, and Fisher conducted notable work at hut sites nearby (Feister 1994a, 1994b, Fisher 1995).

Of the many very special French & Indian War sites in New York, one of the most distinguished is Fort Ticonderoga



Figure 18. The cellar hole of the sutlers’ house (1757-58) on the east bank of the Hudson River in Fort Edward (facing north).



Figure 19. A representative assemblage of artifacts recovered from the sutlers' house in Fort Edward.



Figure 20. The officers' barracks (left) and soldiers' barracks (right) at Crown Point State Historic Site.



Figure 21. The Deborah Clarke Mars Education Center at Fort Ticonderoga, completed in 2008. Extensive archaeological mitigation was required before this building could be erected.

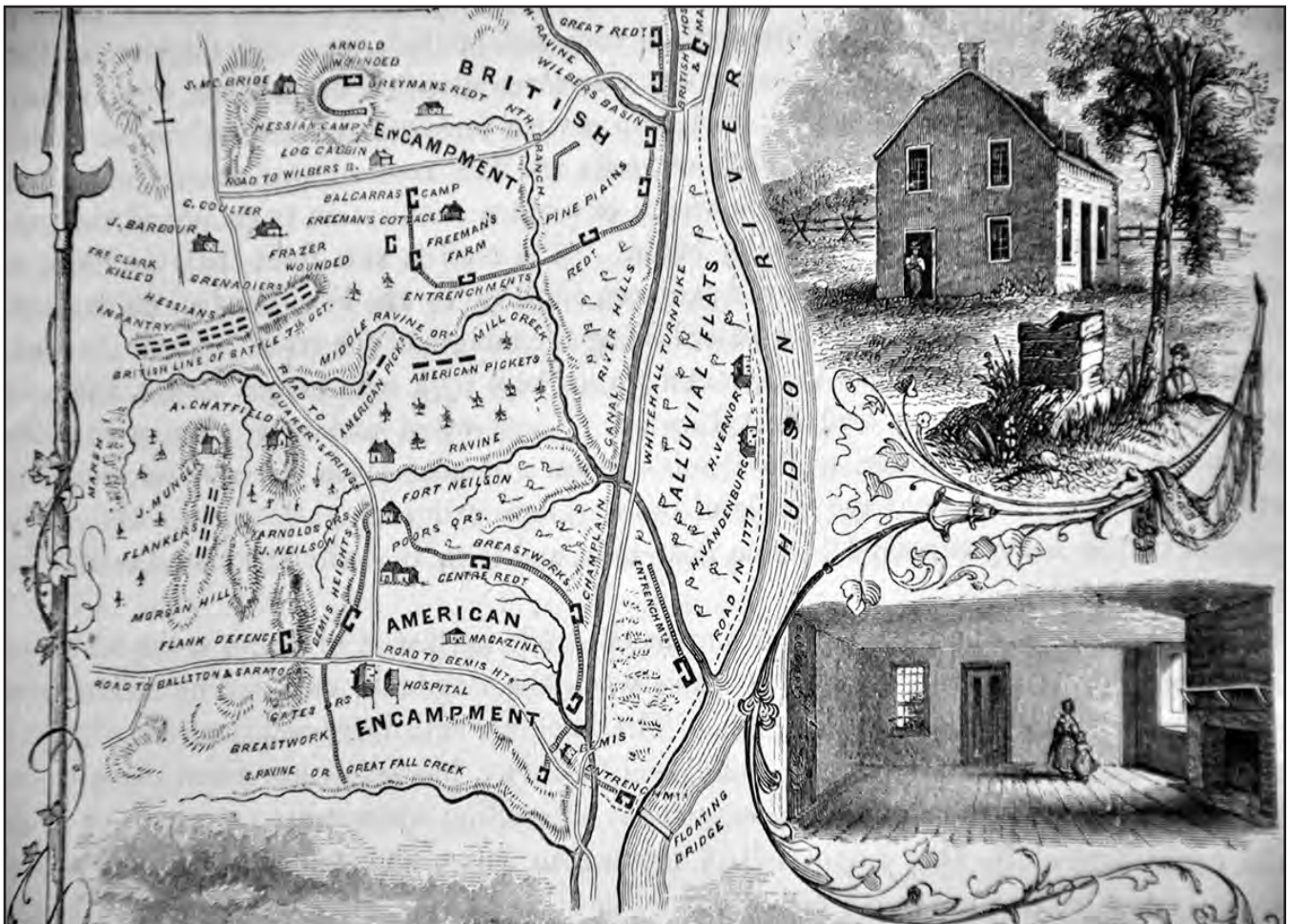


Figure 22. Plan of the American and British Encampments, now within Saratoga National Historical Park. From Benson J. Lossing's *The Pictorial Field-Book of the Revolution*, Vol. 1 (1855), p. 46.

which overlooks both Lake Champlain and the outlet of Lake George. Relative to other sites, Fort Ticonderoga has seen some of the least archaeology, and yet it has some of the greatest potential of all. From 1755, when it was first constructed as Fort Carillon, down to the present day, Ticonderoga has seen many battles, occupations by a variety of armies, extensive encampments, and an early opening (1908) to the public as one of our country's great military attractions. Today, of course, it has the status of being a major museum and educational center with a large professional staff. The one recent archaeological project conducted at Fort Ticonderoga was by Hartgen Archeological Associates (Elise Manning-Sterling and Bruce Sterling) who dug in 2001 and 2005 along the eastern side of the fort in advance of the construction of the Mars Education Center (Manning-Sterling 2004) (Figure 21).

Revolutionary War

New York State is, without question, the setting for some of the best Revolutionary War sites in the United States. One of those sites, Fort Haldimand, is discussed elsewhere in this volume (see Ford and Napoleon; also see Pippin 2005, 2010). Unquestionably the best-known Revolutionary War site in New York is the Saratoga Battlefield (Saratoga National Historical Park), sometimes referred to as the setting for "one of the 25 most significant battles in world history." Benson Lossing visited many of the surviving sites (Figure 22), and then Robert Ehrich worked there in 1940 and 1941 with laborers from the Civilian Conservation Corps (Ehrich 1942). Archaeology continued at the Battlefield under the auspices of John Cotter and Edward Larrabee between 1958 and 1964 (Larrabee 1960), followed by a most precedent-setting mapping project conducted by Dean Snow and SUNY at Albany (Figure 23). Between 1972 and 1975, Snow directed one of the first comprehensive mapping efforts ever performed at an American battlefield, accompanied by multiple excavations to help interpret what was visible on the surface (Snow 1977). A

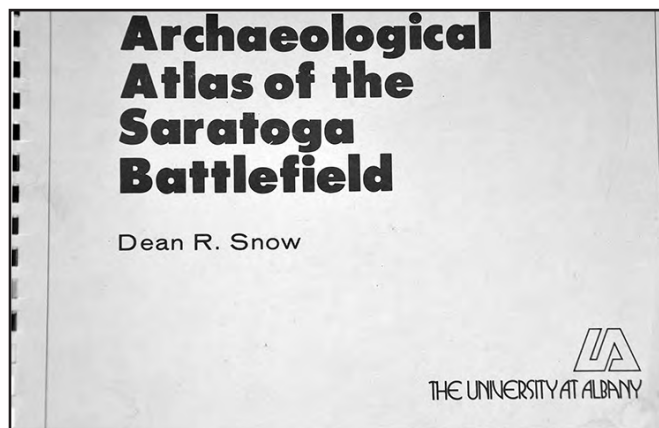


Figure 23 (left). Book cover of *Archaeological Atlas of the Saratoga Battlefield* by Dean R. Snow (1977).

Figure 24 (below). 1986 excavations inside the foundation of the American Headquarters (Woodworth farmhouse) for the Battle of Saratoga (1777).



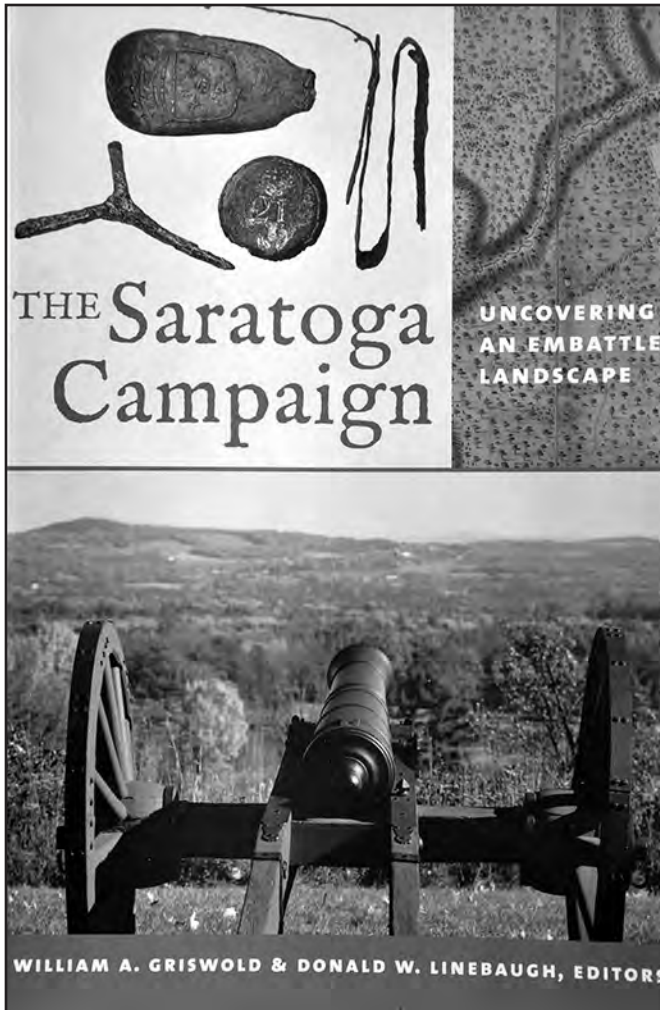


Figure 25. Book cover of *The Saratoga Campaign: Uncovering an Embattled Landscape*, ed. by William A. Griswold and Donald W. Linebaugh (2016).

decade later, David Starbuck and Rensselaer Polytechnic Institute (RPI) dug the American Headquarters for the Battle of Saratoga in 1985-86 (the farmhouse headquarters of General Horatio Gates) (Figure 24); as well as the yards of the Schuyler House in Schuylerville in 1987 (where the British army had burned the house of General Philip Schuyler during the British retreat) (Starbuck 1999b). The many projects conducted in different parts of the National Park have recently been brought together in a major synthesis (Griswold and Linebaugh 2016) (Figure 25), making this one of the best-documented battlefields in the United States.

Another one of the greatest Revolutionary War sites in New York State is Fort Stanwix, built by the British in 1758 to protect the Oneida Carrying Place (Figure 26). In August of 1777 American forces occupying this fort successfully halted the British army of Colonel Barry St. Leger as it sought to unite with General John Burgoyne's invasion force as it came south from Canada. As part of an urban renewal effort in Rome, NY, Senator Robert Kennedy helped to obtain funding for the excavation and reconstruction of the fort, and work began there in 1970 under the direction of National Park Service Archaeologist Dick Ping Hsu, assisted by Gordon DeAngelo, Cynthia Blakemore and others (Hanson and Hsu 1975). This enormous field project was followed by the rebuilding of the fort itself, the very last time that the National Park Service has ever completely reconstructed a fort in this country. Very sizeable artifact collections from the American Revolution are both on display and in storage at the reconstructed fort.

Just as important is the site of the New Windsor Cantonment, which housed the left wing of the Continental Army in 1782-83, just before the Continental Army disbanded for

Figure 26 (below). The sign welcoming visitors to Fort Stanwix National Monument.



good. This was a “log city” with about 600 log dwellings, 7,000 men, and 500 women and children, laid out in a way that demonstrates the social dynamics at work among the different groups encamped there (Fisher 1983, 1984-85, 1986a). One of the most distinctive sites to be studied by Charles Fisher at New Windsor was the “Temple of Virtue,” a public building for worship (Fisher 1986b).

Farther to the south, just above New York City, Fort Montgomery State Historic Site (1776-1777) was the scene of a significant battle fought between British and American forces on October 6, 1777. Fort Montgomery saw much early archaeology by The Committee on Field Exploration of the New-York Historical Society between 1916 and 1918, and later by John Mead and the Trailside Museum from 1967-1971 (Mead 1992). More recently, the New York State Museum has published an edited volume (Figure 27) on the extensive remains that have been discovered there, with in-depth studies of the rich material culture recovered at the site (Fisher 2004). Also, in the Bronx, a group calling itself “The New York City Archaeological Group,” did considerable work on the 1776-1781 site of Fort Independence in 1958, recovering a sizeable artifact collection (Lopez 1978, 1983).

Finally, one of the most detailed analyses at a New York Revolutionary War site is that of Philip Lord, Jr., and the New York State Museum at the 1777 Bennington Battlefield, located on farmland known as “Walloomscoick” (Lord 1989) (Figure 28). It was here that New England militia halted a British expeditionary force (part of General John Burgoyne’s army) that had advanced toward Bennington, VT, to forage for supplies. Lord’s study is an amazing look at the farmland on which a British force was defeated, contributing significantly to Burgoyne’s subsequent defeat at Saratoga.

War of 1812

Until fairly recently, the northern sites created by American forces during the War of 1812 had not received as much attention by historical archaeologists as had the forts and battlefields of the 18th century, but that has radically changed. Old Fort Niagara, the Sackets Harbor Battlefield, Storrs Harbor, and Cantonment Saranac in Plattsburgh are examples of sites studied within just the past ten years. Susan Maguire has excavated the Red Barracks at Old Fort Niagara with the SUNY Buffalo State Archaeological Field School (Maguire 2016), and Tim Abel and students from Clinton Community College have “unearthed a nearly complete soldier’s cabin, possibly occupied by a field officer of the 15th Regiment of Infantry” at Cantonment Saranac (Abel 2016:58). Abel has also conducted archaeology between 2004 and 2012 with students and volunteers at Storrs Harbor, a War of 1812 naval shipyard (Abel 2015).

An excellent new synthesis has helped to bring together results from many of these recent War of 1812 excavations, no doubt stimulating what will become much more research on War of 1812 sites in the years ahead (Lucas and Schablitsky 2016) (Figure 29). New York State has some of the best War

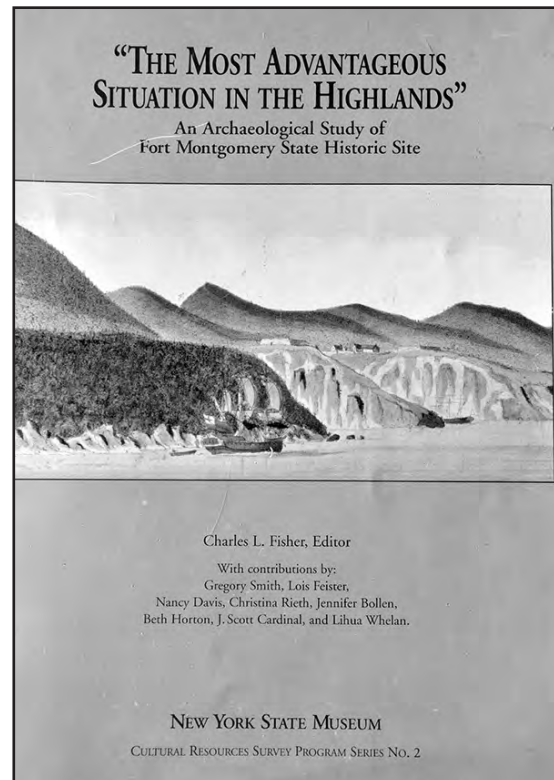


Figure 27. Book cover of “*The Most Advantageous Situation in the Highlands*”: An Archaeological Study of Fort Montgomery State Historic Site, ed. by Charles L. Fisher (2004).

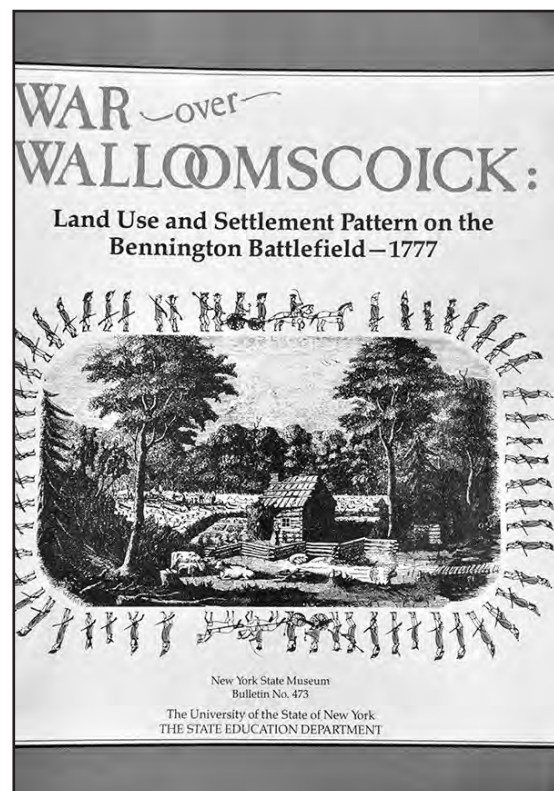


Figure 28. Book cover of *War over Walloomscoick* by Philip Lord, Jr. (1989).

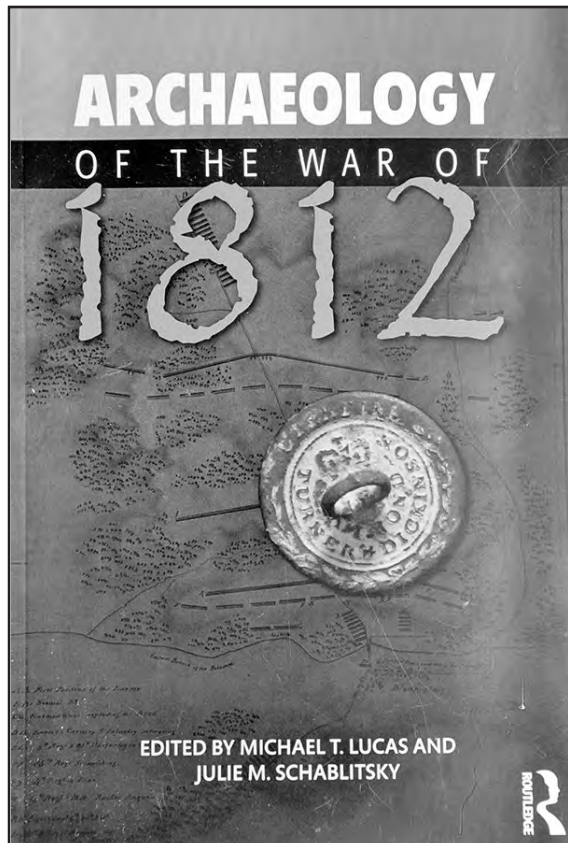


Figure 29. Book cover of *Archaeology of the War of 1812*, ed. by Michael T. Lucas and Julie M. Schablitsky (2016).

of 1812 sites in America, physically running along the border with Canada, and these are going to become “a new frontier” for researchers.

Conclusions

Several syntheses have been written that attempt to summarize the many military sites in New York State, but it is impossible for even a host of books to cover the enormous diversity of time periods, historical events, and physical remains that have survived down to the present day. (Examples of military syntheses may be found in *Northeast Historical Archaeology*, Vol. 7 for 1978; *Northeast Historical Archaeology*, Vol. 12 for 1983; Starbuck 1999b and 2011; and Apuzzo 1992.) So much work has been conducted that the latest research even includes investigations into how we memorialize the past. Brant Venables’ study of the commemorations and memorializations at the New Town Battlefield is just such an example, demonstrating that our society takes its historical roots very seriously (Venables 2012). The heritage narrative will clearly continue to evolve for every future generation.

There also are several long-term trends in military sites archaeology or “conflict archaeology.” We definitely excavate far less than we used to—we increasingly want to preserve more for future scholars who will have better techniques—and forts are not reconstructed the way they used to be. As already mentioned, Fort Stanwix was the very last example of a major fort reconstruction in this country, and we all have come



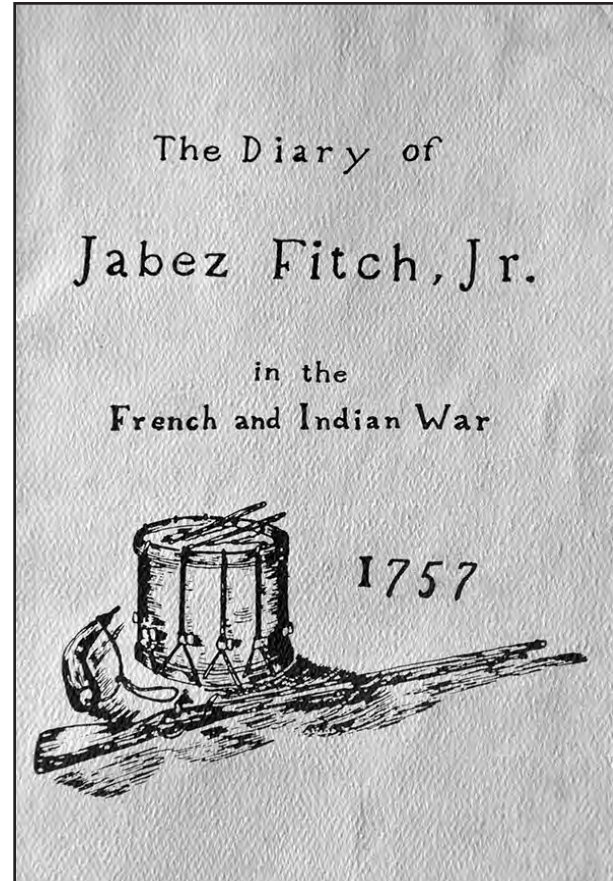
Figure 30. French & Indian War re-enactors in their encampment at the southern end of Lake George (2007), honoring the 250th anniversary of the fall of Fort William Henry.



Figure 31. French & Indian War re-enactors firing their cannons in the Lake George Battlefield Park (2007).

to recognize that past reconstructions simply are not accurate enough. In many ways we have all left “the Ivory Tower” and come to depend upon volunteers, avocational archaeologists, the press, tourism officials, and site managers as our colleagues and partners in this effort. In a way, we have all become “applied” anthropologists because we now participate in many aspects of heritage tourism, and we seek to make our findings relevant to the real world. We also work with military re-enactors a great deal, as they help us to understand better the historical records and material culture of those whom we are unearthing (Figures 30-31). A great many re-enactors are extremely well-read when it comes to the journals and diaries of early soldiers and officers, and they can be very persistent in urging us to read their favorite source materials (e.g., Fitch, Jr. 1968) (Figure 32).

Figure 32 (right). Book cover of *The Diary of Jabez Fitch, Jr. in the French and Indian War, 1757* (1968). This is one of the most-informative and most-cited diaries from the French & Indian War period. Jabez Fitch, Jr. served in Fort Edward and Lake George, providing a wealth of detail about the daily lives of ordinary soldiers. Fitch helped in the construction of the smallpox hospital on Rogers Island, and it was Fitch who dug the cellar hole for Edward Best's sutlers' house in Fort Edward (July of 1757).



Above all, hopefully we are asking a lot more research questions than we used to, and our questions involve social ranking, evidence for individual behavior, adaptations to frontier settings, and sources of supply. There is just no denying that New York State is blessed with a truly wonderful variety of military sites that demonstrate how conflict helped to shape the people we are today. Even if we never personally served in the military, we admire and fantasize about life at these early encampments and forts. They speak to us in very powerful ways.

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Life Outside the Walls: Recent Archaeological Investigations at Fort Haldimand, Carleton Island*

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Carleton Island was home to a British naval base and Fort Haldimand during the American Revolutionary War. Located on the St. Lawrence River in upstate New York, the base served as an important connection between Québec and British interior forts. The Thousand Islands Land Trust protects Fort Haldimand, but the area immediately outside the fort is privately owned. A portion of this area was surveyed with an electromagnetic profiler, a dual gradiometer system, and ground penetrating radar. The geophysical results were then investigated with excavation units that yielded several features, as well as a variety of 18th century artifacts. The features included the glacis, a sheet midden, and a possible abatis trench.

Introduction

During the American Revolutionary War, Carleton Island was the key to British control of Lake Ontario. This small island and its Fort Haldimand allowed Britain to command the waters, build and dock ships, and exclude the American Rebels from the lake. The Thousand Islands Land Trust (TILT) protects Fort Haldimand proper, but much of what made the island important, including the shipyard, Native American village, and facilities necessary to supply the fort were situated outside the fort on what is today private property. In the summer of 2015, Indiana University of Pennsylvania (IUP) conducted a geophysical and archaeological survey of 5.1 acres (2.1 hectares) on Carleton Island just outside Fort Haldimand (Figure 1). This work showed that there are significant intact archaeological features situated beyond the walls of the fort.

Brief History of Carleton Island

From the close of the French and Indian War (1763) until the signing of the Jay Treaty (1796), Britain dominated the Great Lakes and thereby the primary means to access North America's interior. During these years, they maintained approximately six substantial forts along the Great Lakes. From these forts and their associated settlements and harbors, the Brit-

ish were able to control the region through a combination of Native allies, small naval fleets, the presence of soldiers, and their position at key transportation nodes. As a result of this dominance, the Rebel colonists were rarely, with the exception of the siege of Québec, able to contest British control of the region (Middlekauff 2007; White 1991). Anchoring the chain of British Great Lakes forts was Fort Haldimand on Carleton Island.

Carleton Island, formerly known alternatively as Buck or Deer Island, does not seem to have been intensively inhabited prior to the American Revolution. There are reports of a Native American cemetery along the island's north shore (McCarthy 2016a), and the island was likely used as a burial location, rendezvous point, and wayside on the canoe and portage routes of the upper St. Lawrence River. Later the French and then the British also used the island as a rendezvous location. It is unclear when the French began exploiting Carleton Island as a rendezvous site, but by 1774 the British were using the head of the island as a transshipment location (Durham 1889:48; Casler 1906:27; Gibson 1999:28; Pippin 2005:38). The island was a convenient location to transfer goods from St. Lawrence River bateaux to Provincial Marine vessels. The Provincial Marine was a Canadian-based force, staffed largely by the Royal Navy but focused on the Great Lakes, St. Lawrence River, and Lake Champlain. From 1777-1785, commerce on the Lakes was restricted to exclusively government vessels, so that all goods and supplies shipped from the British depots at Montreal and Québec had to be transshipped from river boats to lake vessels when they left the St. Lawrence River. Beginning in 1778, Carleton Island was this transshipment point (Gibson 1999). The goods moving through Carleton Island encompassed nearly all of the rations, materials, and finished products shipped to the military and civilian populations of the Great Lakes. From April through October during the American Revolutionary War, between 134 and 301 bateaux landed at Carleton Island each month. The flow of goods through the island was such that the British military stationed an Assistant Commissary General on the island to shepherd their stores en route to other posts, and there were five or more merchants on the island to arrange shipment of goods to private citizens throughout the Great Lakes region (Gibson 1999; Pippin 2010). The British formalized the island's role as a mil-

*This article was peer reviewed. We are grateful to the reviewers for their helpful input.



Figure 1. Project area location.

itary encampment and transshipment location in 1778, when they began construction of a fort and shipyard at the head of the island.

William Twiss of the Royal Engineers and John Schank of the Provincial Marine were tasked to identify a location for, and to begin work on, a new fort and shipyard at the head of the St. Lawrence River. After inspecting other areas, Carleton Island (then called Buck Island and Deer Island) was recommended, and work began on the fort under the direction of Twiss. In a 17 August 1778 letter, Twiss proposed that the fort be named “Haldimand” in honor of Sir Frederick Haldimand, the newly appointed Governor of Québec, and the name of the island be changed to “Carleton” for Sir Guy Carleton, the

departing Governor (Casler 1906:33-34; Smith 1997:22-23; Gibson 1999:1) (Figure 2). In addition to the Vauban-influenced ditch-and-rampart system of the fort, barracks, storehouses, a saw pit, a lime kiln, a bakery, and carpenter and blacksmith shops were erected on the island (Casler 1906:39; Smith 1997:23-24).

Fort Haldimand, Fort Niagara, and the ships that shuttled between them gave the British effective control of Lake Ontario and by extension much of the interior of North America. Oswego, conversely, was not strongly fortified, which left the Iroquois unprotected and the inland portions of New York open to movement by Rebel colonists. The three campaigns that originated on Carleton Island were largely aimed at ad-

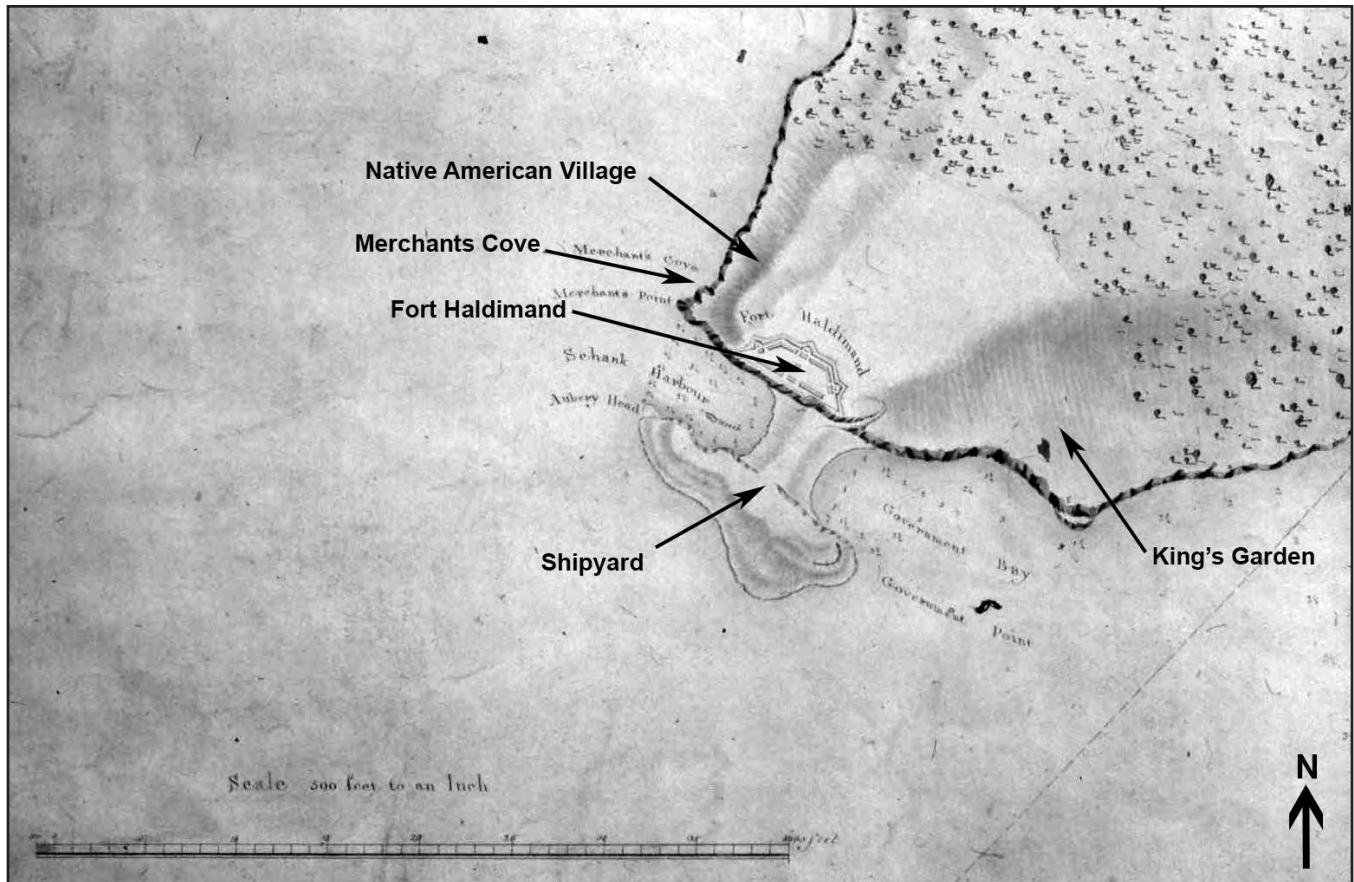


Figure 2. 1810 Map of Carleton Island (modified from Gray 1810).

dress this gap in control. In 1779, Sir John Johnson led the King's Royal Regiment of New York in an abortive attempt to support the Iroquois in the Mohawk Valley after they suffered substantial losses to John Sullivan's Rebel troops. Similar retaliatory raids from Carleton Island continued over the next two summers. Johnson also embarked from Carleton in 1780 on an attack into the Oswego region. Finally, Captain John Ross, then commander of Carleton Island, launched a coordinated attack into central New York with the Fort Niagara garrison in 1781 (Pound 1945:103; Gibson 1999:67). The number of Carleton Island inhabitants fluctuated with strategy and season but regularly included more than 1,000 Englishmen, Lowland and Highland Scots, Irish, Germans, Americans, Canadians, Algonquin-speaking Mississaugas, Iroquois-speaking Six Nations, and free and enslaved people of African descent (Gibson 1999:2, 34, 36; Pippin 2005). The largest of these populations was the Native Americans who numbered 582 in 1783 and lived in a village with permanent structures just outside the fort (Pippin 2010). Waves of Loyalists, fleeing persecution in the rebelling colonies, also regularly swelled the island's population (Potter-MacKinnon 1993).

A shipyard and naval station were situated on the ground flanking the two bays at the head of the island and employed shipwrights, sawyers, carpenters, blacksmiths, artificers, laborers, sailmakers, riggers, boatmen, and a surgeon (Gibson 1999:60). The naval yard was functionally the center of the is-

land, while the fort, attached to the naval yard by a path partly carved into the bluff above South Bay, played a largely supporting role (Gibson 1999:31; Pippin 2005:40). Ship construction at Carleton Island started within days of the British military officially taking control of the place. Shipbuilders began construction of whaleboats or bateaux for raids on the Oswego River and Mohawk Valley in August of 1778, and gunboats were under construction by that winter. The shipyard also produced the 226-ton sloop *Ontario* and the similarly-sized ship *Limnade* in 1780 and 1781, respectively (Smith 1997:57; Gibson 1999:61; Malcomson 2004:26). Additionally, the naval yard, along with Navy Hall at Niagara, was responsible for maintaining the British fleet on the lake, which included the vessels *Haldimand*, *Caldwell*, *Seneca*, and *Mohawk*. A detachment from the island undertook to chart various portions of the lake (e.g., Kingston to Carleton Island and Irondequoit Bay), further extending British control through the safe use of ports (Gibson 1999:61, 65; Malcomson 2004:26).

Also outside the fort but instrumental to the importance of Carleton Island were the facilities at Merchants Point. When Guy Carleton banned all privately-owned decked vessels from operating on the Great Lakes in 1777 because he suspected the merchants of being American sympathizers, Carleton Island became the "great depot of provisions for the upper posts" (Gibson 1999:3). Bateaux traveled up the St. Lawrence River from Montreal to Carleton Island, where their cargos

were offloaded and stored until a naval vessel was available to transport them to Fort Niagara, from which point they were further distributed to the upper lakes. A substantial amount of material passed through Carleton Island, and the protected transshipment location was as important to British control of the interior as command of the shipping routes. In an attempt to offset the amount of food shipped to the island, the British cultivated the King's Garden along the south shore of the island. The garden was the least protected aspect of the military operation and also the least strategically imperative, because of the British military's ability to readily import food to the island.

The need for Merchants Point, the shipyard, Fort Haldimand, and the King's Garden persisted until the end of the American Revolution. With the end of the war, British requirements in the area were reevaluated, as was the port of Kingston. Settlement and town planning were now concerns; Kingston had ample room to lay out a town, and the shores that during the war did not contain enough timber for shipbuilding were viewed as natural meadows ready to be cultivated during peacetime. Carleton Island had been the preferred location to preserve the status quo of the 13 colonies through military control, but Kingston was a better site to control the region through settlement of a Loyalist population (Gibson 1999:11, 109). Major Harris of the 84th Regiment of Foot transferred the administrative function of Fort Haldimand to Kingston during the summer of 1783.

Sometime after the majority of the Fort Haldimand functions moved to Kingston, a vessel was scuttled in North Bay. The bore diameters of recovered smoking pipe stems suggested a mid- to late 1770s date (Murphy 1976b:10; 1976a:19). It seems to have been scuttled in the bay prior to 1810 (see Figure 2), a conclusion based on the large number of rocks in the hull, the presence of an apparently intentional hole in the lower hull, and its first appearance in the cartographic record at that time (Gray 1810; Murphy 1976b:1, 10, 14; 1976a:13). It is odd that the vessel was sunk in the bay rather than just beyond it, where the water is deeper and the hull would have presented no danger to navigation. The wreck was partly excavated and mapped during 1973. This fieldwork was accompanied by a documentary search that led to a "strong indication that it was the *Haldimand*" (Murphy 1976a:14; McCarthy 1974; Perrault 1974). Built in 1771 at Oswegatchie and measuring 23.2 m (76 ft.) on deck, the sloop *Haldimand* regularly ferried troops and goods between Carleton Island and Niagara. By the end of the war it was an aging vessel. It was laid up during the 1777 sailing season because it was too dilapidated to sail, and it reportedly sank in the St. Lawrence River during November of 1780 (Smith 1997:131-132; Gibson 1999:58). Despite these incidents, *Haldimand* continued to see some service until 1785 when it was last mentioned in the historical record (Malcomson 2004:26).

Taken together, the shipwreck and fort nicely summarize the mechanisms of British control on Lake Ontario during the American Revolution. Strategy and infrastructure allowed

Britain to control all of the lake and much of the shore during this period. By commanding the water and providing protected locations to dock ships and transship goods, the British excluded the Rebel colonists from the lake and did not permit them to prey on the ships at their weakest, close to shore. The raids and ships originating from Carleton Island are what made this relatively small island, just two square miles, the key to British control of the interior.

In 1808, the United States government decided that Carleton Island would be an excellent location for a revenue station, a decision prompted by the 1807 Embargo Act, but the administration in Kingston rebuffed the notion because Britain still maintained a small garrison on the island (Casler 1906:117-122). It was not until the beginning of the War of 1812 that three United States citizens seized Carleton Island (Durham 1889:40; Casler 1906:125; Thomas 1978:41; Gibson 1999:110). Following the attack, the fort was burned, and the island officially became United States territory in 1817 (Gibson 1999:110).

Charles Smyth purchased the head of the island in 1821 and before long, timber harvesting led to one of the first semi-permanent settlements on the island and an early population boom (Hough 1854:109; Casler 1906:125). Within two years, the island's population grew from 12 families to 200 residents and supported a tavern, school, and justice of the peace (Durham 1889:122; Casler 1906:111). Following the decline of timbering on Carleton Island in 1824, a smaller but more stable agricultural population began to develop. As agriculture on the island expanded, it became economically feasible to link the island to mainland New York. Although Carleton Island had been connected to New York and Wolfe Island intermittently throughout the 19th century, a formal ferry dock was not built on the island until the 1880s (Casler 1906:150; Marr 1987; Johnson 2006:5). The construction of the ferry dock, as well as the founding of the island school, established Carleton as an island getaway. During the 19th century, the most pronounced change to the island was the addition of eight summer homes clustered on the point. Both the school and the ferry continued to run until the Great Depression caused a decline in the summer residency of the island.

Summer home construction on Carleton Island began relatively early in the development of the Thousand Islands as a vacation destination. The Carleton Island Club, composed of Utica, New York, residents, purchased lands on the head of the island in 1870 and again in 1873 (Durham 1898). In 1893, William O. Wyckoff began construction on his massive "Villa" which would become one of the most recognizable structures on the island. The Villa measured approximately 31.4 x 22.6 m (103 x 74 ft.), with a 33.8-m (111-ft.) tall tower, and reportedly cost \$25,000 to construct. The house had interesting features including wooden floors laid directly into concrete and a large water tank in the tower that fed the house by gravity (Anonymous 1893, 1895, 1968, 1998; Malo 2004:152). The Villa was eventually sold to General Electric, which began to demolish the building in 1936 as part of a plan to develop the island

as a company retreat including a golf course that cut across Fort Haldimand. These structures, along with the Carleton Island Club buildings clustered near North Bay, formed the bulk of the structures at the head of the island in the late 19th century and much of which is still present today (Robinson 1888).

The Great Depression checked and changed the Lake Ontario tourism industry. Tourism had been burgeoning for several decades and spawned its own infrastructure of buildings and steam vessels, but the economic collapse caused many of these buildings to be abandoned or destroyed, and there was a fundamental shift in the steamboat market. On Carleton Island the process was delayed. Much of the head of the island remained in the hands of long-standing families, but by mid-century most of the uplands of the island were owned by Merle L. Youngs. Youngs, founder of Youngs Rubber, an early maker of latex condoms, operated a cattle farm on the island consisting of 450 Herefords. During the late 1970s, the Patten Corporation Northeast eventually acquired the uplands to develop the island for summer residential use (Marr 1987). By that time, Carleton Island was one of the few sizable but under-developed islands in the Thousand Islands. This appearance of a natural state, plus the presence of important historic resources such as the fort, prompted the Thousand Islands Land Trust to work for the donation of the fort in 1986 and to acquire easements on all but the head of the island (Valentine 1997). The easements limit but do not prevent the development of private lots on the island.

Methods

The site investigation began with a geophysical survey of the area. The entire project area was first surveyed with an electromagnetic profiler (GSSI EMP-400). The EMP-400 is an electromagnetic induction tool with integrated GPS. It recorded three types of data (conductivity, in-phase, and quadrature) at three different frequencies (2 kHz, 7 kHz, and 15 kHz). The most useful of these were the in-phase data, which produce results similar to magnetic susceptibility. The instrument was deployed in its horizontal in-line configuration approximately 0.3 m above the ground surface along 1-m interval transects. The EMP-400 data were imported through the GSSI Archeo-Surveyor software and then processed using Golden Software's Surfer program.

The EMP-400 data and historical data were used to position the other geophysical survey locations (Figure 3). Seven ground-penetrating radar (GPR) and magnetic gradiometry survey grids were situated to include the anomalies evident in the EMP-400 data but were also clustered near the historic road that connected the British shipyard on the head of the island with the fort on the bluff above. Four of the survey grids were 40 x 40 m (Grids 3, 5, 6, and 7), one was 30 x 30 m (Grid 4), and one was 10 x 10 m (Grid 2). Grid 1 was laid out as a 40 x 40-m area, but the southwest corner of the grid was not surveyed due to slope and vegetation. Grids 2 and 4 were smaller than the other grids in order to fit within the project area and

to avoid exposed bedrock.

Within these grids, both GPR and gradiometer data were collected at 50-cm intervals in a bi-directional pattern. The GPR was a Mala Ramac Monitor XVII with a 500 mHz antenna. The gradiometer consisted of two GeoScan FM 256

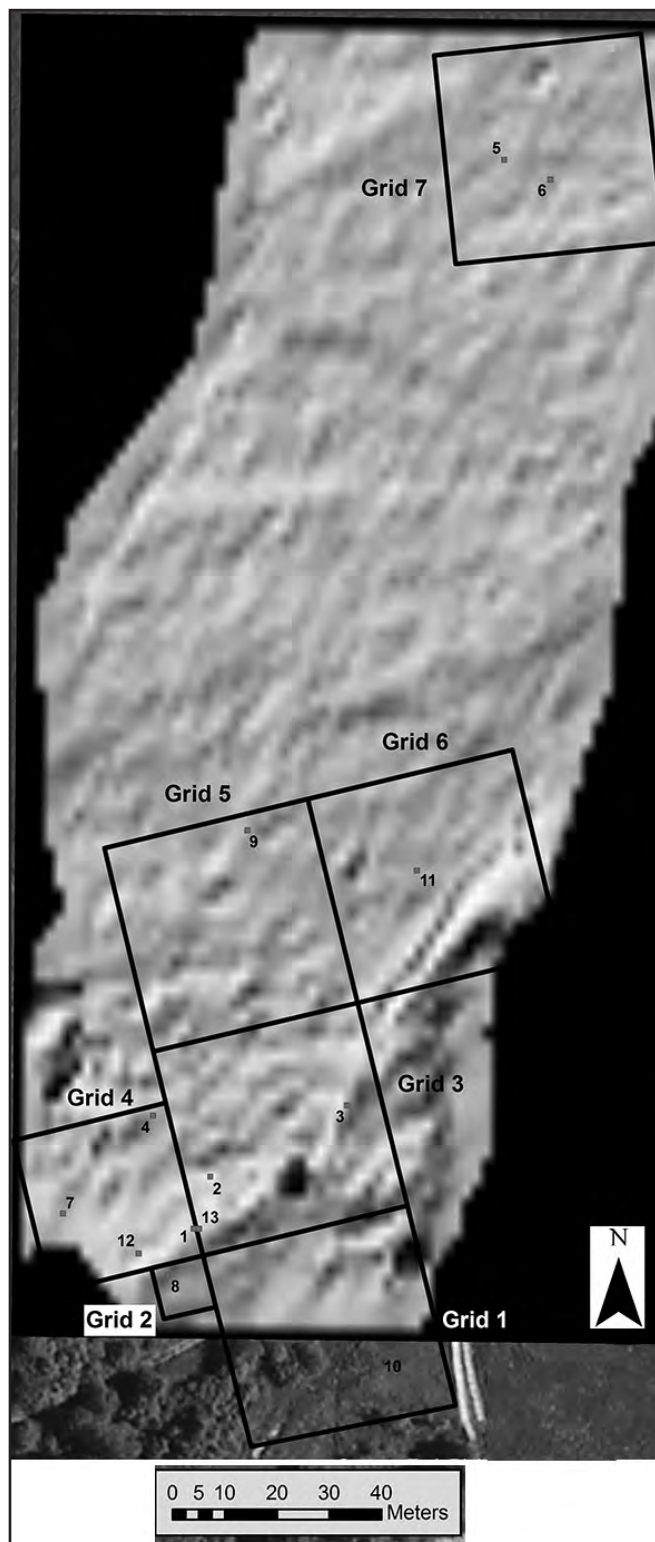


Figure 3. Geophysical survey grid and excavation unit locations overlain on EMP-400 quadrature 15 kHz data.

fluxgate gradiometers in a dual gradiometer setup. The dual setup allowed the data to be collected at 50-cm spacing while walking 1-m transects. The gradiometers sampled at 50-cm intervals along each line. GeoScan GeoPlot software was used to destagger, despoke, high and low pass filter, and interpolate the gradiometer data. GPR Slice was used to process and interpret the GPR data.

The excavation unit (EU) locations were selected to sample the anomalies identified in the GPR and gradiometer results. The thirteen 1 x 1-m EUs were excavated with a combination of shovels and trowels in 5-cm levels with additional breaks at visible strata divisions. Depth measurements were recorded relative to a datum in the southwest corner of each EU that was tied to the absolute elevation of the site. All excavated soils were screened through 6 mm (¼") hardware cloth, and all artifacts were collected and bagged by provenience, including EU, level, stratum, and feature (if applicable). All features were photographed and mapped before being bisected in order to allow profile shapes to be recorded. All EUs were recorded with two wall photographs and a profile drawing of at least one wall. The excavated artifacts were cleaned, sorted by material type within each provenience, cataloged using the New York State Museum protocols, and placed in labeled bags. Information regarding material type, use, and diagnostic features were entered into a Microsoft Excel spreadsheet. In the case of diagnostic artifacts, additional research was conducted in order to identify and date the artifact.

Results

The portion of Grid 1 that was not surveyed is clearly visible in Figures 4 and 5, as is the small portion of Grid 4 that was obstructed by vegetation. The missing lines in the Grid 3 GPR results are a result of corrupted data. Much of the other GPR data is 'noisy' as a result of the high grass that dominates the area. Even after being flattened, the grass formed an air pocket between the instrument and the ground surface, which introduced a substantial amount of disturbance into the data. Even with this noise, however, surface features such as the paths that cross the area, primarily in Grids 1 and 3, were visible in the results. Modern disturbances visible in the gradiometer results included a septic system (Grid 1), electrical box and metal signs (Grid 3), and a buried electrical line (Grid 6). In addition to modern disturbances, the geophysical results recorded a significant amount of geological data. Bedrock was exposed in the southwestern corner of the project area with the overlying soils deepening to the north and east, so that data below 90 cm primarily recorded the bedrock geology of the area.

The GPR and gradiometer data contained 80 identified anomalies. After eliminating anomalies linked to modern disturbances and natural sources, twelve of the most archaeologically promising anomalies were selected for testing (Table 1). Several of these anomalies were caused by bedrock or soil features (Anomaly 16, 21, 35, 47, 60, and 80), while others could not be identified in the ground (Anomaly 6 and 21). Anomaly



Figure 4. Ground penetrating radar results, ~50cm below surface.

26 was caused by a piece of green shag carpet buried just below the ground surface. The remaining anomalies led to the discovery of archaeological features (Table 2).

Feature 1 (Anomaly 17) was a linear feature that extended across Grids 3 and 4 (Figure 6). The feature consisted of very dark grey brown (10YR 3/2) silty to sandy loam mixed with a substantial amount of gravel and small rocks as well as 18th century artifacts. The gravel and rocks were most dense along the southern margin of the feature. The feature was oriented in a NE/SW direction, was approximately 30 cm wide, and is apparent for approximately 22 m long in the gradiometer data. The feature extended into the bedrock to a depth of approximately 40 cm below surface (Figure 7). Feature 1 contained 117 artifacts, 60 of which were burned bone fragments. All of the bone, including the 12 unburned fragments, were too small to identify. The feature also contained six hand-wrought nail fragments, six glass bottle fragments, five creamware ceramic sherds, and three kaolin pipestem fragments. Additionally, one tubular blue glass bead similar to Kidd and Kidd type



Figure 5. Gradiometer results.

Ia19 (Karklins 2012), one broken bone bead, a broken ground-stone celt (Figure 8), and three pieces of debitage were recovered from this context.

Features 8 and 9 were situated north of Feature 1, and both appear to be the bottoms of postmolds. Feature 8 was a dark yellow brown (10YR 3/4) 15 x 12 cm semi-circular stain with a basin-shaped profile terminating at bedrock. Feature 9 was a very dark brown (10YR 3/1) 10 x 10-cm circular feature with a cylindrical profile that terminated at bedrock giving it a flat bottom. Neither feature contained artifacts. Both features were first noted approximately 20 cm below datum, approximately 5 cm deeper than feature 1.

Features 3, 6, and 7 were all pavements of flat stones overlying a buried A horizon (Figure 9). The pavement was thicker and contiguous in EU7 and thinner consisting of discontinuous rocks in EU12. These features were situated in an area of complex, medium magnitude gradiometry anomalies, and it is likely that the paving continues throughout this area (Figure 10). The pavement stones appear to be the same material as the

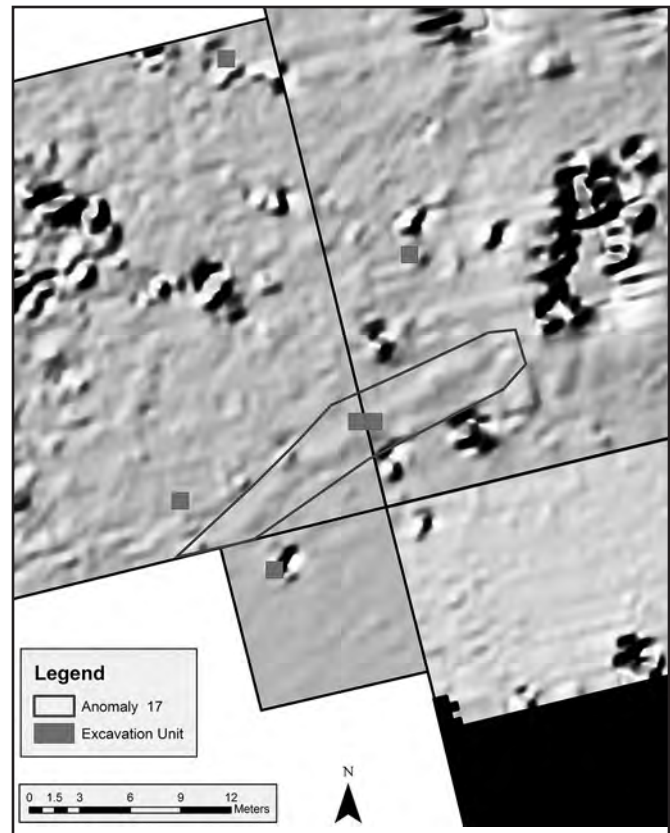


Figure 6. Anomaly 17.

bedrock.

EU 12 contained five cut nails, three sherds of flat glass, and two pieces of bone from the uppermost 5 cm, and five pieces of Onondaga-like chert chipping debris from the next 5-cm level. The nails and glass suggest a post-fort occupation, while the chipping debris, immediately above the pavement, may be associated with the fort. The number of artifacts for this unit is similar to that found throughout the project area ($x=17$ when EU 7 is excluded), while the nearby EU 7 contained 65% ($n = 382$) of the artifacts recovered from the project area. Artifacts from the upper 15 cm of EU 7 included smoking pipe fragments ($n=18$), wrought nails ($n=17$), bottle glass ($n=26$), brick fragments ($n=11$), a metal button with a drilled eye shank, and a three-prong buckle (Figure 11). A similar pipe bowl was recovered by Peter Pratt at the site in 1966 (Pratt 1966). The button was decorated with a six-armed star pattern, with each arm ending in a fleur-de-lis-type motif. The EU also contained bone, which was primarily burned (unburned=12, burned=133), and ceramics including stoneware ($n=6$), tin-glazed earthenware ($n=1$), and porcelain ($n=1$), but dominated by creamware ($n=98$). A trigger mechanism and a hammerstone were also recovered from EU 7. The trigger most closely resembles the Brown Bess Short Land model. This type of gun was used by the British military between 1756 and 1800 (National Rifle Association 2008). While there was a modern intrusion in the form of a Copenhagen tobacco tin, this artifact deposit was remarkably intact and dated to the

Table 1. Excavation unit summary.

EU#	Anomaly #	Grid	Type	Description	Result
1&13	17	3&4	Mag	Linear, low amplitude	Linear archaeological feature. Possible abatis
2	21	3	Mag	Dipole, possible ring of anomalies	No feature
3	26	3	Mag	Possible square of anomalies	Carpet scrap
4	35	4	Mag/GPR	Linear anomaly	No feature, rocks
5	60	7	Mag	Ring of dipoles	No feature, clayey soils
6	67	7	GPR	High Amplitude Reflection	Deep deposit of rocks. Possible 20 th c. drainage feature.
7	40	4	Mag/GPR	Complex	Stone paving, likely glacia
8	16	2	Mag/GPR	Dipole	Bedrock
9	47	5	Mag/GPR	Dipole, circular, medium amplitude	Root disturbance
10	6	1	Mag	Dipole	No feature
11	80	6	GPR	Low amplitude area	Bedrock
12	76	4	GPR	Ring of anomalies	Stone paving, likely glacia

Mag = GeoScan FM 256 fluxgate gradiometers in a dual gradiometer setup

GPR = Mala Ramac Monitor XVII with a 500 mHz antenna

Table 2. Feature summary.

Feature #	EU#	Description
1	1 & 13	Linear feature extending into bedrock.
2	1	Determined to be non-cultural
3	12	Flat stone paving
4	6	Large, deep area of rocks
5	9	Burned root
6	7	Darker soil associated with flat stone paving
7	7	Darker soil associated with flat stone paving
8	13	Sub-circular, small basin
9	13	Circular, cylindrical

fort period. The majority of the artifacts rested on top of the pavement with some being found among the upper stones of the pavement.

EU2 did not contain an identified feature, but it did produce 18th-century artifacts including creamware (n=2) and Jackfield (n=1) sherds and a wrought nail, as well as three cut nails. The remaining EUs contained primarily small numbers of 19th and 20th-century artifacts.

Interpretations and Conclusions

Features 1, 3, 6, and 7 date to the British occupation of Fort Haldimand, and features 8 and 9 may date to this period. The stone pavement (Features 3, 6, and 7) is likely the glacia of the fort. A glacia is an open slope on the outermost surface of a fort's walls designed to expose attackers to the fire of defenders. At Fort Haldimand the glacia appears to have been constructed of the bedrock excavated from the fort's ditch and extended 40-50 m out from the ditch edge. The artifacts recovered from EU7 and EU12 are noteworthy in that they appear to represent a sheet midden spread across the surface of the glacia. This area, just outside the gate and approximately 20 m north of the road leading into the fort, seems to have been a convenient place to dump primarily domestic refuse (indicated by a predominance of creamware and burned bone) originating inside of the fort (indicated by the Brown Bess trigger). The feather-edge and plain creamware, porcelain, and

tin-glazed earthenware suggests that a variety of ceramics of varying quality were used in the fort, possibly as a result of Carleton Island's role as the entrepôt for goods entering the British Great Lakes and reflecting the tastes of soldiers and officers stationed at the fort.

Feature 1 is more difficult to interpret. It is clearly a man-made trench partially cut into the underlying bedrock and likely dates to British occupation of Fort Haldimand, but its purpose is unclear. One interpretation is that it is a traverse abatis trench dug to hold the ends of abatis branches. An abatis is a line of tree branches with sharpened extremities designed to slow and obstruct attacking soldiers. The branches were often staked to the ground or their ends set in a shallow trench to make them difficult to move. There is documentary evidence of an abatis and traverse abatis in use at the fort. A February 1780 letter from Captain Alexander Fraser to General Frederick Haldimand states, "A very strong Abbatis was laid without the former one round the Fort with traverse Abbatis

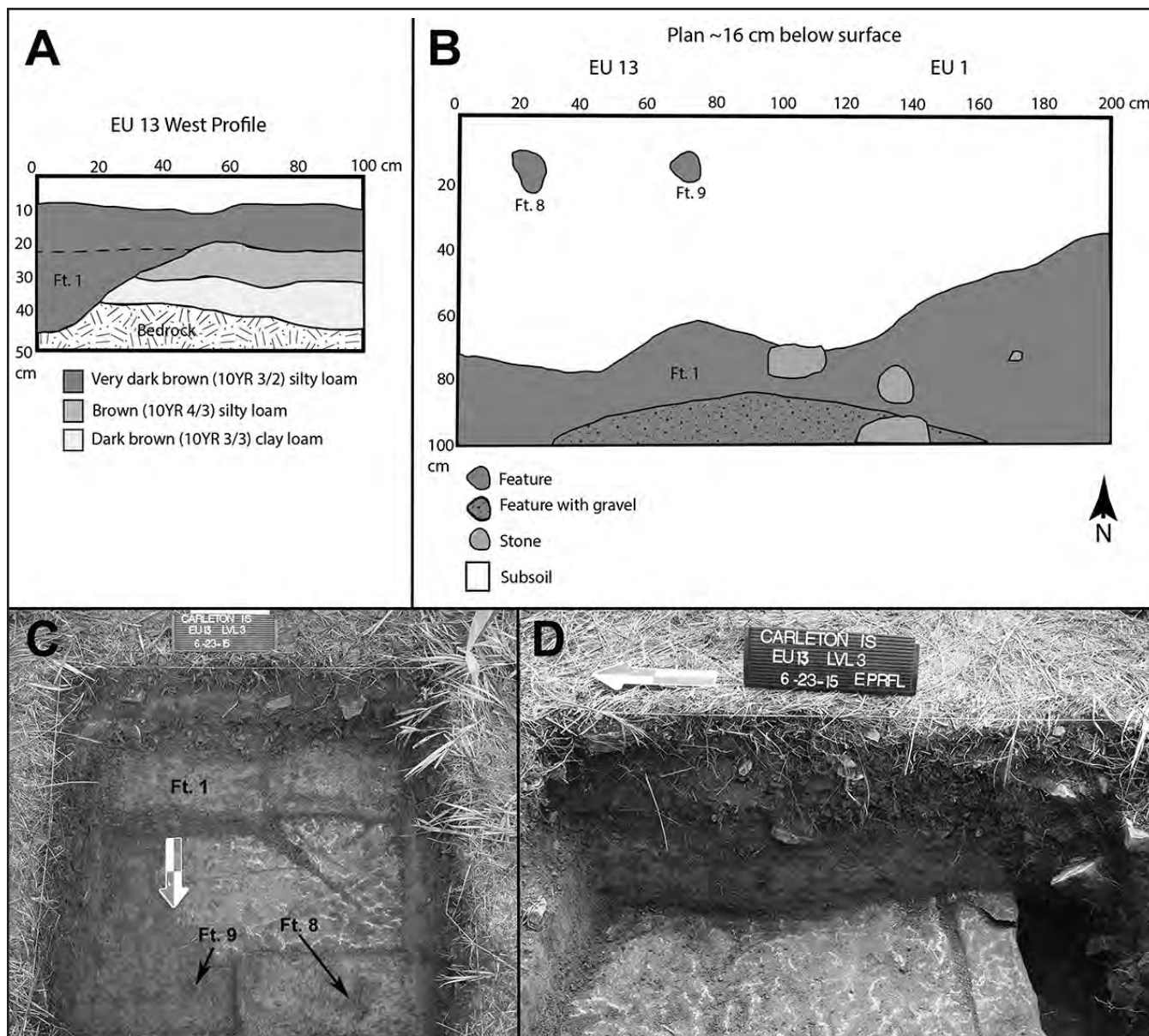


Figure 7. Features 1, 8, and 9. A) West profile of Excavation Unit 13; B) Plan of Excavation Units 1 and 13; C) Excavation Unit 13 during excavation -- note Features 8 and 9 at bottom of frame and Feature 10 at top of frame, as well as bedrock; and D) Excavation Unit 13, east profile -- note trench in bedrock and Feature 10 visible in wall.

between both..." (reproduced in Casler 1906:68). The original abatis was built in early 1779 (Casler 1906:62). The traverse abatis ("abatis" can be both singular and plural) would have run between the main abatis to prevent attackers from moving freely if they penetrated the first abatis. This particular traverse abatis was likely situated immediately north of the road leading into the fort. Features 8 and 9 are also consistent with an abatis. Abatis were often held in place with stakes or pickets, in addition to or instead of a trench. Features 8 and 9 may be the remains of such stakes.

The 2015 geophysical and archaeological survey of a small portion of the lands outside of Fort Haldimand indicates that there are significant and well-preserved Revolutionary War era cultural resources outside of the Thousand Island Land

Trust protected area. The glacis and abatis are less apparent today than the ditch, but were important components of the defensive system. The abatis in particular seems to have given the fort commander some peace of mind in what he perceived as a dangerous post (Casler 1906:68). The midden associated with the glacis also holds the potential to address questions of quality of life at the fort. While the current sample is too small to be definitive, the variety and quality of ceramics recovered is striking and it would be worthwhile to compare the glacis midden to middens inside of the fort and at other British Great Lakes forts (Pippin 2010).

The non-military artifacts recovered from both the glacis midden and the possible abatis trench, some of which are possibly associated with Native Americans, are also notewor-

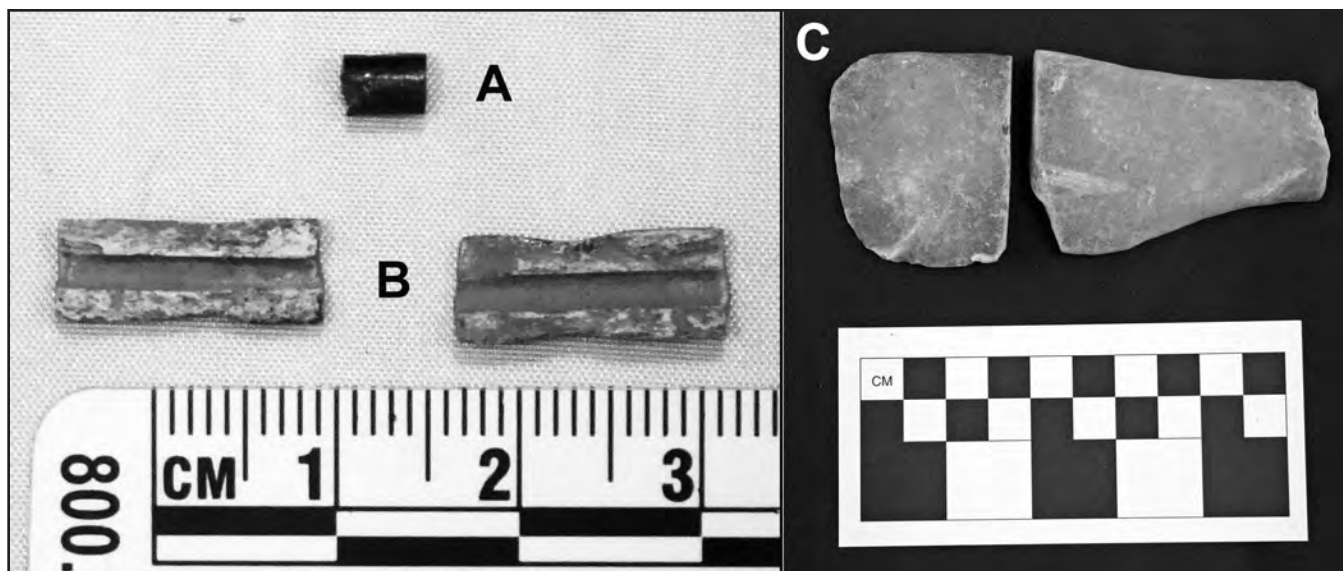


Figure 8. Artifacts recovered from Feature 1: A) blue glass bead; B) two halves of one bone bead; and C) broken celt.

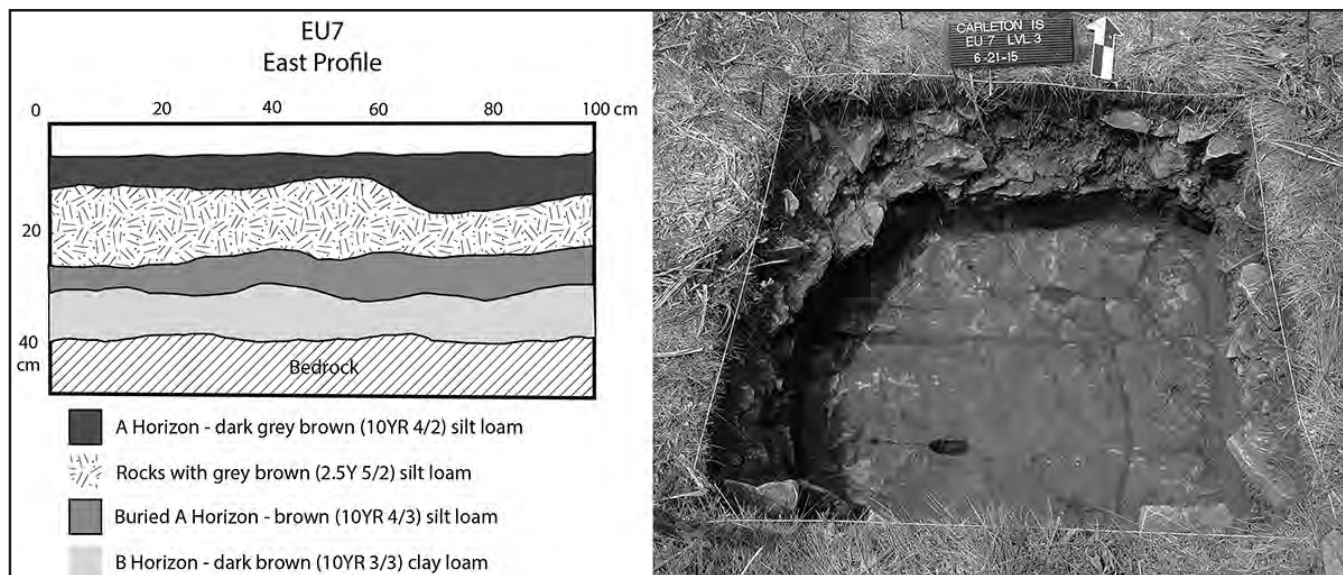


Figure 9. Excavation Unit 7. Left: stratigraphic profile; Right: Plan photograph. Note the soil horizons between the stones and bedrock.

thy. A substantial population of Native Americans, Loyalists, and irregular troops congregated around Fort Haldimand throughout the American Revolutionary War, and these features offer an opportunity to better understand the lives and experiences of these populations. Much of the documentary record for 18th century Carleton Island was written by the officers of Fort Haldimand, and they offer a very specific, and not always flattering, view of the populations outside of the fort wall. Archaeology is the best way to balance the narrative and fully understand life on Carleton Island during the American Revolution.

Many other historically recorded features are still unidentified on Carleton Island. The all-important shipyard may have been disturbed by later farm and vacation buildings, but

may still contain intact features, as is evidenced by the large, now-submerged dock at the mouth of North Bay (McCarthy 2016b). Likewise the Native American village and Merchants Cove may exist as archaeological sites along the island's north shore. If the Carleton Island Merchants Cove is similar to "the Bottoms" at Fort Niagara, evidence of the site may spread below the waterline (Knoerl 1994). There are also historical accounts of three burial grounds outside of the fort. Moreover, it is likely that many more features ignored in the historical record are still present in the fields and woods surrounding Fort Haldimand.

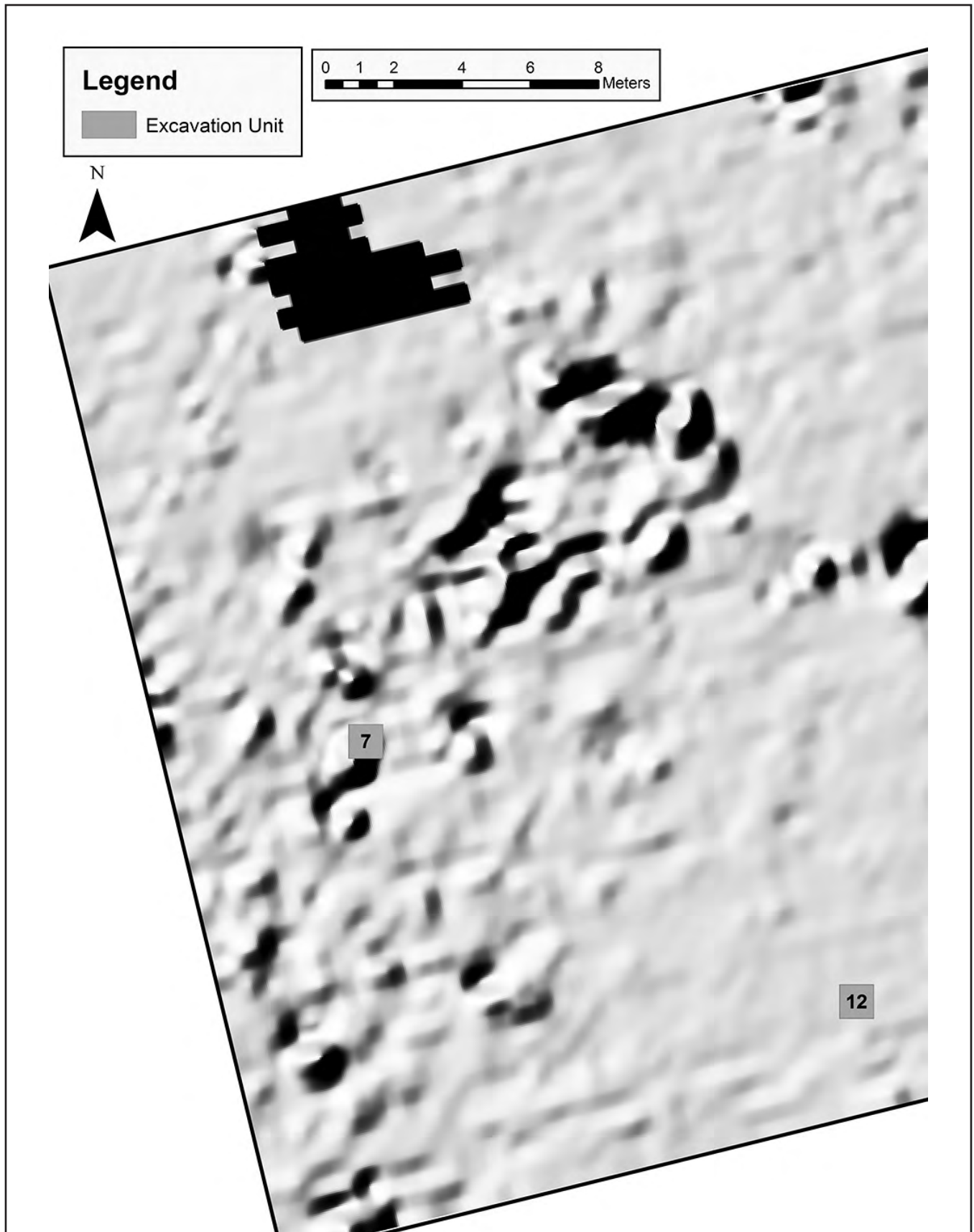


Figure 10. Detail of gradiometry results in vicinity of Excavation Units 7 and 12.

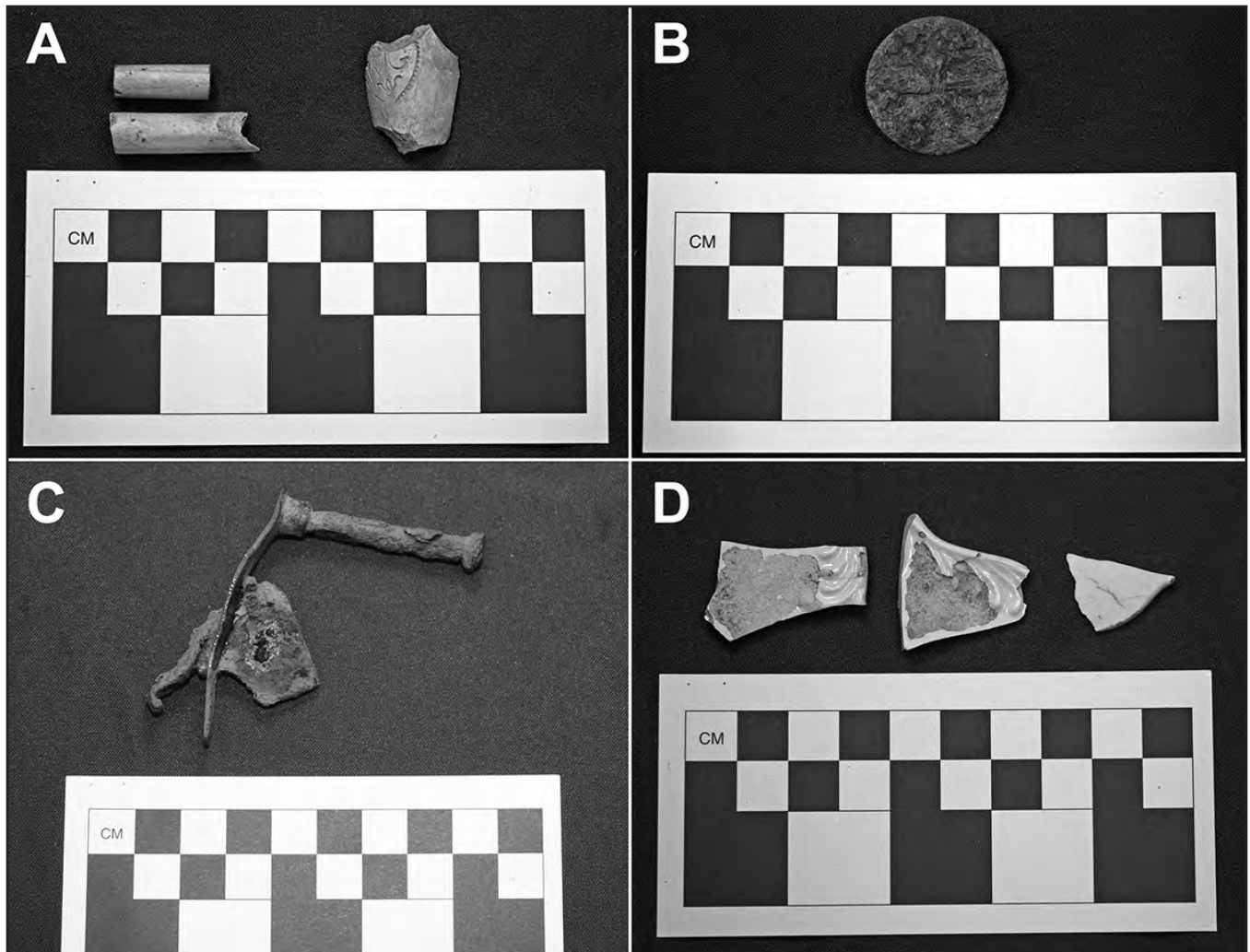


Figure 11. Artifacts recovered from Excavation Unit 7: A) pipe fragments, including "WG" marked bowl; B) metal button; C) Brown Bess trigger; and D) creamware; the two sherds on the left have feather-edged decoration.

Acknowledgments

Funding for this project was provided by the Toomey Foundation for the Natural Sciences; we are grateful for their generous support. This project would not have been possible without the cooperation of Jane Carver who allowed us to work on her property and showed great interest in our findings. Her dedication to the preservation of Carleton Island history is inspirational. We also owe a debt of gratitude to Dennis and Kathi McCarthy for providing us housing and ferrying us to the island during the period when our boat was being repaired. Dennis also provided valuable comments on an earlier draft of this article, drawing on his decades of research regarding Carleton Island. Emily Falk led the geophysical data collection, and Scott Rivas and Alyssa Hyziak assisted with the field work. Lastly, we would like to thank the Thousand Island Land Trust for their preservation and protection of Fort Haldimand.

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The Randolph Biface Cache, Cattaraugus County, New York

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In 1878, a cache of Meadowood bifaces was found in Randolph, Cattaraugus County, New York. Described here are some bifaces from the cache in the anthropology collection of the National Museum of Natural History.

Introduction

Dr. Frederick Larkin (1880:8) described the find made in the summer of 1878. A farmer plowing a field uncovered 167 bifaces 40 rods (200 m) from the Randolph railroad depot in Cattaraugus County (Figure 1). According to Larkin, found later were about 50 bifaces, mica sheets, stone axes and other unspecified items. Therefore, the cache may not have been limited to bifaces, or at least other types of artifacts were found close by. The whereabouts of these other artifacts is not known. Clearly the number of bifaces was large, at least 217. Obviously the excavator may have missed some, or gave some to others then. Hence, there is no way to know exactly how

many bifaces were in the original cache. In any case, the cache is among the larger Meadowood caches presently known, but at least five others have 200 or more bifaces (Granger 1981:72). Cattaraugus Creek forms the northern boundary of Cattaraugus County. Located in the southwestern quarter of the county, Randolph is about 7.5 mi (12 km) from the Allegheny River in the valley of a small stream, Little Conewango Creek. The creek flows west to join Conewango Creek itself, which in turn eventually enters the Allegheny River at Warren, Pennsylvania.

From the cache Frederick Larkin donated 85 items in 1878 to the U. S. National Museum, now the National Museum of Natural History (NMNH). These are registered under NMNH accession 7929 with anthropology catalog number 35473. These 85 could be half the lot of 167 initially uncovered in 1878. The total items in the original accession has been reduced somewhat by exchange of at least three bifaces and discard of one fragment. A side notch point mentioned on the catalog card is missing. That still leaves seven items unaccounted for. Possibly these were also fragments summarily discarded and unrecorded sometime in the past. Finally, not counted, as will be discussed below, is one biface dismissed as a later label reapplied in error.

Artifact Description

The cache contains Meadowood bifaces. Defined by Ritchie (1971:35-36) the side-notched Meadowood point is characteristic of the Early Woodland period and occurs widely in the Northeast and as far south as the Middle Atlantic region. An un-notched form occurs in caches. Of the total of 70 triangular bifaces, 65 are intact and five have a damaged tip or corner. In addition, there are one tip fragment, one flake and a bipointed biface. Although some bifaces were broken, no damage by thermal alteration is evident.

The bifaces are all made of mottled gray material visually consistent with Onondaga chert. The color varies slightly among the bifaces, some tending to lighter blue gray color with tan spots. Judging from other bifaces found in the county in the NMNH collection, Onondaga chert is by no means unique to the cache bifaces, but rather it is a raw material used extensively in the vicinity for chipped stone tools.

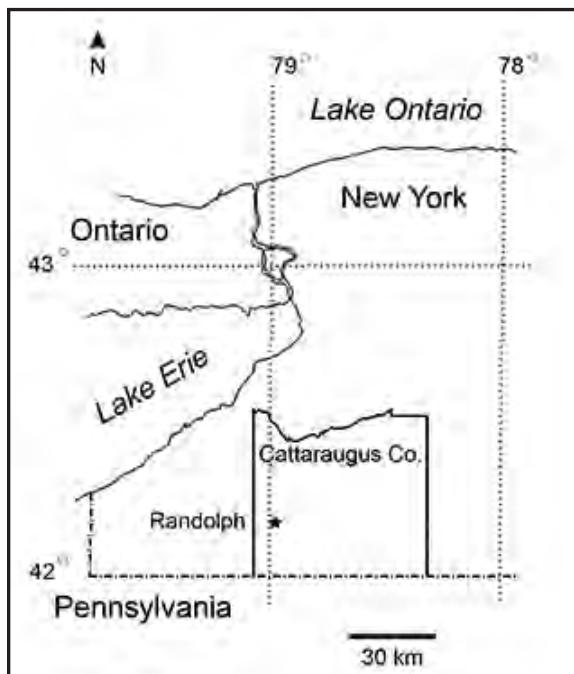


Figure 1. Location of Randolph, Cattaraugus County, New York.

One biface has a catalog number written in black ink rather than white which was used on the rest. A distinctive adhesive adhering to it indicates that it was clearly on exhibit in the early years of the NMNH. Furthermore, it is rather large in comparison to the rest of the bifaces. Its length of 65.4 mm and weight of 13.5 g are more than three standard deviations from the means for the rest of the bifaces. As a suspected labeling error, it is left out of the analysis here.

It is evident in Figure 2 that the bifaces vary somewhat in size and shape, although they are all generally similar. Some simple measurements may be used to examine the variation of size and shape. Measurements as defined by Granger (1981:82) are total length, base width, maximum thickness, and base width, measured in millimeters. In addition, weight is measured in grams. Weight would seem to be a good overall measure of size. Because in no case does maximum blade width exceed base width, blade width is not measured. Table 1 gives summary statistics for these measurements for 65 bifaces.

Figure 3 shows the distribution of values for length, width, thickness and weight measurements. The symmetry and shape of these distributions impact further statistical analysis. Distributions that depart from normal (commonly called bell-shaped or Gaussian) are inconsistent with a basic assumption of parametric statistical tests. Archaeologists often must contend with asymmetrical, peaked, or spread distributions for measurement values.

For a symmetrical distribution, mean and median are similar. Table 1 shows means and medians are similar for the measurements, except for weight. Skewness and kurtosis are measurements of asymmetry and shape (Sokal and Rohlf 1981:114). For a normal distribution, they are both zero. For both, all the biface measurements depart from zero, in fact with values over one, suggesting distributions with excessive skew and spread to be normal distributions. Testing for a significant difference from zero is rather tedious to calculate (Sokal and Rohlf 1981:117) and not important here for the purpose of simple description. Suffice it to say, these

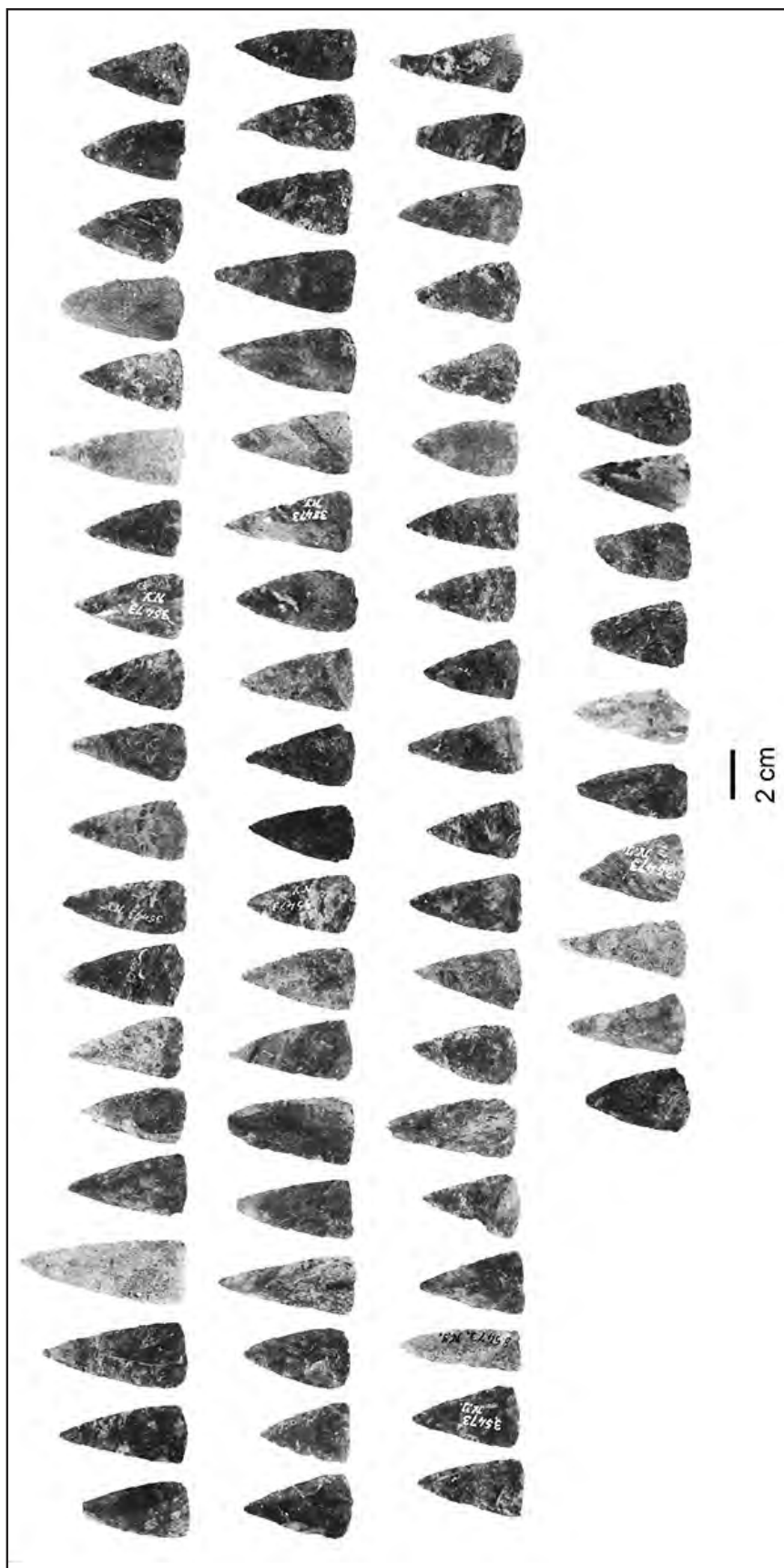


Figure 2. Randolph cache bifaces, NMNH catalog number 35473.

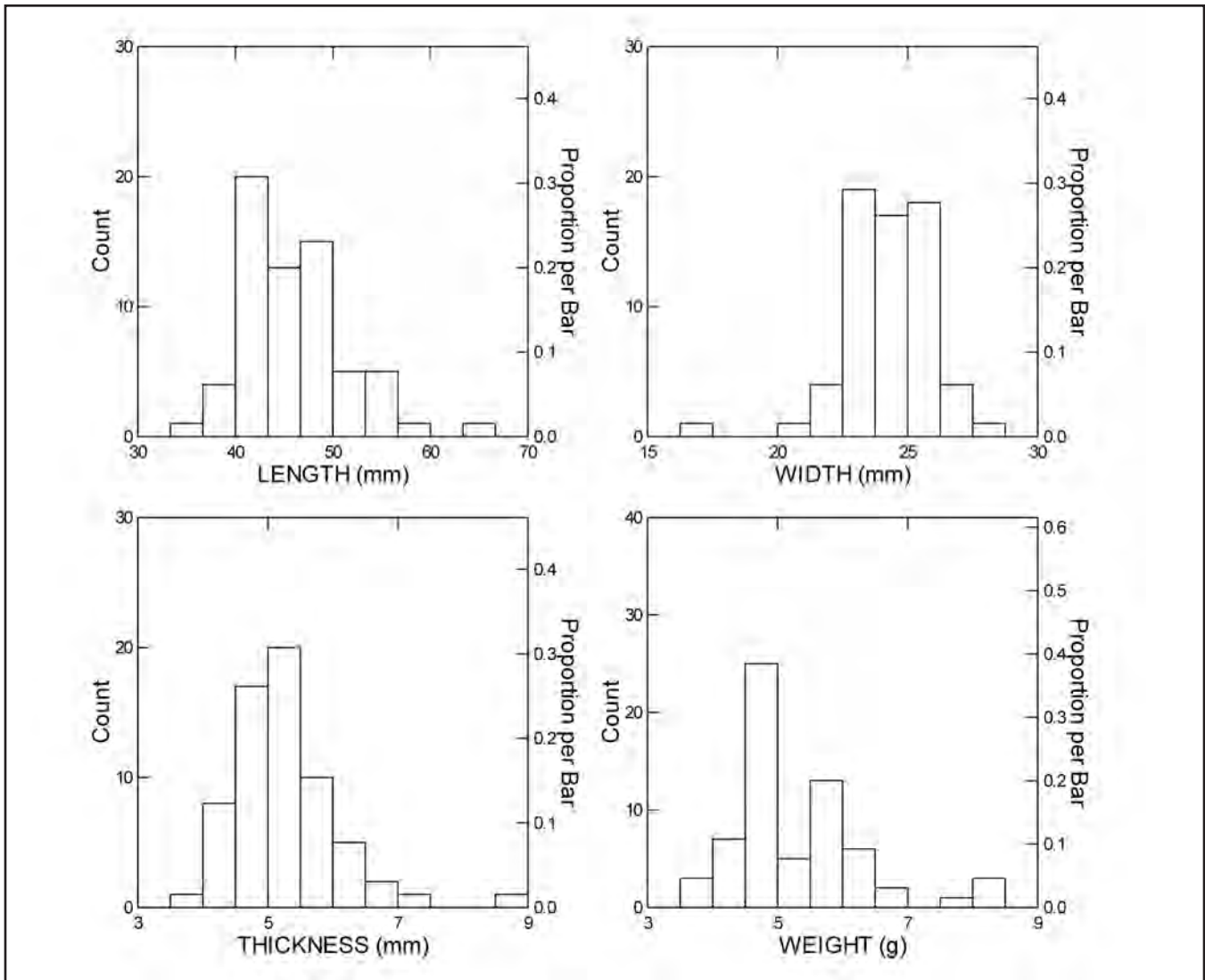


Figure 3. Biface length, width, thickness and weight measurement distributions.

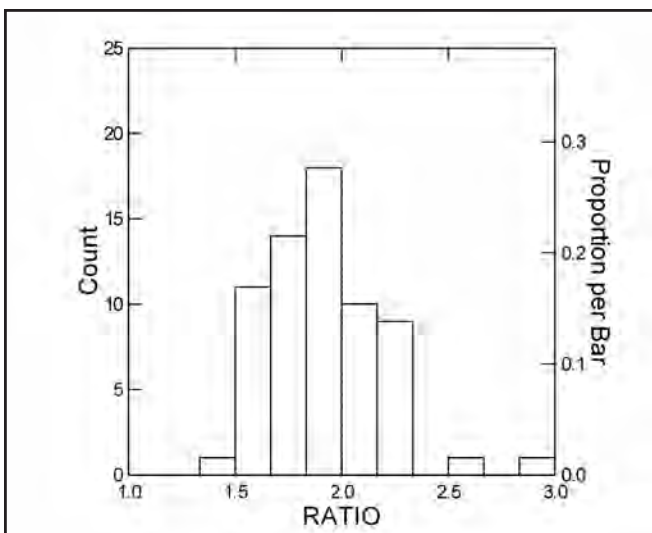


Figure 4. Length/width ratio distribution.

Table 1. Summary of Measurements for 65 Bifaces.

	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)	L/W Ratio
Mean	46.15	24.26	5.21	5.25	1.91
S. D.	5.31	1.75	0.78	1.01	0.26
Min.	36.20	16.60	3.90	3.50	1.46
Max.	66.00	28.60	8.50	8.40	2.88
Skew. (G1)	1.01	-1.23	1.35	1.12	0.96
Kurt. (G2)	1.84	5.04	3.94	1.52	1.96
Median	45.10	24.50	5.20	4.90	1.90

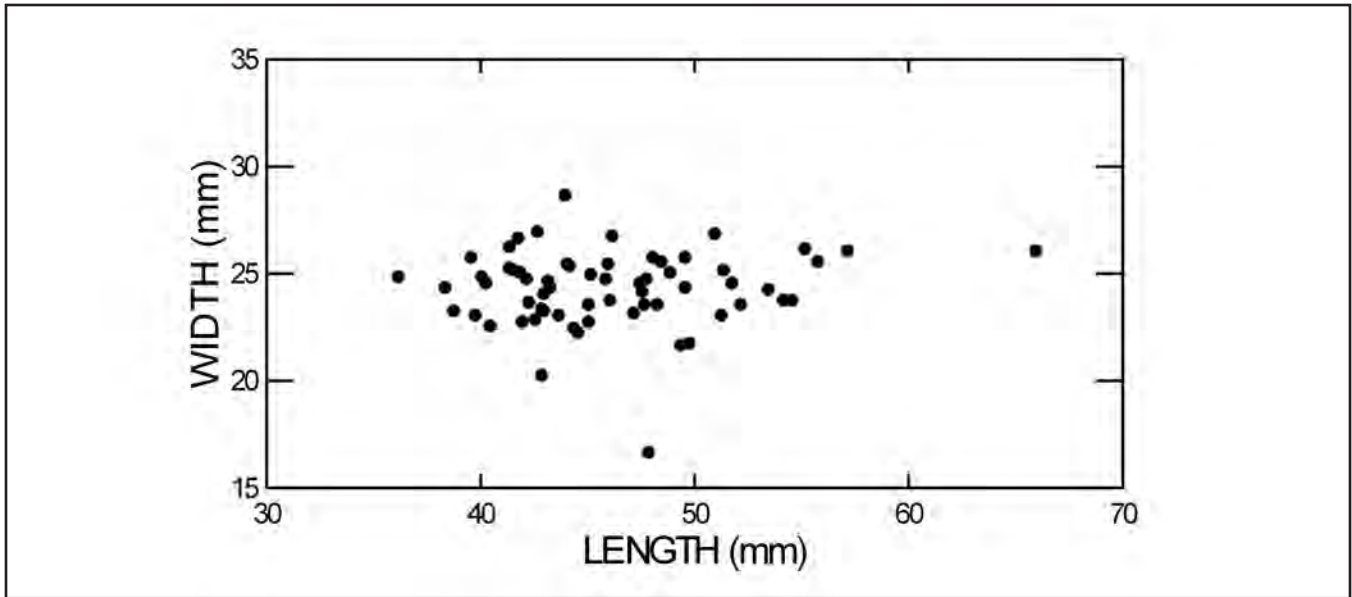


Figure 5. Cross-plot of length and width.

biface measurements may depart from normal distributions and that would need to be considered when testing for differences between this and other caches.

Keep in mind that the bifaces described here are only part of the original cache total. Furthermore, as they are not a probability-based sample, the question arises as to how representative they are of the total bifaces. The number of bifaces studied here is a fairly large proportion of the apparent total, about 30%. That would seem an adequate sample unless the original biface population was extremely heterogeneous. Archaeologists usually must contend with collections that are not the total, nor samples obtained with statistical rigor. Here even having all bifaces that were found, the possibility would remain that some were overlooked in the field.

A simple shape index is the length/width ratio, that is to say, length divided by width. Figure 4 shows the distribution

of the length/width ratios. The mean and median of the ratio are slightly less than two. In other words, length is generally slightly less than twice the width. As can be seen in Figure 2, some of the bifaces are asymmetrical. The subjective impression is that the bifaces have a less than homogeneous appearance.

Figure 5 shows a cross-plot of length and width. As can be seen, width varies much less than length. There seems to be little correlation of width and length. Length accounts for only about 7% (r^2) of the variation of width (Sokal and Rohlf 1981:561). A t test indicates that the slope of the regression line does not significantly differ from 0 (Sokal and Rohlf 1981:454). Apparently, width does not increase with length.

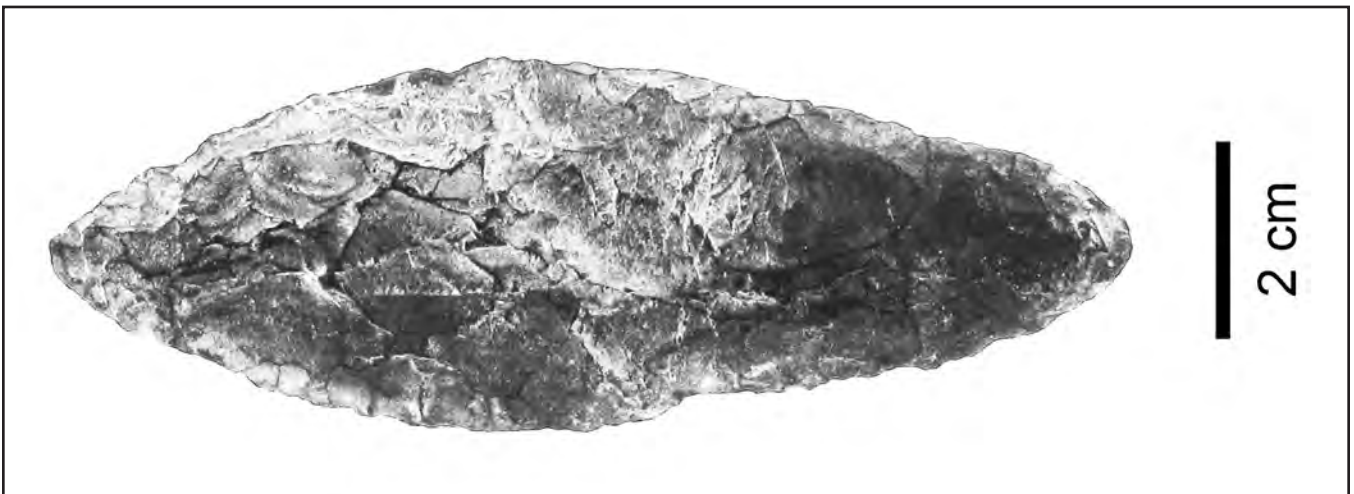


Figure 6. Bipointed biface, NMNH catalog number 35473.

Bipointed Biface

A bipointed biface is present besides the triangular bifaces (Figure 6). The homogeneous dark gray raw material is dissimilar to that of the Meadowood bifaces described above. It is 108 mm long, 37.5 mm maximum width, and 10 mm thick. Neither end has edge grinding. The wider end is suspected to be the actual cutting edge because one side has a series of abruptly terminated flakes. These could be interpreted as evidence of resharpening, but could simply be left over from unsuccessful thinning during manufacture.

Discussion

Even though local glacial till may contain occasional Onondaga chert pebbles, the cache of bifaces would require more than a few pebbles for raw material. The bifaces can be assumed to have been made in a workshop near an Onondaga chert quarry. It is possible that initial processing took place at a quarry workshop, and the bifaces were finished locally. The nearest outcrops would be along the Niagara Escarpment about 80 km to the north (Rickard and Fisher 1970).

The mean biface weight estimated here suffices for an approximate estimate of the total cache weight. For 217 bifaces the result is a total weight of about 1.1 kg for the cache. Certainly, that weight seems a small burden for an individual even in addition to a normal domestic kit carried when traveling.

We postulate that the community that visited the Randolph locality in Early Woodland times was part of a band. Characteristics of egalitarian societies (Service 1971, 1979) called “bands” are worth brief review here. Bands are usually composed of communities, that is to say constituent local residential groups. Kinship ties the band together, although usually community membership is flexible, and communities may amalgamate or disperse during an annual round of seasonal activities. Inherently a band as a social unit may be defined as a frequently interacting population. Individuals within a band may not interact face to face daily, unless it was in fact a single community, but more often than with individuals outside the band. Likewise, material items circulate among kinsmen within the band, but comparatively infrequently pass to or from outsiders.

We have little idea of the average Early Woodland band population or territory size in western New York. The territory size of a band if it included both the Onondaga chert quarries and the Randolph locality would need to be over 40 km in radius. This seems possible if communities made settlement moves over distances of 10 or 20 km during an annual round of subsistence activities.

Exchanges within a band would move items only within the radius of the territory utilized by that social group. For long distance movement, exchange would be assumed to take place between individuals in different bands. Here if the bifaces moved in a single exchange between bands, then the implication is that the band territory radius would be reduced in

half to 20 km.

The find is south of other Meadowood sites reported in western New York (Granger 1978:43-44; Tache' 2011:76), although this may be simply a matter of incomplete reporting. Granger (1978) considered at some length the distribution of Meadowood components and their specific environmental settings. This find shows that not all Meadowood components in western New York are within the watershed of streams draining into the lakes. Randolph is within the Allegheny Upland near the unglaciated Salamanca Re-entrant (Cadwell 1988). Even so, the direct distances are not great; the find is about 80 km south of the Lake Erie outlet at the Niagara River and about 40 km from the Lake Erie shore. Furthermore, discussing central New York, Granger (1978:53) pointed out that the watershed divide to south-flowing rivers would be easy to cross. The situation is similar in western New York too. Crossing from the Cattaraugus watershed to that of the Conewango would be almost imperceptible. Recall that the local context of the site is a small stream valley between Conewango Creek and the Allegheny River a few kilometers distant.

How do we interpret this and similar caches? The apparent quantity of bifaces here exceeds the number needed at one time in a tool kit. Bifaces stored for later use would be at a location regularly visited or at least was expected to be revisited at some foreseeable time during an annual round of settlement moves by a local community.

Alternatively, the cache may not be for domestic purposes. It could be an offering, other than mortuary, left at this location for some significant reason that is now lost to us. Even though locations of such caches could be at prominent landmarks, they may just as likely be idiosyncratic, and not habitation sites at all.

Finally, the bifaces may be part of a mortuary feature. Recall that Larkin (1880:8) mentioned other artifacts were found at the location. If they were contained in the same feature as the bifaces, that would be evidence supporting a mortuary interpretation. Granger (1978:296) proposed that several bands utilized Meadowood mortuary sites, that is to say a population larger than that of a local community. Such a location would need to be familiar to members of several communities. It would be a location visited by a large number of people, although perhaps briefly, and probably revisited by a diverse group.

Lacking more information about the site, no further interpretation will be proposed for this cache. We see that for this or other biface caches each explanation has implications related to site context and characteristics. Overall, our knowledge of the Meadowood site distribution is based on an incomplete and fortuitous collection of finds and always will be. Yet, accumulating data more representative of the actual site distribution is possible. Contents of other caches must exist in museum collections or private hands that are as yet unreported in the archaeological literature. Reporting the locations of such caches is critical for better understanding them.

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Climate and Native-American Subsistence Practices during the Mid-Holocene in the Hudson River Valley: Evidence from Site 589 in Bethlehem, New York

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Within the upper reaches of the Dowers Kill, Site 589 was discovered in advance of a proposed housing subdivision. A radiocarbon date of 5,830 – 5,750 cal. BP was returned on a fragment of calcined bone; in addition, no Vosburg or Vosburg-like points were recovered from the assemblage indicating a Late Archaic (4,000 to 1,500 BC) occupation. The site is examined in relation to a growing set of environmental data that suggest the Mid-Holocene (after 6,000 BP) was marked by a period of extreme drought and seasonal variation. The forests of New York were greatly affected by these climatic shifts and witnessed a dramatic die-off of hemlock and gradual replacement with oak and hickory. The location of Site 589 along a small mosaic of wetlands may have been a short-term reaction by Native groups to the drought conditions. As climatic conditions stabilized during the later stages of the Holocene, these small wetland mosaics (formerly reservoirs of water, food and other resources) were no longer important focal points of subsistence strategies. In part, this was due to greater availability of resources across the broader landscape and effort required to extract usable resources from small wetlands. These changes in Native subsistence strategies are reflected in the brief, but intense occupation of Site 589, and its abandonment during the late Holocene.

Introduction

The 589 Precontact Site (Site 589) was identified in testing for a proposed housing subdivision on Elm Avenue in the Town of Bethlehem, Albany County, New York (Figure 1). Although multiple components were identified, the majority of the assemblage appears to date to the Late Archaic period (4,000 to 1,500 BC) with a single radiocarbon date from 5,830 – 5,750 cal. BP (hereafter simply BP).

The approximately half-acre site is likely part of a fall/winter procurement pattern that exploited a series of nearby wetland mosaics. Overlooking the Dowers Kill (part of the Vloman Kill watershed), the site's location would have afforded Native American occupants with a diverse array of resources, including food and fibers for basketry, as they prepared for winter. Several other nearby contemporaneous sites, and the lack of later archaeological components, suggests that a particular set of environmental conditions existed around 6,000 BP that brought Native American foragers to the Dowers

Kill area. We review a growing set of data from scientists reconstructing paleoclimate and the past environments of the Northeast to explore how Native populations reacted to the dynamic changes brought about by shifting conditions in the mid-Holocene.

Background

Site 589 is located in the Eastern Mohawk-Northern Hudson Lowlands geological province. The landforms across this area were influenced by a number of geologic and climatic events that include glacial re-advances, glacial lake formation, and glacial lake drainage (LaFleur 1979). More specifically, Site 589 is located on the Dowers Kill, part of the Vloman Kill watershed, which along with the Normans Kill is one of the principal drainages of the Albany Pine Bush and a major tributary to the Hudson River (Figure 1).

The surficial geology in this area is dominated by lacustrine sediments that settled out of glacial Lake Albany which covered the western Mohawk basin at the end of Pleistocene some 12,000 years ago. These sediments were molded and carved by winds and water during the successive stages of the recession of Lake Albany as it drained—Quaker Springs 11,900 to 11,500 BP; Coveville 11,500 to 11,300 BP; and Fort Ann 11,300 to 11,100 BP (Isachsen 2000:187). The latter two stages were more like rivers or what are called “fast lakes” and the sandy terrace on which Site 589 is located likely formed during the Coveville or Fort Ann stages of glacial lake recession.

Site 589 was principally occupied between 6,000 and 5,000 BP (Appendix 4), which is commonly accepted as the beginning of the Late Archaic period in archaeological terms. This period roughly corresponds to the beginning of a series of environment/climatic changes that produced the broadly dispersed mixed forests that are present today across much of the eastern United States (Funk 1990). This was closely followed by an increase of large fauna, specifically white-tailed deer populations that sustained a growing human population (Funk 1993). This view is supported by rich archaeological data sets across New York, especially the Hudson River Valley (Funk 1976a).

Approximately 1,000 feet (300 m) northeast of Site 589

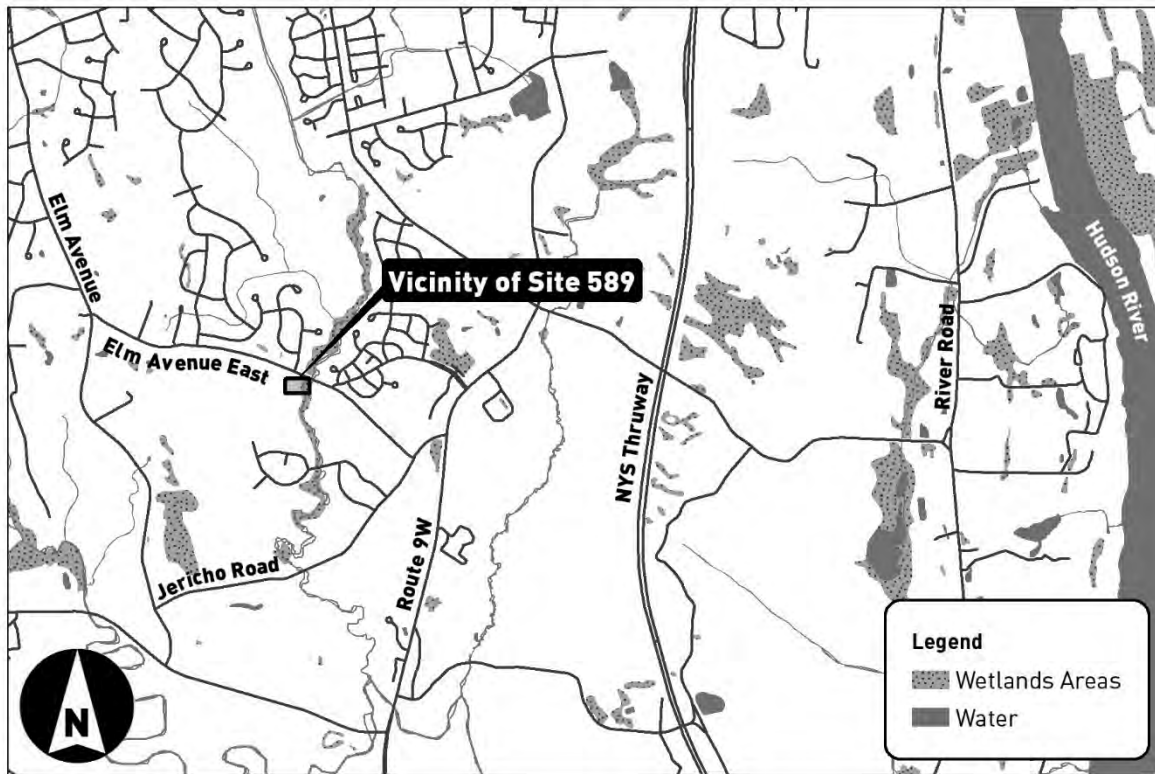


Figure 1. Site 589 situated along the west side of the Hudson River within a broad array of modern wetlands, primarily along the Dowers Kill and Vroman Kill.

lies another Vosburg site, the Dowers Kill Site or Site 180). Beth Wellman of the New York State Museum examined the assemblage and determined it was a Vosburg component site (Werner Archaeological Consulting 1994a, 1994b). These two Vosburg sites may have been part of a series of camps that developed over several years as small groups returned to the same general area. Or the sites may have existed at the same time, possibly occupied by related family groups.

Mid-Holocene in New York

Around 6,000 years ago the environment of the upper Hudson River Valley was assuming a more modern appearance. Yet, despite several millennia of general warming with overall wetter climatic conditions, recent data suggests the trend was interspersed with short intervals of rapid fluctuations. These shifts in climatic conditions likely had a profound effect on Native populations and their movements on the landscape in search of food and other resources.

Site 589 dates to an interstitial period, between what has been called the Middle Holocene and Late Holocene, or the beginning and end of a hypsithermal period (Anderson 2001:146), also known as the Holocene climatic optimum. Although beyond the scope of this discussion, Anderson (2001:161) notes broader implications for Native groups throughout the eastern United States during the Late Holocene as population levels rose and new cultural expressions emerged in the form of mound construction, the emergence of

complex trade and exchange networks, and increases in warfare and conflict (Anderson 2001:161).

Given the relatively limited occupation of Site 589, we consider the implications of climatic shifts at a much smaller scale and more specific period of time. While acknowledging that climatic changes likely influenced Native cultures over the *long duree*, we interpret Site 589 (and similar nearby sites) as evidence of a temporary shift in subsistence strategies in response to a relatively short period of climatic instability, as we will discuss below.

Climatic Trends

Before 6,000 BP, the climate of the eastern United States trended toward more temperate conditions with increased rainfall and warmer temperatures (Table 1). After about 6,000 BP the rainfall trends slowed, and, after a series of fits and starts began to reverse. Warmer and now drier conditions (perhaps even extreme drought) during the two millennia after 6,000 BP appears to have had a profound effect on the forests and ecology of eastern New York (and most of the eastern United States). Foster and others (2006) have suggested, based on strong evidence from a variety of data sets, a climatic shift generally between 5,000 to 3,000 BP in eastern New York. More precise timing on the event is not currently available due to the lack of radiocarbon dates for the sediments often used to study the phenomena.

In and around the Hudson River Valley a similar pattern is noted with warm, wetter conditions shifting to warmer, dri-

Table 1. The Climate of the Eastern United States Before 6,000 BP.

Date (Cal Yrs. B.P.)	Trends	Local trends	Source Data (Citation)
9,000	Spike in storminess		Southern VT and eastern NY (Noren et al. 2002)
		Rise in oak, hemlock and beech, decline in pine	Lake Grinnell, northern NJ (Zhao et al. 2010)
8,000		Warm, wet	Lake Minnewaska, eastern NY (Menking et al. 2012)
		Wet interval	Davis Pond, southwest MA (Newby et al. 2011)
7,500		Warm, Dry	Lake Minnewaska, eastern NY (Menking et al. 2012)
		Dry interval	Davis Pond, southwest MA (Newby et al. 2011)
7,000	Wet interval	Near modern lake levels	Crooked Pond, Eastern MA (Foster et al. 2006)
		Flooding peaks	New Hampshire and Maine (Parris et al. 2010)
6,500		Warm, wet	Lake Minnewaska, eastern NY (Menking et al. 2012)
6,000		Dramatic hemlock die-off	Berry West, North, Hawley, western MA (Foster et al. 2006)
		Spike in storminess	Southern VT and eastern NY (Noren et al. 2002)
5,800-5,550	Site 589 radiocarbon date		(Hartgen 2016)
5,500	Drought and hemlock decline	2-3 meter lake level drop	Crooked Pond, Eastern MA (Foster et al. 2006)
	Cooling and drying	Sharp hemlock decline	Lake Grinnell, northern NJ (Zhao et al. 2010)
		Dry interval	Davis Pond, southwest MA (Newby et al. 2011)
		Gradual hemlock die-off	Ballston Lake, eastern NY (Toney et al. 2003)
5,000		Warm, dry	Lake Minnewaska, Mohonk Lake, eastern NY (Menking et al. 2012)
		More rapid hemlock die-off	Ballston Lake, eastern NY (Toney et al. 2003)
4,500		Warm, wet	Davis Pond, southwest MA (Newby et al. 2011)
4,000		Flooding peaks	New Hampshire and Maine (Parris et al. 2010)
3,500	Wet interval	Warm, wet	Monhonk Lake, eastern NY (Menking et al. 2012)

er conditions (Menking et al. 2012:53-54). Over the long term there is a noticeable rise in moisture towards modern conditions, punctuated by repeated “short-term low-stands” of water levels in lakes, swamps, and wetlands (Newby et al. 2011:528). In all, some 11 different low-stands are noted during this time “suggesting numerous century-scale and longer droughts in New England during the Holocene” (Newby et al. 2011:529).

Recent core analyses from lakes in Saratoga County (Ballston Lake) and the Swangunk Mountains (Davis Pond) also support this hypothesis. A period of warm, wet weather in eastern New York was truncated by a series of shifts towards warmer and drier conditions which, in part, were responsible for a dramatic decline in hemlock (*Tsuga*) stands (from over 30% of the forest to less than 5%) and a shift to a more mixed forest canopy (Haas and McAndrews 2000; Zhao et al. 2010). The most intense period of drought in the Hudson River Valley appears to have occurred between 5,800 and 5,550 BP. Newby dates the hemlock die-off at Davis Pond to about 5,500 BP (2011:529), coincident with a period of drought. Other researchers have also detected this noticeable decline in effective moisture at the same time (Shuman and Marsicek 2016).

The dry environmental conditions likely reduced the overall wetland mosaic patterns common in the eastern United States, rendering them inefficient as a food source, both directly and indirectly for game animals. Century-long drought patterns have been noted after 5,800 BP (Haas and McAndrews 2000), suggesting that after initially acting as a reservoir for water, the wetland mosaics too began to decline, and their value to Native subsistence practices subsequently waned.

Loss of Hemlock Forests

One of the more dramatic changes in New York during the mid-Holocene is the precipitous decline in hemlock forests. With the decline of hemlock, pine (*Pinus*) and oak appear to have filled the resulting void in the uplands (but oak declined drastically along the coast). Other taxa such as hickory (*Carya*) began to increase while birch (*Betula*) declined. The rise in oak and hickory likely fueled a rise in deer, turkey, and other animals that feed on the nut harvests. While some have posited the drop in hemlock was due to insect predation or other detrimental pathogens, the driving casual factor was likely climatic changes, perhaps tied to solar activity (Foster et al. 2006).

Decline in hemlock and pine likely also helped to open the forest floor to more sunlight, thus promoting the growth of grasses and weeds, particularly in marginal environments like steep slopes or places of stony soils. In the Ballston Lake data set, oak also evidenced a decline after 6,000 BP, but its fall-off was markedly less rapid than hemlock. For deer populations the new grassy forage in and around former hemlock stands and the likely continuation of oak stands in the uplands may have helped to expand their range and increase their population in the Late Archaic period.

Effects on Native Populations

As the environment dried, it is possible that Native groups focused on reservoirs of water and resources, such as near wetland mosaic complexes. Larger systems throughout New York have been known to have attracted precontact groups for millennia (Funk 1991). And similar patterns have been noted to the east in New England, as discussed below. Without large wetland complexes in the upper Hudson Valley, it appears Native groups focused on more ephemeral systems, at least for a period of time.

A large proglacial wetland complex, now known as Titicut Swamp, in southeastern Massachusetts, appears to have witnessed an extended period without open water between 4,000 and 3,150 BP (Simon 1991:69). Archaeological data from sites around the swamp indicate Native land-use of the area peaked prior to these drying conditions (Simon 1991:71). Similar patterns of Early Holocene land use were noted within and around the Robbins swamp in northwestern Connecticut (Nicholas 1988:279, 1991:79). By the Middle Holocene, land use at Robbins Swamp declined dramatically. In part, this is likely due to drying within the swamp, similar to that witnessed at Titicut Swamp.

The effects of the drying trend on smaller mosaic wetland complexes, such as those around the Dowers Kill, was likely even more pronounced. If the trend of droughty conditions extended inland to the Hudson River Valley, smaller creeks may have become ephemeral runs of water, active only during periods of excess surface water after heavy rains and melting snow.

George Nicholas (Nicholas 1988) hypothesizes “ecological levelling,” in which the landscape surrounding mosaic wetlands during the Middle Holocene improved to create a more evenly dispersed set of resources that Native populations could utilize. Thus the biomass available in wetlands for Native populations declined while it increased in non-wetland areas. As a result, wetland mosaic complexes were no longer the focus (or core) of Native subsistence-settlement patterning as the Middle Holocene progressed.

The droughty conditions of eastern New York may have forced Native populations to remain closer to major tributaries and lakes for a relatively short period of time. Concomitantly, the hemlock die-off and dry conditions may have contributed to a degraded upland environment. The upland forests formerly choked with thick stands of hemlock were now open to new forest canopies that could support a larger biomass, based on the oak-hickory-deer-turkey biome (*sensu* Ritchie 1969). As a result, Native groups began to more broadly utilize the upper Hudson River landscape after about 3,000 BP.

Smaller mosaic wetland complexes, like those at the Dowers Kill, were no longer as advantageous as during periods of dramatic drought in the early Middle Holocene. As a result, the corresponding archaeological signature of Native groups in the smaller wetland mosaics likewise dropped and was refocused in uplands, large wetland complexes, and riverine environments.

Site 589 and the Upper Hudson River Valley

To summarize, Site 589 dates to a period of great climatic variability, as evidenced in cross-disciplinary paleo-environmental studies and in the broader set of archaeological landscape data, especially at the mosaic wetland complexes (Table 1). Shortly after 6,000 BP the Northeast experienced a disruption in the trending pattern of increasing temperature and surface moisture. Periods of extreme drought and the reversal of the overall climatic trend led to two important changes to the environment: 1) the rapid and sudden decline of the hemlock forests, and 2) the drying of wetland complexes, both large and small.

We argue that Site 589 evidences Native peoples' response to these dynamic environmental conditions following:

- 1) an initial and temporary shift in subsistence focusing on shrinking wetlands shortly after 6,000 BP; and
- 2) later abandonment of these smaller ecological wet lands zones in favor of a more broadly dispersed land use pattern as ecological leveling occurred with the replacement of the hemlock forest by a mixed deciduous forest.

The former is evidenced at Site 589 by a relatively short period of intensive land-use (we interpret two separate occur-

rences based on the artifact patterning, as discussed below). The latter is evidenced by the relative lack of diagnostic materials that would suggest Site 589 was intensively occupied/used after the beginning of the Laurentian Late Archaic period (i.e., Middle Holocene 7000 to 5000 BP), as these ecological zones were no longer part of the typical subsistence rounds.

Site Excavations

Data Retrieval excavations were conducted by Hartgen Archaeological Associates, Inc. in 2015 after initial study by other teams of archaeologists (Landmark Archaeology Inc. 2004; Rittner and Basa 2006). The study consisted of reduced-interval shovel tests to better model the intra-site patterning of artifacts and their relative distribution. The majority of artifacts were recovered from a shallow topsoil that developed from intermittent plowing during historic agricultural use of the property that started in the early-to mid-1800s and continued through the mid-1900s. The plowing likely disturbed numerous features, but the artifacts appeared to retain horizontal integrity, and defined concentrations of fire-cracked rock and calcined bone allowed subsequent unit excavation to focus on those areas where features were once present.

In all, 245 shovel tests during the data retrieval refined the site boundaries, and 75 one-meter units in both high- and low-density areas of the site captured stratigraphic details and more controlled estimate of artifact densities (Figure 2). One



Figure 2. View northwest across the series of units excavated in Activity Area 1 of Site 589.

of the more notable site attributes was a high density of calcined bone that survived in the plowzone, totaling 400 fragments. The larger of these samples were analyzed for radiocarbon dating by Beta Analytic, and for species identification by zooarchaeologist Marie-Lorraine Pipes.

The shovel testing determined that there were primarily two activity areas, both in the northwest area of the site that overlooked a small intermittent stream and wetland. These two areas were apparently coterminous with slight variations in artifact assemblages. Activity Area 1 (AA1) had a high concentration of stone tools, suggestive of a processing area, whereas Activity Area 2 (AA2) had a high percentage of the recovered fauna, suggesting a roasting platform was proximal and the resultant bone scatter was the final stage of processing game. The overlap or clustering of different activities at AA1 and 2 is indicative of communal space where game was both processed and consumed (Yellen 1977).

The notable aspect of the extensive excavations was the paucity of intact cultural features. In fact, only two precontact features were identified, neither of which contained diagnostic attributes. As a result, much of the interpretive value of the site is derived from inference of the recovered artifacts such as fire-cracked rock, stone tools, debitage, and animal bones (Figure 3).

Artifact Assemblage

In all, 5,784 artifacts were recovered from the Phase III excavations, 4,547 of it (79%) debitage. The types of debitage recovered suggest a variety of activities were occurring together, possibly foraging and hunting, by a small group of Native people. The debitage appears to be primarily of the same materials as the stone tools, and locally derived from a number of nearby quarry sites. This suggests a relatively limited area of logistical forays for Middle Holocene people in the Hudson River Valley. Analysis of the debitage identified three primary chert types within the assemblage. The predominant chert type is from the Mount Merino (sometimes also referred to as Normanskill) formation, situated within Ordovician-aged shale bedrock. This chert is the principal ore both in the debitage and in the chipped stone tools. Cortex flakes have flat, planar surfaces, which demonstrates that the raw ore was derived from bedded veins of chert, quarried from local bedrock. Its green to grayish-green color with dull white inclusions and low-luster appearance suggests Flint Mine Hill (about 17 miles south of Site 589) as a possible source.

The chert types that occurred less frequently in the assemblage are fossiliferous, which suggests they were sourced from

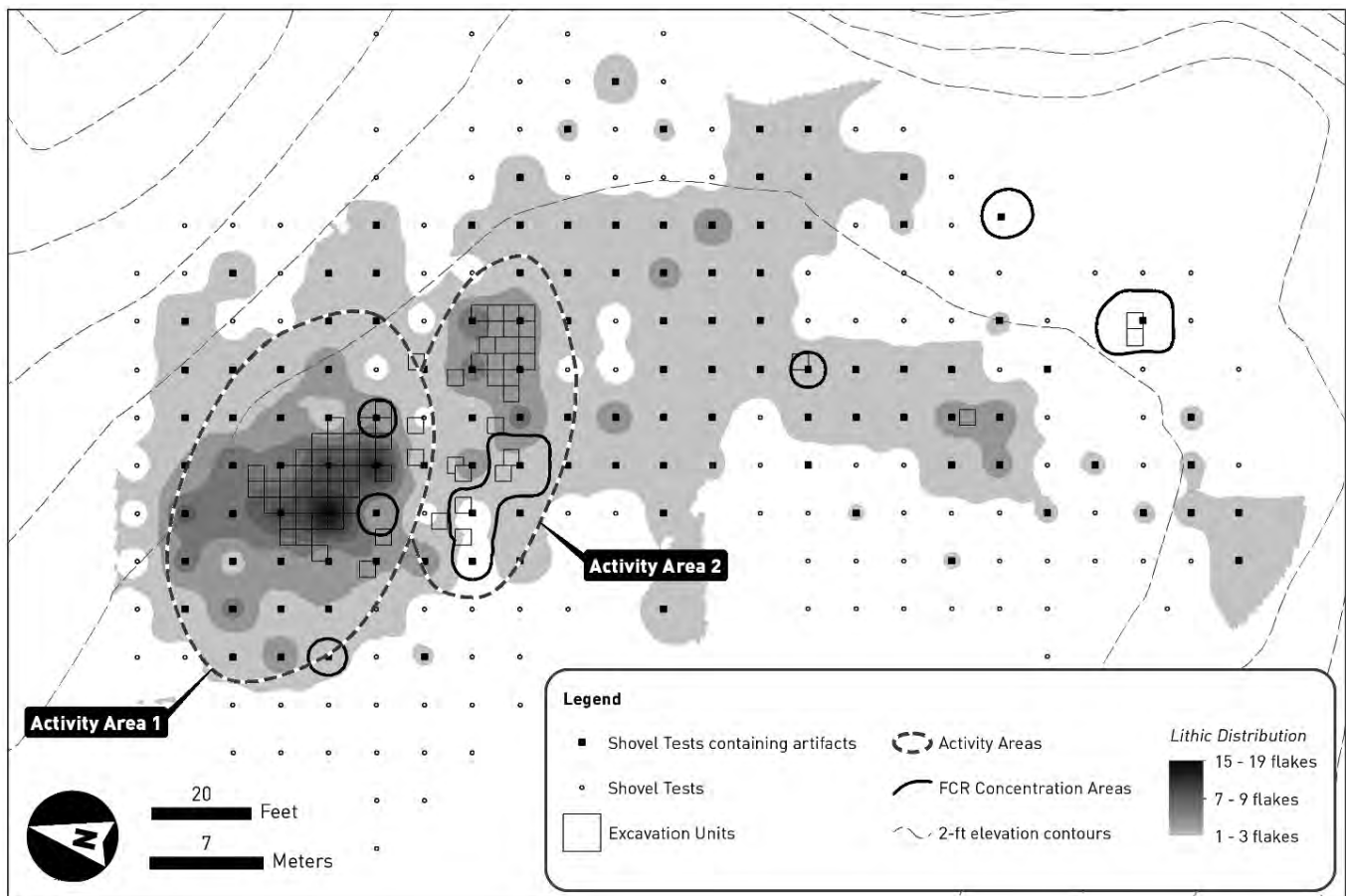


Figure 3. Artifact distribution within the site and among the two identified Activity Areas.

Devonian-aged bedrock found in the limestone belt along the base of the Helderberg Escarpment and Catskill Mountain range. Curiously, Devonian-aged sources are closer to Site 589; however, the Ordovician ore was used more frequently.

The overall size range of the debitage suggests that stone tools were being fashioned on site from larger cores or blocks of chert ore (larger debitage). And smaller debitage suggests finished tool were sharpened and refined. Assuming the chert waste debris is not a palimpsest of overlapping material from different time periods, and from the same occupation, the debitage suggests a variety of activities performed by a variety of different people.

Diagnostics and Chipped Stone Tools

The remnants of seventeen (17) projectile points were recovered from Site 589, thirteen (13) within Activity Area 1, and two from Activity Area 2 (Table 2, Figure 4). The projectile point types represented in the assemblage are all thought to date to the Late Archaic. Otter Creek, Brewerton, Beekman Triangle, Lamoka, and Vosburg projectile points largely overlap in time and space, and the functional/stylistic differences are poorly understood by archaeologists. The diagnostic projectile points recovered from the site suggest multiple occupations. Vosburg-like points or variants were the dominant type recovered from Site 589, and the occurrence of other contemporary point-types is not unusual for sites of this time period (Funk 1976).

Twelve (12) scrapers and scraper fragments were recovered from Site 589 (Figures 5-7). Six were recovered from Activity Area 1, five from Activity Area 2, and one from outside both. The examples from Site 589 can be categorized by size and shape as follows: small, large and triangular end scrapers. End scrapers are typically made from a teardrop- or spoon-shaped flake, likely prepared/shaped on a core, then removed from a core, with a single blow. The bit end is thicker, wider, and exhibits modification, with flakes removed to create a steep scraping edge on the dorsal side, with a smooth ventral under-side of the tool. The end opposite the bit is sometimes carefully shaped to a point, suggesting that it was hafted. The other shapes and sizes indicate they were hand-held without a handle. The large end scrapers from Site 589 are generally round and teardrop-shaped, with the utilized bit covering about half the tool, and all of the examples are whole.

Other tools included four drill fragments and one whole drill that was carved out of a raw piece of chert that likely acted as the handle (Figure 8). The other drills were apparently hafted for use as part of larger tools. Bifaces, mostly broken, were also recovered in large numbers, 81 in total. Their function, however, is unknown due to their highly fragmentary nature. Ground stone tools such as gouges, adzes, celts (wood-working), ulus, plummets and bannerstones (atlatl weights) were missing from the assemblage. This is not unusual at small back-country sites like Site 589 (Funk 1976); however, the absence of bannerstones is curious because the extensive faunal

Table 2. Projectile points recovered from Site 589.

Activity Area	Type	Chert type	Approximate dates (BP)
1	Vosburg	Normanskill	5500-4000
1	Possible Vosburg	Normanskill	5500-4000
1	Otter Creek	Normanskill	6500-6000
1	Possible Vosburg	Onondaga	5500-4000
1		Normanskill	
1	Vosburg	Normanskill	5500-4000
1		Normanskill	
1	Untyped	Normanskill	
1	Untyped	Onondaga	
1	Vosburg	Normanskill	5500-4000
1		Onondaga	
1	Brewerton side-notched	Normanskill	5400-4500
1	Vosburg	Normanskill	5500-4000
1	Vosburg	Normanskill	5500-4000
2	Vosburg	Normanskill	5500-4000
2		Onondaga	
2	Possible Vosburg	Normanskill	5500-4000
--	Lamoka	Onondaga	4500-3900



Figure 4. Top: from left to right, three Vosburgs (142.1, 137.1 and 210.1) and a Beekman Triangle (202.1). Middle: from left to right are three Vosburgs (220.1, 222.1 and 203.2) and a complete biface (217.3). Bottom: from left to right are a Brewerton side-notched (216.1), an Otter Creek (176.2), a Lamoka (97.1) and a Beekman Triangle (177.1).

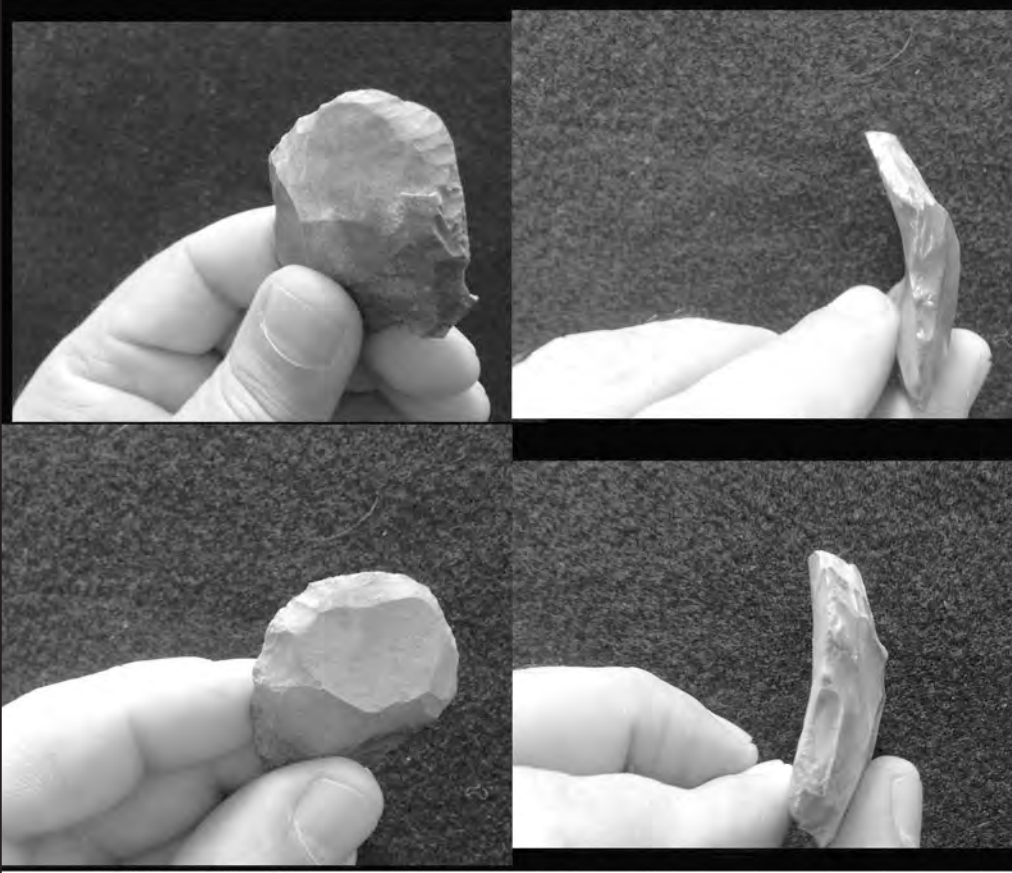


Figure 5. Close-ups of the bit ends and cross-sections of scrapers 210.2 (top) and 203.1 (bottom). The curvature is believed to have been intentional and used for processing animal hides.

Figure 6.
Examples of
four large scrap-
ers, all of which
were recovered
from Activity
Area 1.
Top left is
Artifact 210.2;
top right is
203.1;
bottom left
is 217.2; and
bottom right is
168.1.

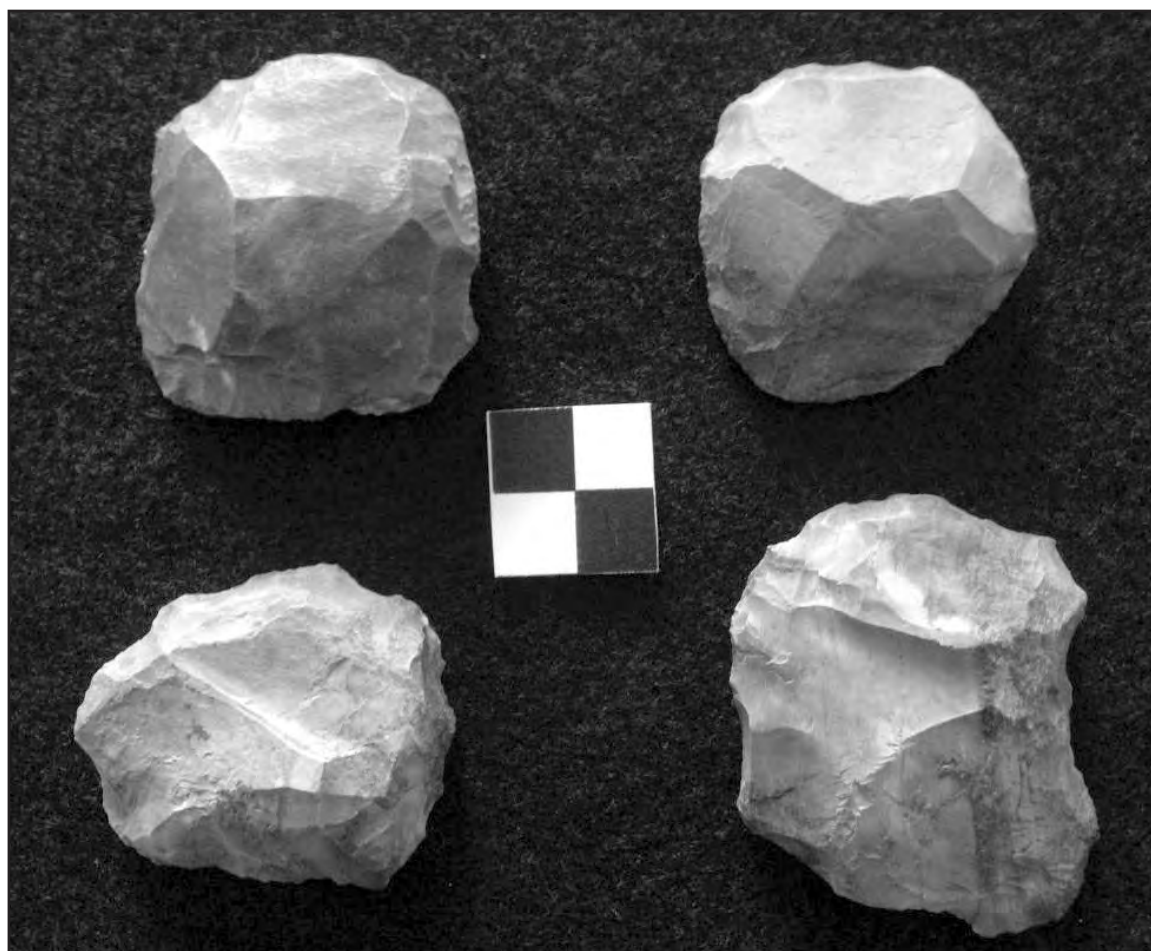


Figure 7.
Three trian-
gular-shaped
scrapers from
Site 589.





Figure 8. Drill 222.2 is an excellent example of the variety of stone tools at the site.

assemblage suggests that hunting was intensive.

The tools recovered from the site were predominantly in AA1, including 76% of the points, 56% of the bifaces, and 66% of the scrapers. Given the number of tools (and types of tools) in AA1, many of which are those that are used in faunal processing tasks, it is highly suggestive of an occupation focused on hunting and processing game.

Other Artifacts

Concentrations of FCR were found in one large area of AA2, near the calcined bone. However, the bones were more likely burned in an open hearth as opposed to a roasting platform or earth oven, where the fire-cracked rocks were more likely utilized.

The faunal material recovered from Site 589 was found in the plowzone; none was collected from intact features. This makes preservation of this component of Site 589 remarkable.

In general, the faunal assemblage consisted of small calcined bone fragments with few diagnostic attributes. A sample of nine bones from Unit 42 Level 1 in Activity Area 2, and weighing a total of 3.2 grams, was radiocarbon-dated. The bone was calculated to date to 5830 – 5750 cal BP. Though the bone was not recovered in direct association with the lithic artifacts from in situ precontact archaeological deposits, the radiocarbon date corresponds well with the established dates for the projectile point types at the site. This supports the contention that the faunal material was left by the same precontact groups that produced the remainder of the artifact assemblage.

The calcined bone is evidence of the construction of large, open fire hearths. As demonstrated by Stiner and Kuhn 1995, calcined bone is most typically created from open fires and appears to be a rather intentional process (Stiner et al. 1995). The faunal assemblage (n=400) was analyzed and speciated by Marie-Lorraine Pipes. Ms. Pipes identified three species within the assemblage: white-tailed deer, unspecified duck and turtle.

The assemblage of white-tailed deer was represented by a range of skeletal elements that were particularly informative. Foot elements were dominant, and the loin, thigh, rib and fore-shank fragments were indicative of dietary refuse. The overall dispersal of deer elements across the site suggests a minimum of 23 deer were represented. Deer were heavily exploited at Site 589, and the range of body parts represented suggests that entire carcasses were brought to the site and processed. This was perhaps indicative of winter preparation for food stores and pelts.

The unspiciated examples include fragments of unidentified bird, medium-size mammal, small-sized mammal and unidentified mammal. The mammal specimens that could not be identified by species fall within the size range of dogs to raccoons, which includes animals such as beaver, woodchucks, fox, etc. The unidentified bird bones include fragments of large long bones, which suggest turkey, pheasant or other large game birds.

Duck, turtle, and bird, as well as small mammal bones, suggest the residents pursued a variety of game that could be had near this wetland environment. A broad hunting strategy in which different types of animals were taken is suggested by the range of species represented.

The lack of fish and other seasonal indicator species may be due to taphonomic processes. However, it may be that this was a fall or winter site. The recovery of a nutting stone indicates that nuts were being processed at this site. This artifact also provides one of the few clues as to the site's seasonality, suggesting an early fall occupancy. If associated with the Middle Holocene date of the calcined bone, it was likely used to open hickory nuts based on pollen studies (Foster et al. 2006).

Hot Rock Cooking

Small fires or hearths were built in both Activity Areas. These fires, evidenced by concentrations of fire-cracked rocks, were built to provide warmth and light, as well as to assist in pro-

cessing food. The quantity of fire-cracked rock suggests the construction of a large roasting platform. Plant material such as tubers and nuts were collected from within or along the nearby wetlands and heated to make them edible. The cobbles were likely collected within or along the Dowers Kill and brought up to the terrace for use.

In eastern North America, the techniques of spit- or rack-roasting food over an open fire seems largely to have been replaced by or, at least, commonly supplemented by moist-cooking techniques using indirect heat sometime during the Middle Holocene (McElrath and Emerson 2009:847). Thoms (2008, 2009) argues that such changes in cooking technology represent land-use intensification and a trend toward using previously available but unused or under-used food resources that require more intensive food processing. Such cooking techniques required heating cobbles and using the stored heat for slow cooking foods. Repeated heating and cooling or the abrupt cooling of very hot rocks cracks them into distinctive angular fragments that archaeologists call fire-cracked rocks.

Cook stones were an efficient heating element as their non-combustibility and high density allowed for the capture and maintenance of heat for longer periods than hot coals. Not only were cook stones popular in low-fuel environments as they extended cooking times without overtaxing limited resources, but hot-rock cookery also allowed foods to be boiled or steamed in earth pits and ovens instead of simply being flame-roasted (Thoms 2008:445, 2009:576). Experimental archaeology shows that the roasting of fish and mammals produces more oils and fats than the cooking of vegetable and shellfish resources and thus produces more cracking and spalling of the surrounding rocks (Pagoulatos 1993).

Other precontact sites in New York near wetland environments are known to have had plants such as water lily (*Nymphaea* sp.) with edible seeds and tubers; rush (*Juncus* sp.) with leaves used to weave baskets; cattails (*Typha* sp.), also with leaves for weaving and a starchy rootstock used for food; wild rice (*Zizania aquatica*) with its edible seeds; and sedge (*Cyperaceae* sp.) and arrowhead (*Sagittaria* sp.), also with edible tubers (Hartgen Archeological Associates Inc. 2006b:66-70, 2010:20-21). Wild rice is known to have been sun-dried or parched over a slow fire to crack the hulls. Likewise sedge and arrowhead tubers were dried to process the root. Hickory (*Carya* sp.) and hazelnuts (*Corylus americana*) have also been recovered from stone platforms dating to the Late Archaic period (Hartgen Archeological Associates Inc. 2006a:70).

In summary, these hot rock features at Site 589 may have been early attempts at cook-stone technology consisting of a closed steaming/roasting platform, a smaller, closed steaming pit, and an open roasting or drying platform. These features were attempts to maximize food resources by cooking or processing plants and animals that would otherwise provide little caloric or nutritional value. Such strategies may have been particularly important in times of ecological stress.

Conclusion

Funk (1991) describes the period around 6,000 BP as an era with low sea levels: perhaps 9 meters (27 feet below present) which would have created a very different ecological regime for the Hudson River. It is likely that the upper Hudson River was not part of the modern estuary system. As a result, at times of drought and climatic instability, upland wetland mosaics gained in importance for Native populations.

The exploitation of these small wetland mosaics shortly after 6,000 BP appears to coincide with dramatic shifts in weather patterns that were punctuated by periods of extreme drought. These fluctuations are well evidenced in the pollen and sediment records in the Northeast, but their impacts on human populations are poorly understood.

Site 589 was a back-country camp site occupied principally during the Vosburg phase of the Late Archaic period. Calcined bone from the site yielded a radiocarbon date of 5830 – 5750 cal. BP. Though evidence for seasonality is limited, the site is interpreted as a fall resource extraction area. Evidenced activities include the production of stone tools for hunting (projectile points) as well as processing of animal hides and plant materials from bifaces, drills, and scrapers.

The assemblage recovered from Site 589 provides a limited glimpse into the response by Native groups to climatic changes in the upper portions of the Hudson River Valley. Site 589 was an upland, Late Archaic, principally Vosburg-related resource extraction center. Even though plowing obliterated some of the archaeological features, it retained much of its horizontal integrity, which allowed the landscape to be examined holistically. Taken in concert, the assemblage indicates that a variety of subsistence tasks were being undertaken here, including intensive hunting, gathering, butchering and processing of meat, cooking and preparing both meat and vegetable resources. At least two Activity Areas or focal points of work were identified in close proximity within the site.

The evidence suggests relatively short-term occupation by a variety of people, perhaps working in concert to extract resources from the nearby wetland environments. Radiocarbon dating of the calcined bone places the occupation in the Middle Holocene, consistent with the Vosburg Phase.

Site 180 was another small Vosburg site located only a few thousand feet north of Site 589 (Werner Archaeological Consulting 1994b). Although the assemblage was not available to compare with Site 589, the geographic province of Site 180 suggests that resources available along this section of the Dowers Kill were returned to during the Vosburg phase of the Late Archaic period.

We have argued that climatic changes at this time may have made upland wetlands like those near the Dowers Kill attractive to Native groups for a short period of time. These wetlands may have acted as reservoirs of moisture and plants and animals during periods of extreme drought. As climatic conditions and greater mast food from trees emerged, small wetlands mosaics were less favored—perhaps due to the effort

required to sufficiently extract edible materials. This may explain why Site 589 was not intensively occupied/used after the Vosburg phase of the Late Archaic.

The lack of sustained site occupation after the Middle Holocene may reflect a broader pattern of “ecological levelling” as described by George Nicholas (1988). As sea levels rose, the upper portion of the Hudson became incorporated into the larger estuary. As such, resource availability likely increased and Native subsistence patterns shifted towards other areas such as the estuary; the uplands where large game such as deer could be found; and larger wetlands with greater resource diversity, thus leaving these smaller wetland mosaics as less relevant.

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Microtopography and Archaeological Landscapes: Filling in the Gaps at Mount Sinai Harbor, New York*

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On the shores of Mount Sinai Harbor, Long Island, New York, archaeological research has revealed unequivocal evidence for intensive prehistoric settlement by coastal hunter-gatherers. Large residential bases, shell middens, and lithic aggregations dating from the mid to late Holocene are spread over wide areas around the harbor. These sites form a complex palimpsest, an archaeological landscape where vertical stratification is rare, and chronometric components are often difficult to delineate. Recent investigations at the Remsen Hill site revealed a deeply-buried lithic scatter and hearth feature dated to 3,000±40 B.P. on a small terrace bounded by steep slope. These data indicate that discrete, single-component deposits occur at the periphery of these large domestic sites, on small, level areas that formed along the sheer margins (>15-35% slopes) of the Harbor Hill moraine. As a result, the new locus at Remsen Hill yields important insights into prehistoric landscape use in glaciated settings and fills a missing gap in the radiocarbon record of Mount Sinai Harbor.

Introduction

In the winter and spring of 2010, archaeologists investigated a previously unsurveyed portion of the Remsen Hill site (Kalin and Lightfoot 1989), an upland lithic scatter in the hamlet of Mount Sinai, Suffolk County, New York, identified here as the Kalafatis-Remsen Hill site extension (K-RHSE) (Figures 1-4). During the initial shovel test and surface survey at K-RHSE (Figure 3), a diffuse scatter of quartz tools and debitage was encountered throughout the study area (Bernstein and Tweedie 2010a), a typical site pattern recorded along the southern rim of Mount Sinai Harbor (Bernstein 2002). Dense concentrations of lithics along with a deeply-buried hearth (Feature 1) were later encountered at the northern edge of the property (Figure 4), situated on a small glacial landform described as a bench-terrace overlooking the harbor (Bernstein et al. 2010).

The isolated terrace lies on a sheer, north-facing slope of the Harbor Hill recessional moraine and encompasses a very small area (roughly 150m²).

The hearth (Feature 1) dates to the third millennium B.P.

and fills a missing gap in the radiocarbon record of Mount Sinai Harbor (Table 1). The hearth and lithic scatter from the terrace also appear to be a single-component locus, in a region where settlement in the mid-late Holocene was heavily concentrated on coastal moraine uplands. Thus, the small terrace deposit at Remsen Hill and the greater landscape of pre-contact sites surrounding Mount Sinai Harbor is the focus of this discussion.

Archaeological and Glacial Landscapes of Mount Sinai Harbor, Long Island, New York

The geomorphology of Long Island is recorded as a Pleistocene age “mantle” of glacier-deposited sediment and clastic till, overlying a deeply-buried shelf of Cretaceous sedimentary and Paleozoic metamorphic rock (Cadwell et al. 2003:8). Aside from barrier islands, tombolo's, sand spits, and dune fields that formed on the coastline in the mid to late Holocene, glacial moraines and their associated outwash plains dominate the landscape. Long Island's terminal and recessional end moraines (i.e., Ronkonkoma, Harbor Hill, Roanoke Point, and Sands Point) are complex, overlapping hill systems deposited during the Last Glacial Maximum (approximately 25,000 years B.P.), and later during periods of recession and readvancement between 24,000-18,000 years B.P. (Ridge 2003; Sirkin 1995). Kame deltas, meltwater channels, and kettle pond networks truncate the east-west trending moraines and outwash valleys (Bennington 2003; Sirkin 1995). Smaller glacial landforms, such as dry kettle holes, tunnel valleys, linear knolls, and noses (e.g., bench-terraces) often formed within or along the margins of moraine slopes (Morgan 2012).

On the northwestern coastline of Long Island, the moraine ridges have eroded into a “steep marine scarp...broken by inlets or harbors, one of which is Mount Sinai Harbor” (Kalin and Lightfoot 1989:14). Recent interpretations of the cove's glacial history based on high-resolution Digital Elevation Models have argued the uplands surrounding the small inlet are where the Harbor Hill and Roanoke Point moraines interface and overlap one another (Bennington 2003). Prior analyses by Sirkin (1994:2) considered the Mount Sinai Harbor hills to be composed of two discrete recessional moraine systems, deposited at different times in the late Pleistocene by the Connecticut Lobe of the Wisconsin Ice Sheet (C3- Mount

*This article was peer reviewed. We are grateful to the reviewers for their helpful input.

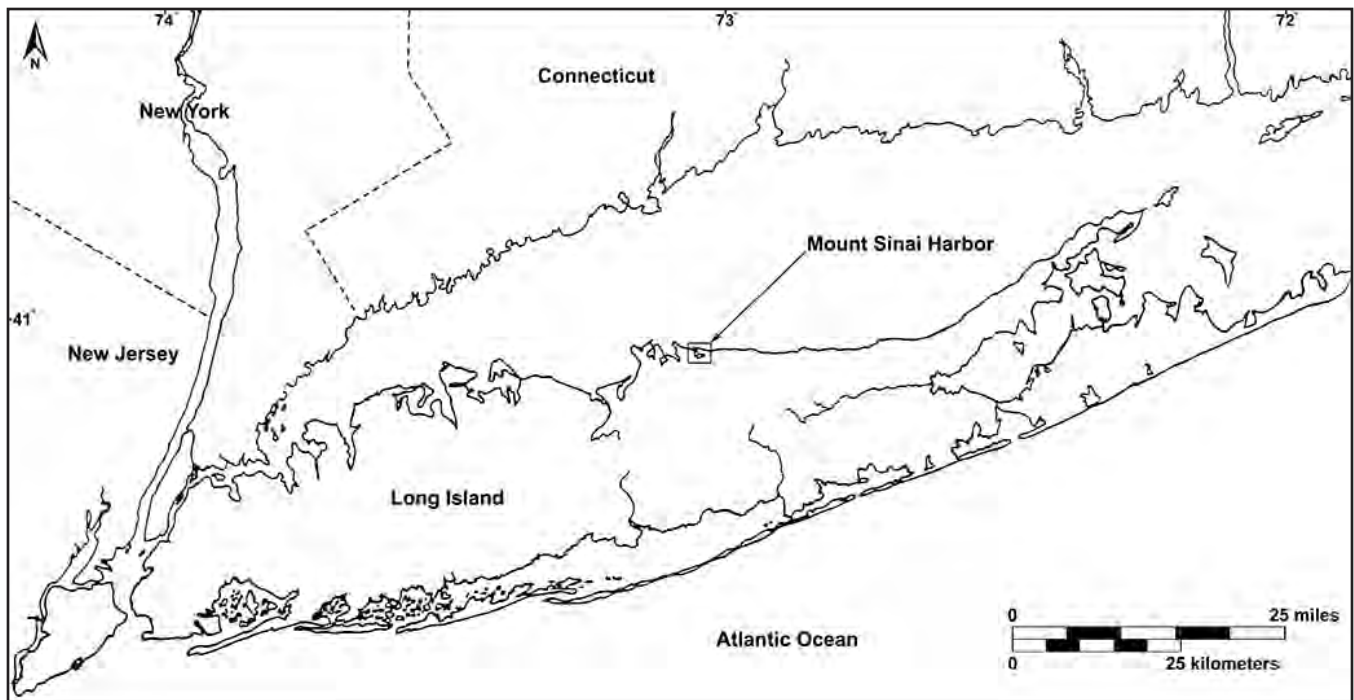


Figure 1. Long Island and Mount Sinai Harbor study area.

Sinai Moraine, C-4 Roanoke Point). Regardless of the exact processes which led to the moraine's formation, glaciers in the area had fully receded by approximately 18,000 years B.P., and a shallow cove was exposed with steep, sloping hillsides.

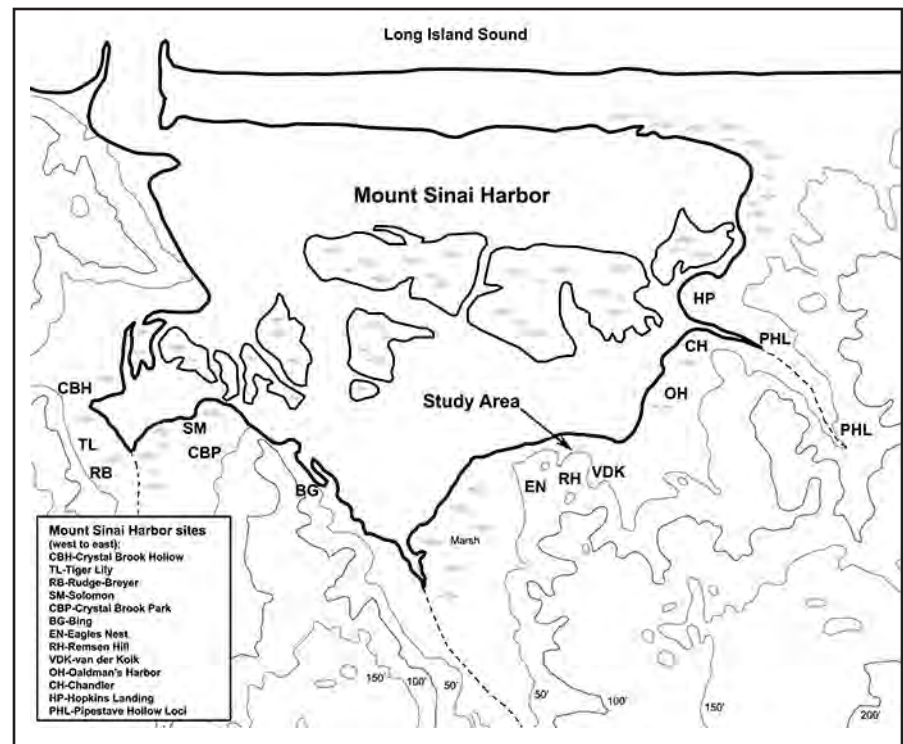
The post-glacial environment of Mount Sinai Harbor developed into a classic example of what Lightfoot (1993:170) refers to as a "low wave-stress" estuary, a protected coastal wetland encompassing over 500 acres of shallow, brackish water and salt grass marshland. Here, glacial uplands and low-lying terraces drain into an amphitheater-shaped cove (Figure 2). Based on the density and diversity of natural resources available, it is considered today to be "an estuary of national significance" (Mt. Sinai Harbor Management Plan 2006: 8). Mount Sinai Harbor is the most easterly of a series of similarly productive coastal inlets, all of which flow north into the greater estuarine basin of the Long Island Sound. Locally this area is referred to as the 'Necks' of northwestern Long Island, where coves are protected from wave-stress by moraine peninsulas, and often one or more post-glacial barrier bars (Figures 1-2). Steep hillsides, flat marshlands, and terraces bound the southern rim of Mount Sinai Harbor, with a rocky sand spit fronting the Long Island Sound (Figure 2). Paleoenvironmental reconstructions of the harbor and historic maps both suggest the barrier bar's existence, and the harbor's access to the Sound has been intermittently closed and breached over time (Browning-Hoffman 1982; Gramly 1977; Gramly and Gwynne 1979, 1982). Excluding areas of actively eroding bluffs, the moraine uplands and elevated terraces surrounding the harbor have, in contrast, remained relatively unchanged throughout the Holocene.

The glacial topography surrounding Mount Sinai Harbor

is well-known as one of the most intensively inhabited prehistoric landscapes in the Long Island Sound region (Bernstein 2002; Duranleau 2009; Gwynne 1982). This comes as no surprise, considering the harbor sits on a major source of quartz and quartzite cobbles used in stone tool manufacture (Lenardi 1998). A wide range of terrestrial, littoral, and maritime resources could also be found within a very short distance (<1km), many of which were available year-round (Gwynne 1982). However, most important in facilitating long-term human occupation, Mount Sinai Harbor was a catchment for dozens of freshwater springs, seeps, and streams (Bernstein 2002). Altogether, this abundance of organic and inorganic resources provided the ideal context for adopting a generalized subsistence strategy and sedentary settlement structure (Bernstein 2002). Incidentally, some have suggested that by the mid-late Holocene transition, roughly 4,200 B.P. (Walker et al. 2012), the greater Long Island Sound region's carrying capacity could support sizable hunter-gatherer-fisher populations (Nixon 2004). Post-glacial sea-level rise had slowed considerably by this time, and large estuaries developed along the newly inundated coastline, facilitating widespread exploitation of the maritime ecotone in Southern New England (Braun 1974). The archaeological record of Mount Sinai Harbor fully supports this model (Duranleau 2009).

Academic, avocational, and cultural resource management (CRM) excavations have been conducted on the shores of Mount Sinai Harbor for almost a century (Gwynne 1982). The last forty years of archaeological and paleoenvironmental research has demonstrated that most level areas (0-15% slopes) abutting the harbor contain prehistoric archaeological sites dating from 6,000-350 B.P. (Bernstein 2002; Bern-

Figure 2. Known archaeological sites and topography of Mount Sinai Harbor.



stein et al. 1993, 2002, 2010; Bernstein and Tweedie 2010a, 2010b; Browning-Hoffman 1982; Gramly 1977; Gramly and Gwynne 1979; Gwynne 1982, 1984; Kalin and Lightfoot 1989; Wisniewski and Gwynne 1982). On the low-lying terraces of the harbor, massive shell middens such as Crystal Brook Hollow, Tiger Lily, and Pipestave Hollow loci (Figure 2) cover several acres and often continue into the tidal zone (Gramly 1977; Gwynne 1979; Wisniewski and Gwynne 1982). Upland residential bases on the south shore of Mount Sinai Harbor, such as Eagles Nest and Solomon (Figure 2), have been intensively investigated with large scale data recovery operations (Bernstein et al. 1993, 1997). These efforts have yielded strong evidence for year-round mid-Holocene occupation of large coastal settlements (Bernstein 2002, 2006). Duranleau (2009:57) recently synthesized much of the extant settlement data for coastal Southern New England, and concluded, “by far [Mount Sinai Harbor] demonstrates the best evidence for sedentary habitation during the Late Archaic Period...”

Despite these dense settlement patterns, stratified pre-contact sites are extremely rare on Mount Sinai Harbor, and coastal New York as a whole (Ceci 1990; Rothschild and Lavin 1977). This is partially due to the unconsolidated nature of glacial sediments, extremely slow rates of soil formation (Warner et al. 1979), and the lack of large riverine floodplains burying old living surfaces. Coastal localities were inhabited repeatedly over time, and often directly adjacent to previous settlements (Rothschild and Lavin 1977); resulting in what are locally termed as ‘horizontally-stratified’ archaeological sites. Lightfoot et al. (1987:14) paraphrases several archaeologists’ views about the Long Island Sound region’s process of site formation and settlement patterning, and argues that “productive

coastal habitats tend to be reoccupied over extensive periods of time... The complex occupational episodes of coastal places makes these manifestations very difficult to interpret.”

Most of the known sites around Mount Sinai Harbor (Figure 2) are broadly interpreted to be large, multi-component habitation zones or residential bases. Yet these loci were only identified as discrete archaeological “sites” by virtue of modern property lines, arbitrarily bounding the available study areas. When examined on a landscape scale, these sites fuse into one another. This pattern should not, however, be confused with the obscuring byproducts of historic shell midden and topsoil mining, which in some cases re-deposited a thin scatter of prehistoric artifacts across large areas (Ceci 1984). Instead, this refers to the consistent presence of artifacts and/or features in subsoil horizons over wide horizontal areas of minimal slope (0-15%), and typically within 100-200m of protected coastal harbors.

Intensive settlement patterns are reported from a number of archaeological investigations in similar cove and harbor settings across Long Island (Bernstein 1993; Bernstein et al. 1993; Bernstein et al. 2009; Bernstein and Lenardi 1992; Bernstein and Tweedie 2008; Cammisa et al. 1999; Leveillee 1996) and along the Southern New England coast (Bernstein 1993; Leveillee 1996). In these site reports, it is frequently concluded that, when present, the material evidence for prehistoric occupation was recorded as “dense and homogeneously distributed” (Bernstein and Lenardi 1992:1) and typically “...extended throughout the property” (Cammisa et al. 1999:27). Protected harbors across Long Island, many of which are surrounded by numerous contiguous prehistoric sites, thus appear to have resulted in ‘landscapes’ of horizontally-stratified archaeological deposits.

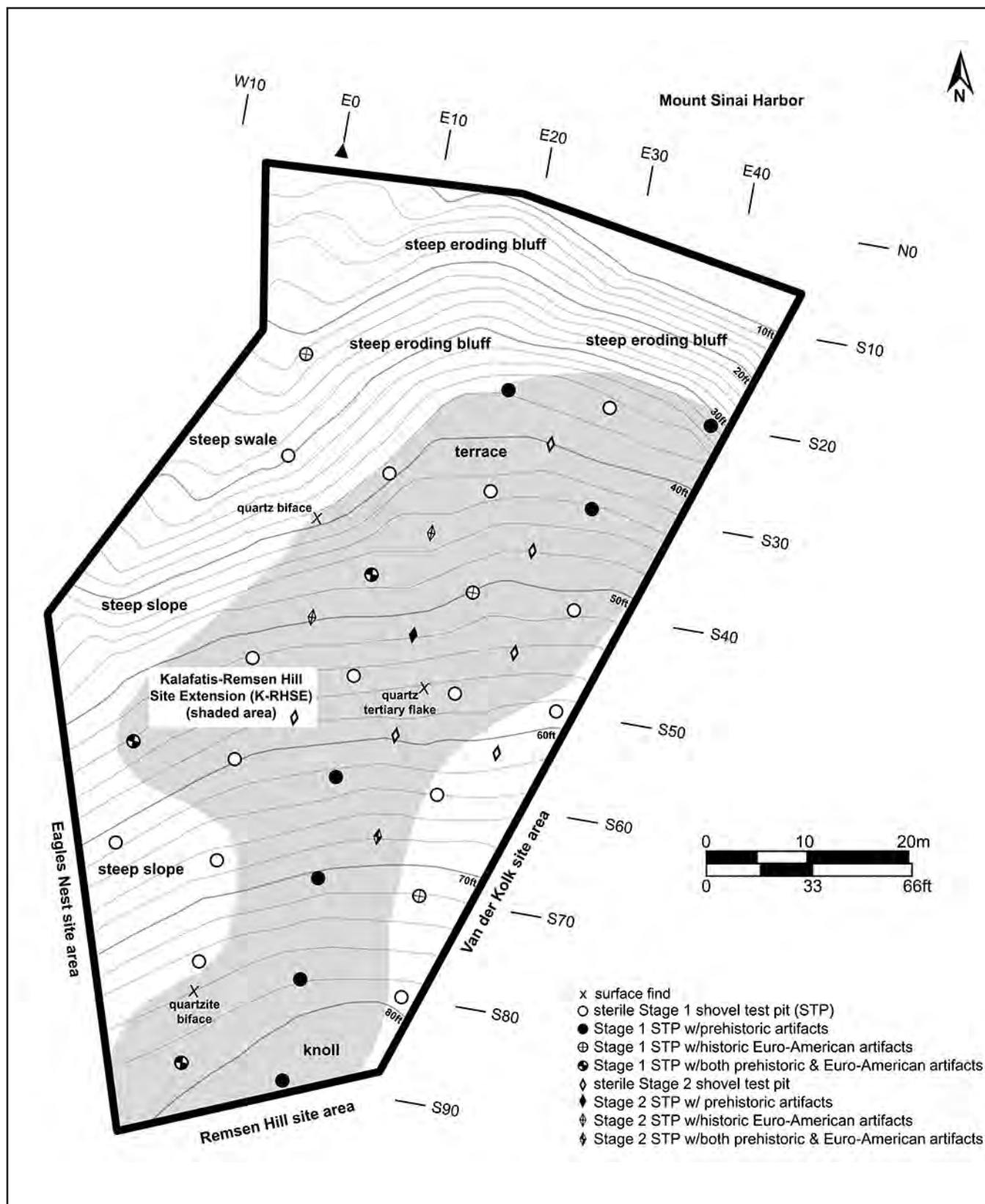


Figure 3. Shovel test pit locations and surface finds at the Kalafatis-Rensen Hill site extension (K-RHSE).

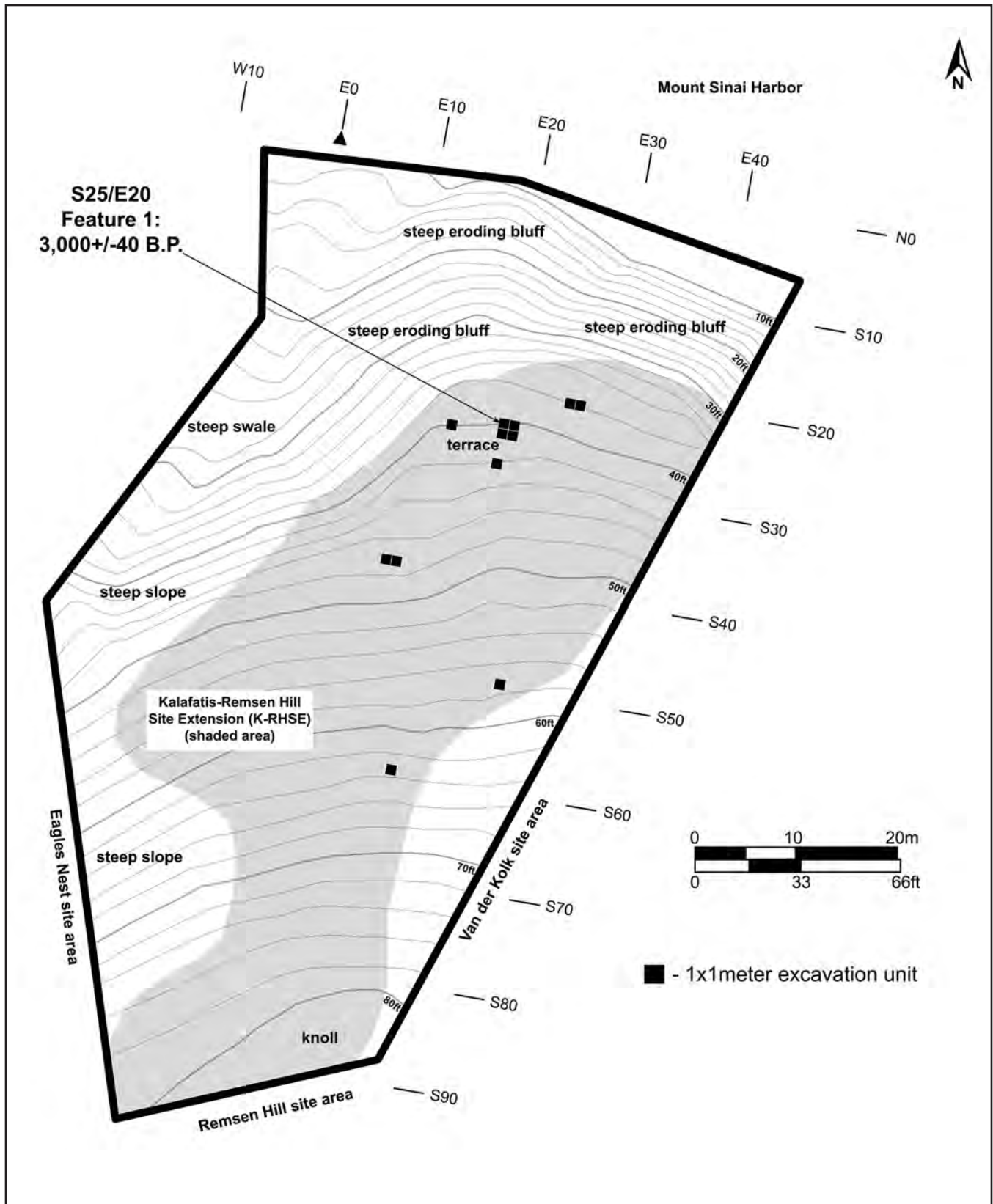


Figure 4. 1x1 meter excavation units at the Kalafatis-Remsen Hill site extension (K-RHSE).

Recent investigations on Mount Sinai Harbor have shown that single-component archaeological deposits also occur in this once densely populated area of Long Island (Bernstein 2002; Bernstein and Tweedie 2010a, 2010b; Bernstein et al. 2010). These rare sites are located on the periphery of large habitation areas, on steep slopes, swales, and other microtopographic features, like narrow bench-terraces, situated along the sheer margins of the moraine. These spatially restricted landforms and sloped areas were, understandably, not conducive or attractive for long-term residential use, and seem to have served more short-term or specialized purposes (Grills 2008). Given the difficulty in isolating chronometric components on the moraine plateau of Mount Sinai Harbor, it is exactly these types of topographic settings that archaeologists should investigate further.

Clues to habitation in these peripheral areas have been increasing. A recent archaeological survey on the southwestern shore of Mount Sinai Harbor identified the Bing site (Figure 2), a diffuse spread of pre-contact quartz lithics including a contracting-stemmed projectile point and fire-cracked rock feature (Bernstein and Tweedie 2010b). The entire property was essentially composed of steep slopes, small terraces, and a very small stretch of upland knoll overlooking the harbor. The presence of artifacts was generally related to the steepness of the slope, but it appears that use of habitable space in this small study area was nearly ubiquitous. Certainly, many of the pre-contact artifacts recovered on the small terraces could have been secondarily deposited from erosion or horizontal movement, but every single point of surface erosion and exposed subsoil (e.g., road cuts) observed in the study area yielded abundant quartz lithic artifacts. As such, this limited survey suggests that these peripheral sloping landscapes were utilized in some capacity in prehistory.

A more conspicuous example was found in 1991, just east of the Remsen Hill study area at the van der Kolk shell midden (Figure 2). Here archaeologists excavated a meter-thick refuse deposit on a steep slope, in which the top and bottom strata of shell yielded a surprising radiocarbon date range of a single calendar year, A.D. 1222 (Bernstein 2002; Table 1). Seasonality studies examining the lamellar cross-sections of *Mercenaria mercenaria* supported these interpretations of a single year of site occupation and midden deposition (Bernstein 2002). At van der Kolk, the steep slope and swale topography was heavily utilized as a peripheral discard zone for bone, shell, and lithic refuse for a very short period in the late Holocene. Land use observed at Mount Sinai Harbor thus appears to have resulted in two broad categories of archaeological signatures: the palimpsest residential base (e.g., Eagles Nest, Pipestave Hollow) on upland knolls and low-lying terraces, and the rare, single-component deposit (e.g., van der Kolk midden) on peripheral landforms. This brief report examines the latter, a single-component deposit at the Kalafatis Remsen Hill site extension (K-RHSE) (Figures 2-4).

Remsen Hill and Adjacent Sites (Eagles Nest, van der Kolk)

The Remsen Hill site, located on the southeastern shoreline of the harbor (Figure 2), was first discovered in the 1980s during a cultural resources assessment for a residential subdivision on the south shore of Mount Sinai Harbor (Kalin 1986). The report concluded that the knoll contained a large prehistoric aggregation covering an area of roughly 500m². The site was considered eligible for the State and/or National Register of Historic Places, and the results of the limited site investigation were eventually published (Kalin and Lightfoot 1989). The Remsen Hill site yielded a typical suite of pre-contact artifacts for the southern New England coast consisting of flaked stone tools, debitage, cores, fire-cracked rocks, and shellfish remains. Two probable hearth features were also encountered, although they did not yield any organic material suitable for radiometric dating. Based on the site's upland location and the presence of stemmed projectiles, it was interpreted as a possible summer encampment occupied during the Late Archaic period (Kalin and Lightfoot 1989).

The Remsen Hill site directly abuts the much larger Eagle's Nest site to the west (Figure 2). The Eagle's Nest site was a massive 7 to 10 acre residential base occupied by coastal hunter-gatherers for nearly 6,000 years (Bernstein et al. 1993). It produced the oldest radiocarbon date on Long Island (Table 1), an abundance of subsurface features (e.g., hearths, post molds, storage pits), and one of the richest collections of quartz lithic data in the region (Lenardi 1998). The nearly 60,000 stone tools, cores, and debitage from Eagle's Nest have been subject to numerous quantitative analyses and experimental studies (Bernstein et al. 1996; Bernstein and Lenardi 2008; Lenardi 1998; Nadeau 2006), some of which are ongoing (Duke and Pargeter 2015; Pargeter and Tweedie 2018).

At Eagle's Nest, lithic artifacts were encountered throughout the entire property. However, feature clusters and habitation refuse were concentrated on the hilltop's smaller topographic features; specifically, narrow linear knolls, that were only slightly elevated from the surrounding terrain. Bernstein et al. (1993:20) notes a "series of flat ridges or knolls cross the site...it was on these rises that the greatest evidence for prehistoric human occupation is located." Microtopographic landforms and other prominent geological features (i.e., glacial erratic boulders) were evidently the focal points for human activity at Eagles Nest (Bernstein et al. 1993:21, 157).

Given the fact that Remsen Hill and Eagle's Nest are adjacent to each other, and yielded a nearly identical lithic assemblage, it was not a stretch to identify the sites as extensions of one another. The same can be said for the van der Kolk site, which lies directly east of the Remsen Hill site (Figure 2). The van der Kolk study area included a small upland portion of Remsen Hill; here quartz lithic scatters identical to those at Eagle's Nest and Remsen Hill were recovered (Bernstein 2002; Lenardi 1998). From these data, it is clear the entire upland ridge in the three contiguous properties was densely settled

Table 1. Radiocarbon dates from Mount Sinai Harbor, New York.

Lab #	Provenience	¹⁴ C years B.P.	Adjusted Age	Calibrated date
Eagles Nest				
Beta-55875	Feature 72	1900±60	1870±60	5 B.C.-240 A.D.
Beta-55876	Feature 136	3520±70	3470±70	1975-1670 B.C.
Beta-48823	Feature 78	4900±80	4860±80	3880-3375 B.C.
Beta-44627	Feature 17	360±70	340±70	1420-1650 A.D.
Beta-44628	Feature 21	3850±120	3830±120	2630-1990 B.C.
Beta-53692	Feature 109	3860±70	3820±70	2530-2125 B.C.
Beta-53693	Feature 111	710±70	660±70	1250-1395 A.D.
Beta-53694	Feature 129	3940±60	3910±60	2640-2190 B.C.
Beta-53695	Feature 137	3800±60	3750±60	2510-1970 B.C.
Beta-53696	Feature 143	3950±60	3930±60	2645-2205 B.C.
Solomon				
Beta-55876	Feature 3	3850±80	N/A	2490-2030 B.C.
van der Kolk				
Beta-55877	Midden, Lev 6	780±60	1200±60	1240±60 A.D.
Beta-55878	Midden, Lev 18	770±60	1200±60	1240±60 A.D.
Pipestave Hollow				
GX-4894	Hearth, Nut	N/A	N/A	1250±155 A.D.
Unknown	Hearth	N/A	N/A	
K-RHSE (Remsen Hill)				
Beta-277703	Feature 1	3010±40	3000±40	1330-1070 B.C.
B.P. dates given plus or minus one standard deviation.				
Calibrated dates represent 95% confidence intervals or date reported.				

during the mid-late Holocene. When all the other archaeological sites from the hill systems and terraces surrounding Mount Sinai Harbor are considered together (Figure 2), subtracting >35% slopes and marshlands, a nearly unbroken area of occupation is observed.

Kalafatis-Remsen Hill Site Extension (K-RHSE)

In 2010, archaeologists investigated a one-acre parcel on the sheer north-facing slope of Remsen Hill (Bernstein and Tweedie 2010a). Prior to the survey, it was concluded the property generally overlapped with the Remsen Hill site area. The prehistoric artifacts and features recovered during the 2010 fieldwork were thus considered to be an extension of the Remsen Hill site. To distinguish these data from earlier work (Kalin 1986; Kalin and Lightfoot 1989), the new locus was

named the Kalafatis-Remsen Hill site extension (K-RHSE).

A Stage 1B archaeological survey was undertaken in the winter of 2010 by the former Institute for Long Island Archaeology at Stony Brook University (Bernstein and Tweedie 2010a). Nearly the entire one-acre parcel, with the exception of very steep, eroding slopes (>35%), was examined with sub-surface shovel testing (Figure 3) as well as a pedestrian survey that examined all ground surfaces regardless of slope. The study area was initially shovel tested at 10-meter intervals. Seventy-one prehistoric artifacts (quartz projectile point fragments, bifacial and unifacial tools, 37 flakes, 29 fire-cracked rocks, and one small fragment of grit-tempered pottery) were recovered from ten of the 28 shovel test pits (Figure 3). Three additional quartz lithics were found exposed on the ground surface; notably, these surface finds occurred on areas of steep, visibly eroding slopes (>15-35%), where the shovel tests tend-

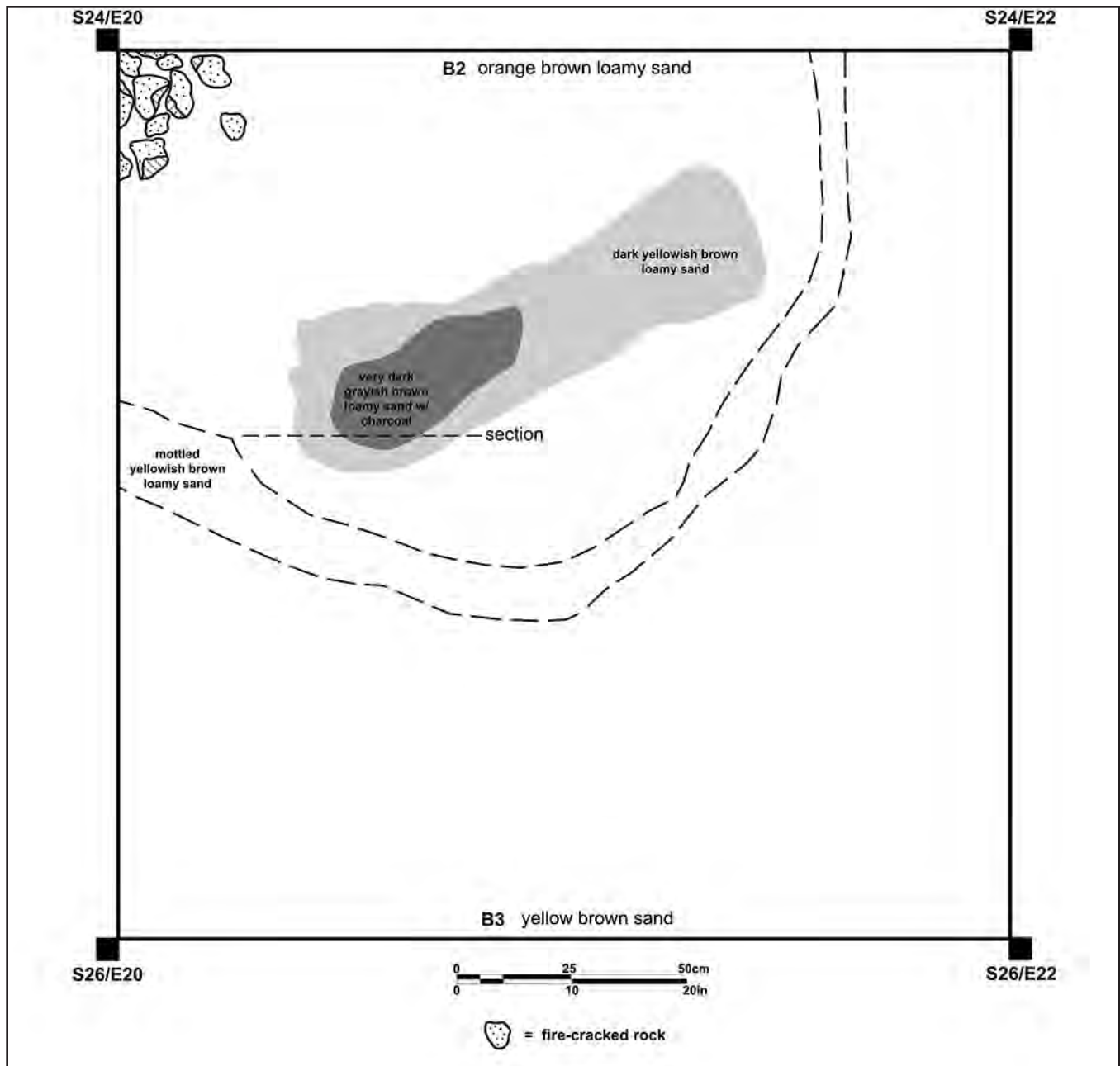


Figure 5. Plan view of Feature 1 hearth, soil stain, and fire-cracked rock (FCR) cluster.

ed to be sterile (Figure 3). The majority of the prehistoric artifacts were found in two shovel tests on the elevated knoll, in the southern third of the parcel (Figure 3). It is here where topography is most level, and not surprisingly, where the artifact density is the highest.

Based on the results of the initial survey it was clear that the whole property had great potential for further investigation, and a Stage 2 site evaluation was undertaken the following spring (Bernstein et al. 2010). Ten additional shovel tests were excavated for the site evaluation, as well as twelve 1x1 meter squares (Figures 3-4), but only within the building envelope for house construction. It was apparent the densest portion of the site was located on the upland knoll (Figure 3);

however, there was no threat from residential development in this area. This provided archaeologists with the impetus to focus on the rarely investigated microtopography of glaciated settings (Grills 2008), in this case steep slopes and very small terraces.

In the course of these investigations, a dense lithic concentration along with a deeply-buried hearth feature (Figures 4-5) was encountered on a small level area, identified as a bench terrace (Bernstein et al. 2010). Located along the northern edge of the property, the terrace is bounded to the south by steep slope, and to the north by a bluff, which drops sharply over 12 meters to the shoreline. From this vantage point, the terrace provides a commanding view of the entire harbor,

Long Island Sound, and the Connecticut coastline (Figure 6). The small terrace is shown between the E15 and E30 lines, and between the S20 and S30 lines on Figures 3-4, an area of roughly 150m². Aside from the knoll, this microtopographic feature witnessed more intensive prehistoric occupation than anywhere else in the study area.

To investigate this unique setting, six 1x1 meter excavation units were grouped together to form 2x2 and 1x2 meter blocks on relatively flat sections of the terrace (Figure 4). Two additional 1x1 meter squares were placed on the southern periphery, where the steep slope interfaces with level terrace ground (0-3% slope). These latter units yielded moderate to low numbers of primarily quartz cores, flakes, hammerstones, and fire-cracked rock (FCR), as did the 1x2 meter block on the northeastern edge of the terrace. In contrast, the 2x2 meter block, located in the central core of the terrace (Figure 4), yielded 531 pre-contact artifacts; these include a rhyolite expanding-stemmed projectile point, two re-fit fragments of a ground stone tool, a large quartz hammerstone (Figure 8), quartz and quartzite core fragments, bifacial tools, 360 pieces of debitage, and 162 FCR fragments. The 2x2 meter block was established after a charcoal-stained hearth (Feature 1) was encountered in S25/E20 more than one meter below the ground surface. The three additional 1x1 meter squares were subsequently excavated around the original unit, in order to fully expose the hearth feature (Figures 4-5).

Feature 1

The hearth (Feature 1), found between 108-138 cm below the modern ground surface, was recorded as a very dark, grayish brown soil stain with abundant charcoal. Basin-shaped in profile, the charcoal feature was surrounded by a roughly circular area of heat-discolored subsoil (Bernstein et al. 2010; Figure 5). The darkest central portion of the feature measured approximately 15 x 45 cm and was about 20 cm thick. Artifacts spatially associated with the hearth included a concentration of nearly one hundred fire-cracked rocks overlying deeply-reddened subsoil (Figures 5 and 7). The FCR cluster was found less than one meter from the dark stain, and within the periphery of the discolored soils surrounding the hearth (Figure 5). The dense area of FCR continued into the north and western walls of S25/E20 (Figure 7). In addition to charcoal and FCR, 21 pieces of quartz and quartzite debitage were found in and immediately adjacent to the center of the feature.

After the feature was mapped, photographed, and sectioned, one liter of sediment from the darkest-stained portion of the hearth was collected for flotation. Among the cultural finds in the heavy fraction was a very small quartz tertiary flake. The light fraction contained several hundred small wood charcoal fragments and a possible charred seed, reminiscent of wild blueberry (*Vaccinium* sp.). The recovery of even a single seed is significant for the region, as the paleoethnobotanical record of coastal Southern New England is extremely limited



Figure 6. Looking down slope at excavation of 2x2 meter block on terrace. Note Mount Sinai Harbor, Long Island Sound, and Connecticut coastline visible in background. View is north.

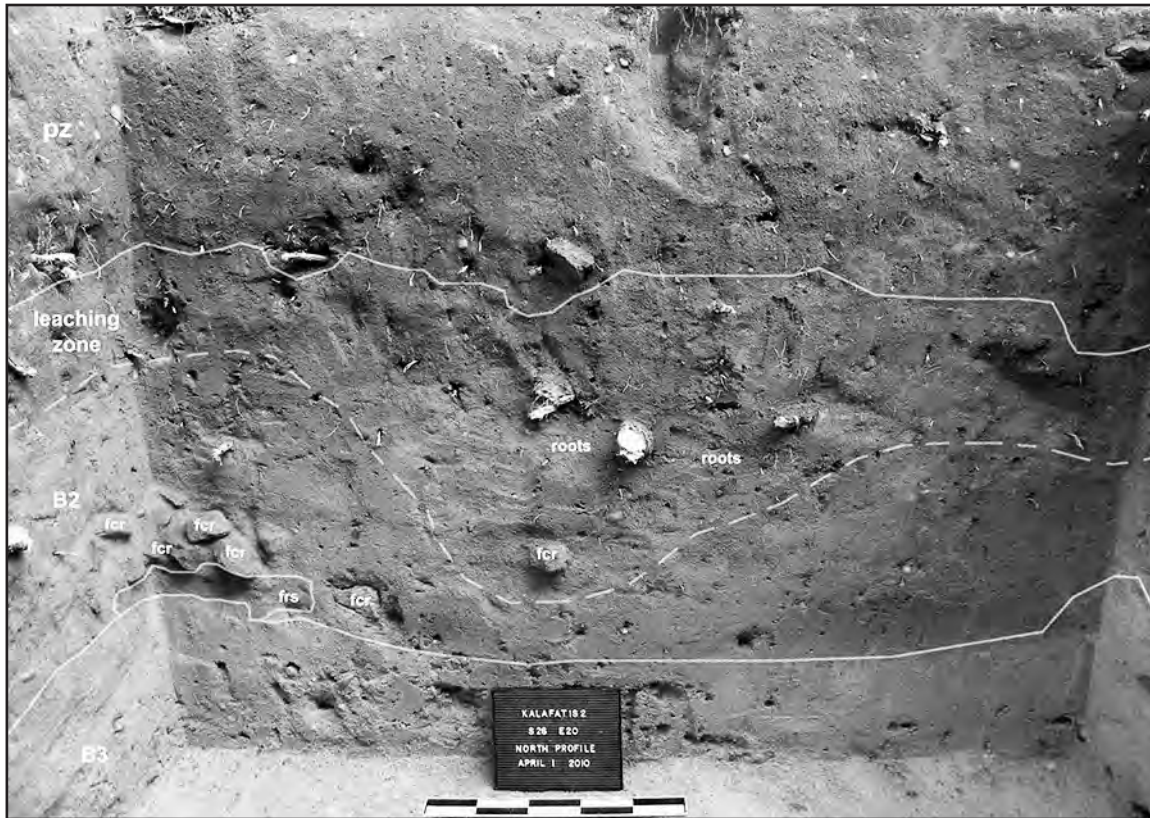


Figure 7. North wall profile of 2x2 meter block on terrace. Note fire-cracked rock (FCR), fire-reddened soil (frs) in northwest corner and continuing in to the walls. Root intrusion and disturbance is also visible in the leaching zone just above Feature 1.

(Bernstein 1999). For example, the Eagle's Nest site, directly to the southwest of K-RHSE, contained over 100 features with soil samples processed by flotation, yet these efforts revealed no evidence of plant remains beyond wood charcoal (Bernstein et al. 1993).

Wood charcoal was collected separately from the center of Feature 1 and submitted to Beta Analytic, Inc. for conventional radiocarbon dating (Table 1). Beta-Analytic provided an assay of 3010 ± 40 B.P., corrected to 3000 ± 40 B.P. (Beta-277703). Calibrated dates were presented with both 68% (one sigma) and 95% (two sigma) confidence intervals (cal 2σ 3330-3070 B.P., 1330-1070 B.C.). The age of the hearth and the adjacent recovery of a rhyolite expanding-stemmed projectile point, suggests Feature 1 was deposited during the early part of the Late Holocene, or the Terminal Archaic period (approximately 3500 to 2500 B.P.).

The age and artifact associations of Feature 1 are highly significant, as it provides the first unequivocal evidence for human occupation on the shores of Mount Sinai Harbor at the beginning of the third millennium B.P. (Table 1). Multiple site loci, including Eagle's Nest, Oaldman's Harbor, and Crystal Brook Hollow have yielded artifacts considered diagnostic of this era (i.e., expanding-stemmed projectiles, steatite vessel fragments). Yet Gwynne (1979:19) and others (Browning-Hoffman 1982) note the entire Mount Sinai Harbor area conspicuously lacks features dating to this time (Table 1). As a

result, the date from this isolated hearth fills in an important chronometric gap in Mount Sinai Harbor's nearly continuous record of human habitation from the mid to late Holocene.

Lithic Data: Flaked and Ground Stone

At K-RHSE, flaked quartz tools and debitage, and thermally-altered rock dominate the lithic assemblage (Bernstein et al. 2010). Lithic finds also include a ground stone tool, an adze or celt made of fine-grained igneous material and composed of two re-fitting, medial fragments (Figure 8). The proximal and distal ends were not recovered, but when viewed in cross-section, the ground stone artifact appears to be quadrangular, typical of an adze. Little is known about the use and manufacture of celts, axes, and adzes in Southern New England. Despite being an extremely variable class of tools and weapons, none are considered time markers. Ground stone tools in general were produced for most of the Holocene. The ground stone fragments found at K-RHSE, which most closely resemble the vertical and side profiles of an adze, suggests that woodworking was one of the activities practiced on the terrace at Remsen Hill. However, the adze does not appear to be temporally associated with the hearth feature (see below).

From the late Pleistocene and until the late Holocene, quartz was the primary raw material used on the Southern New England coast (Bernstein 2006; Bernstein and Lenardi 2008; Lavin 1988). The nearly exclusive utilization of glacial

quartz cobbles (Bernstein and Lenardi 2008), and occasionally larger glacial erratic boulders (Bernstein and Lenardi 2005), for stone tool manufacture is not surprising given the overwhelming abundance of these minerals in local till deposits and beaches. The Carver and Plymouth (CpE) sands (15-35% slopes) in the study area (Warner et al. 1979) are characteristic of glacial moraines and heavily laden with quartz cobbles of sufficient size for stone tool production (Kalin et al. 1988). Quartz procurement for Mount Sinai Harbor's inhabitants would have then required either a short foray to cobble-strewn beaches on the barrier bar to the north (Figure 2), or to eroding hillsides on steep moraine slopes.

Quartz artifacts at K-RHSE are ubiquitous and represent nearly every stage of cobble reduction and tool manufacture (Bernstein et al. 2010). Basic quantitative data on the quartz lithic assemblage was calculated, despite the low sample size ($n=457$); these include tool/core ratios (2.8), tools/debitage ratios (0.31), % of primary flakes (10.7), % of tertiary flakes (59.3), and % of block/shatter (12.3). The high percentage of primary (>50% cobble cortex) flakes and block-shatter (angular fragments) suggests a considerable amount of early-stage quartz cobble reduction was taking place at K-RHSE.

The total lithic assemblage for flaked stone from non-quartz specimens is extremely limited ($n=3$). These include one chert flake, an unidentified sedimentary flake, and an expanding-stemmed projectile point made from dark purple rhyolite (Figure 8). Lithic technology at K-RHSE thus appears to have been focused on the production of bifacial and unifacial tools made from locally-obtained quartz cobbles. The intermittent utilization of exogenic rock, for both flaked and ground stone technology, also demonstrates a wider range of activities was taking place. Given the site's unexpected location on a small, isolated terrace overlooking Mount Sinai Harbor, it

is important to discuss the depositional context of lithic artifacts found at K-RHSE.

Archaeological and Geographic Context

Two different processes appear to account for the presence of lithic artifacts and features on the small terrace and throughout the study area on the northern slopes of Remsen Hill. Artifacts from the steep slopes (>15%) south of the K-RHSE terrace area may have originated on the upland knoll. The four 1x1 meter units excavated on the steepest part of the slope (Figure 4) contained an average of only six quartz lithics each, with most artifacts coming from the topsoil-plow zone (Ap). These artifacts may have been washed downslope and reworked by historic period agricultural activities; or perhaps this pattern reflects deliberate disposal of lithic refuse, especially if occupation at the Remsen Hill site was long-term.

In the case of the terrace, the lowest levels of the deposit appear to be in-situ, with most artifacts and the hearth feature found in deeply-buried, undisturbed subsoil (B horizons). The topsoil-plow zone (Ap) on the terrace is deeper than the average for the study area, probably reflecting horizontal movement from the steep slope. Historic land clearance and subsequent farming activities would have potentially led to increased erosion, solifluction, and soil accumulation on the terrace, further burying the small pre-contact site.

The two ground stone tool fragments, found in the same 1x1m unit containing the hearth feature (S25/E20); also indicate some portions of the subsoil horizons were disturbed at the K-RHSE terrace. The artifacts were recovered in an excavation level 70 cm above Feature 1, and therefore could not be considered contemporaneous with the hearth. This suspicion was supported by a fragment of 19th-century yellowware ceramic 20 cm below the ground stone tool. The same pattern



Figure 8. Artifacts recovered from 2x2 meter block at K-RHSE (left to right): rhyolite expanding-stemmed projectile point, medial fragment of igneous ground stone tool, distal fragment of pointed quartz biface, and large quartz cobble hammerstone.

was observed immediately to the southeast in S26/E21 (Figure 4), where a single square-cut nail was recovered 30 cm below the topsoil-plow zone. This indicates subtle post-depositional disturbances and vertical movement from steep slopes were mixing components in the Ap and upper B horizons. Root disturbance was also apparent in the K-RHSE excavations and can be seen in the north wall profile of the 2x2 meter block in Figure 7. Fortunately, the subsoil layers surrounding the hearth feature, FCR concentration, and expanding-stemmed projectile point (108-138 cm below ground surface) appear completely in-situ, as these were encountered 40-50 cm below the subsoil levels containing 19th-century artifacts.

Erosion and horizontal movement from hillside clearly impacted the nature of archaeological deposition at K-RHSE, but the active bluff to the north was also a major factor. Erosion, and episodes of bluff collapse, could have considerably reduced the size of the terrace since it was occupied in the third millennium B.P. The bluff's edge line was roughly two-three meters to the north of the 2x2 meter excavation block (Figure 4). As shown in Figure 7, the FCR concentration from Feature 1 continued into the north and west walls of N25/E20. It was deemed unsafe to continue excavating in the direction of the bluff, so this area was not investigated further. Therefore, only limited interpretation of the feature's core and periphery could be made.

The rates of bluff erosion at the K-RHSE terrace over time remain unclear. Studies on the degradation of moraine slopes (Morgan 2012) suggest a high degree of variability exists. It may have been the case that the terrace was once a slightly more prominent moraine "nose" (Morgan 2012). Nonetheless, it is still presumed the appearance of the site's landscape over the mid to late Holocene would have been a relatively small, level area, deposited at the foot of a steep slope and bluff overlooking the harbor. Paradoxically, erosion over the last three thousand years may have reduced the size of the terrace to the point that it discouraged later groups from occupying this landform, resulting in a discrete archaeological component (Feature 1).

Based on the unique geography of the terrace, it is tempting to hypothesize about possible alternative function(s) of landscape use (e.g., watch post, observatory). Given its secluded location, surrounded in all directions by steep slope, privacy may have been its primary attraction. The terrace's expansive viewshed of the harbor and Long Island Sound to the north would have also provided a strategic vantage point for observing human, animal, atmospheric, and astronomical phenomena. Without further data, however, the prehistoric activities reflected by the artifact assemblage minimally include stone tool manufacture and use, woodworking with ground stone tools, and building intense fires that discolored the underlying subsoil. Additionally, the deeply buried hearth feature, and the associated expanding-stemmed projectile point, strongly suggest the deposit is a discrete component that represents a short-term occupation in the third millennium B.P. Still, when working in one of the most beautiful landscapes in Southern

New England, one could not help but think the isolated, private overlook could have been utilized for something as simple as the sheer enjoyment of its tranquil setting. From the limited investigations at K-RHSE, it becomes readily apparent that prehistoric peoples utilized nearly every inch of habitable space in Mount Sinai Harbor.

Discussion and Conclusions

Glacial macro and microtopography not only defines the landscape of Long Island, New York, but also the depositional structure of the archaeological record. Microtopographic features like bench terraces and small linear knolls, which are often not depicted on maps, were clearly focal points for human activity in the past. Data obtained from K-RHSE strongly suggests coastal hunter-gatherers maximized the use of habitable space in Mount Sinai Harbor during the mid to late Holocene.

The dense settlement pattern observed at Remsen Hill and other portions of Mount Sinai Harbor reflects a successful strategy of intensive land-use and re-occupation over long time periods (Bernstein 2006). In a broader context, similar coastal settings throughout the Americas were particularly suited to promoting this type of concentrated habitation pattern, especially "low wave-stress estuaries ... providing a diverse range of foodstuffs that facilitate the rise of sedentary communities, high population densities, and complex hunter-gatherer societies" (Lightfoot 1993:170-171). At the very least, archaeological landscapes on Mount Sinai Harbor and coastal Long Island could be understood as the consistent presence of pre-contact artifacts and/or features in subsoil horizons over wide horizontal areas within roughly 100-200 meters of "low-wave stress estuaries."

The emphasis on both landscape context and the single-component terrace deposit at K-RHSE was intended to reinforce the sentiment that the "more sensitive we can be to the totality of our data base and its inherent complexity, the more fully we can realize its ultimate social value" (Dincauze 1980:38-39). Two important insights were drawn from the site evaluation at K-RHSE. First, charcoal from Feature 1 dated to 3000±40 B.P. (corrected) has filled a missing gap in the rich radiocarbon record of Mount Sinai Harbor. Second, the K-RHSE site clearly demonstrates that discrete, chronometric site components can be located on micro-topographical features (e.g., small terraces) that formed on the steep (>15-35%) slopes of glacial moraine hill systems. It is these peripheral types of geographic loci (slopes, swales, bench terraces) that should be further examined, in order to test new hypotheses about chronology, landscape use, and human behavior on the coastline of Long Island.

Acknowledgements

First, I would like to thank David J. Bernstein, Director of the former Institute for Long Island Archaeology at Stony Brook University, for reading and editing this article prior to submis-

sion. Much of this work is built upon the legacy of his seminal research into the coastal hunter-gatherers of Southern New England and Long Island, New York. In addition, I would like to thank the crew members and staff of the former Institute for Long Island Archaeology that assisted in the survey and excavation of K-RHSE in 2010: Abbie Beightol, Bradley Beightol, Steven Goldstein, Christopher Melnick, Daria Merwin, Victoria Reeve, and Leo Vita. Daria Merwin in particular provided guidance in the excavation and sampling of the deeply buried pit feature, and also photographed the artifacts shown in Figure 8. This article would not have been possible without their hard efforts in both the field and laboratory, and it is to them this article is dedicated.

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Blue Jay Ridge: A Late Archaic to Late Woodland Site

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Blue Jay Ridge, the last excavated of the Macauley Complex sites, was excavated by students at SUNY Geneseo in archaeological field schools directed by Dr. Wendell Rhodes. Excavation took place during the summers of 1982 through 1986. Artifacts were found dating from the Late Archaic to the Late Woodland, a probable span of 5,000 years.

Introduction

Dr. Wendell Rhodes, then Chair of the Department of Anthropology at SUNY Geneseo, directed archaeological field schools from 1965 to 1989. These excavations were at sites that became known as the Macauley Complex. The artifacts and written records that resulted from those excavations were stored at SUNY Geneseo. Early in the 2000's I was granted the opportunity to examine the Macauley Complex artifacts, identify and catalog them, and extract their meaning in the context of New York State archaeological knowledge. Blue Jay Ridge was the 14th and last site excavated at the Macauley Complex. Due to lack of storage space at SUNY Geneseo, the Macauley Complex artifacts were donated to the New York State Museum in September 2015.

The Blue Jay Ridge site (abbreviated BJR) was situated near the confluence of the Genesee River and Canaseraga Creek a few miles south of the village of Geneseo, New York. The artifacts excavated at the site testify to the fact that it was utilized by prehistoric peoples, probably on an episodic basis, from Late Archaic times until near the time of the coming of European traders and settlers to this part of what was to become New York State.

The Site

Blue Jay Ridge was located about 800 meters (2,600 feet) downstream from the confluence of the Genesee River and Canaseraga Creek. Unlike most of the other Macauley Complex sites, BJR was about 300 m (1,000 ft) east of the riverbank on gently sloping terrain. It was near the 630-foot contour, thus about 80 feet above the surface of the river. This information comes from two of the student notebooks: Sanford, 6/15/82 and Ursitti, 6/82. The location of the site is shown in Figure 1, a photograph of the relevant area of the USGS topographic map of

the Geneseo quadrangle.

East of the site the terrain continues to slope gently upwards and then rises more steeply to the top of a ridge about 2 mi (3 km) east of the site and 540 ft. (165 m) above it. West of the river is the bed of a periglacial lake, named Lake Geneseo (Muller et al. 1988:126). This plain is about 2 mi (3 km) wide at the site.

The soils at the site are Ottawa loamy fine sand (USDA: map 3) and, according to the survey, they are very strongly acid (USDA:78). Several of the artifact depths were recorded as being "between the mantle and yellow sand" and ranged from 4 to 10 inches, leading one to believe that at least some of the area had not been plowed.

Excavation

The student excavators dug 136 five-foot by five-foot units for a total of 3,400 square feet (316 sq. m.). Figure 2 is a map of the excavation. To keep the map at a reasonable scale, three outlying units, S40/W35, S60/E35, and S70/W5, are not shown. The excavations trend in an east-west direction, following the low ridge formed by the erosion of water flowing from the higher ground to the east toward the river.

The size of the mesh of the screens used during the excavation is not mentioned in the extant documentation. Probably they were ¼ inch, that being the accepted standard in this part of the country in the 1980's (Personal Communication, Dr. Paul Pacheco).

Laboratory Procedures

I identified the lithic artifacts; measured them to the nearest millimeter; and weighed them to the nearest tenth of a gram. I weighed, but did not measure, the tool fragments. I sized the debitage into four ranges: those that would fit inside a one-by-one cm square were Size 1. The pieces of debitage that would fit in a two-by-two cm square were Size 2. Size 3 was those pieces that fit inside a four-by-four cm square, and Size 4 were those pieces that were too large to fit inside the four-by-four square. I separated the debitage into these four groups, counted, and weighed each group.

There were many pieces of chert in the debitage bags that

did not have a bulb of percussion; hence they could not be called flakes. The fractured surfaces of the pieces were devoid of markings. I believe, based on my experience with the fracture of glass, another brittle solid, that these were products of low stress breaks. Such low-stress fractures could be caused by freezing of water in pre-existing cracks in the chert or per-

haps by stresses transmitted to a pre-existing crack during the reduction process. I lumped these pieces, which I called "chert fragments," with the debitage since the extant information indicates that they were found by the excavators in proximity to other debitage.

I measured the working-edge angle of the scrapers using

Figure 1. The location of the Blue Jay Ridge Site. The figure is a photograph of the southeastern corner of the USGA topographic map of the Genesee Quadrangle. The double line from northeast to southwest is the route of Interstate 390. The upper left corner of the figure shows the confluence of the Genesee River and Canaseraga Creek.

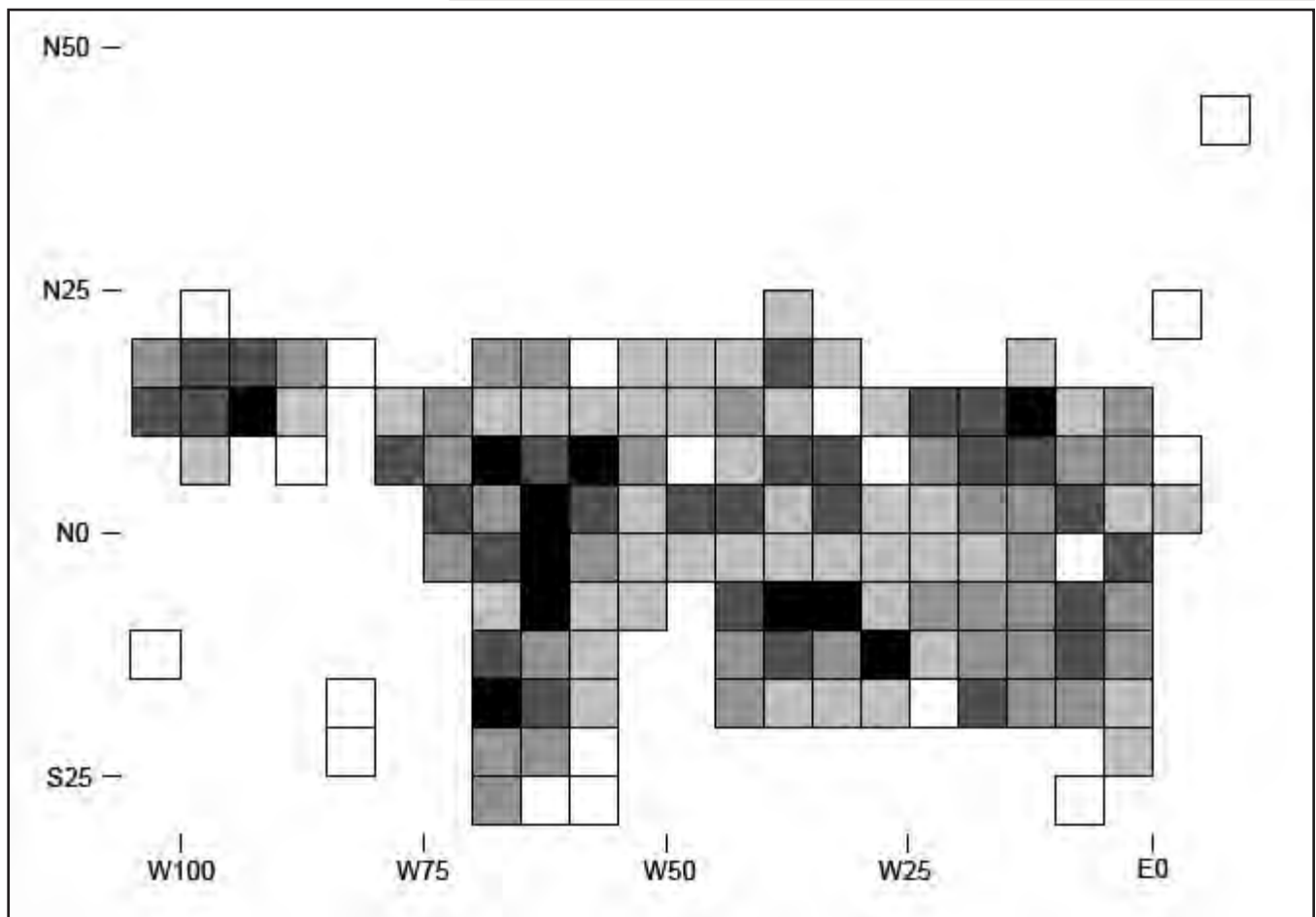
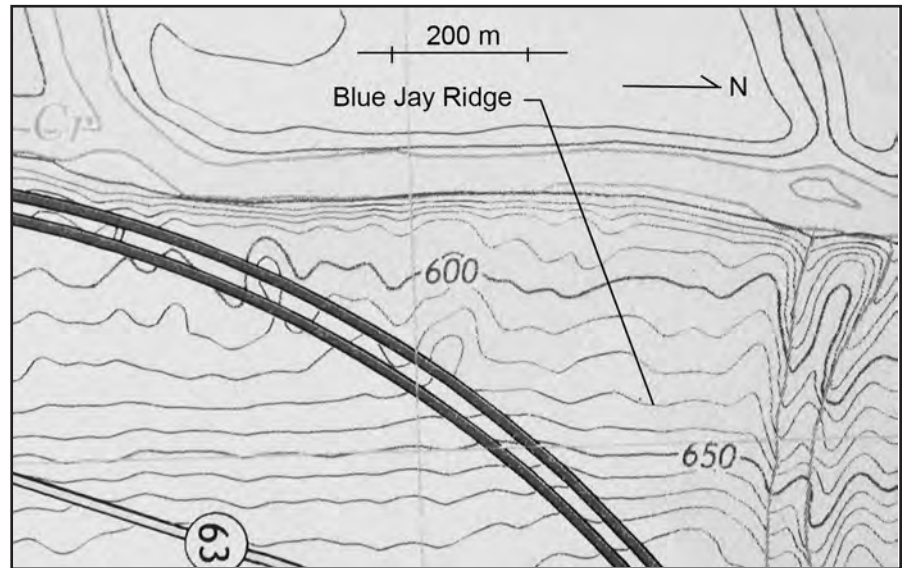


Figure 2. A map of the site showing the location of the stone tools.

a contact goniometer. This measurement was sometimes not very accurate due to the extensive use wear of some of the scraper edges. I estimate the accuracy of these measurements to be within 5 degrees or so. I entered the lithics data in a database entitled BJR Lithics, written in Filemaker Pro.

The ceramic artifacts were sized according to the same scheme as the debitage. Again, I counted and weighed each size category separately. This data was entered in a database entitled BJR Ceramics, also written in Filemaker Pro.

A third database, entitled BJR Other, contains the data about the bone and other non-lithic and non-ceramic artifacts. These artifacts were also measured and weighed.

I photographed the complete tools; these are in a file named "BJR Photos." These records are also at the New York State Museum in Albany.

Data

Lithics

The BJR Site yielded chipped stone, rough stone, and pecked or ground stone artifacts. They are detailed in Tables 1, 2, and 3, respectively.

A few of the entries in Table 1 may need a few words of explanation:

- Biface fragments are those artifacts that were worked on both surfaces but were too small to further identify.
- Cache bifaces are the artifacts that have been known for many years as cache blades or mortuary cache blades. Recently Taché has suggested that cache biface is a more apt name for these artifacts (Taché 2011:250).
- A few artifacts had edges that were sharp enough to be classified as knives and other edges that were scraper-like. I called these Knife/Scrapers.

In addition to the artifacts listed in Table 1, approximately 26,400 pieces of debitage are in the BJR collection. The distribution map of the stone tools is shown in Figure 2, and the distribution of the debitage is shown in Figure 3. The angle of the working edges of the scrapers averaged 57.7° with a standard deviation of 8.1°.

Again, a few words of explanation are needed for some of the entries in Table 2:

- I have lumped hammerstones and anvil stones because it is often impossible to tell the difference.
- I have opted to quantify the hematite by weight; it seems to me to be a more descriptive measure.

With reference to the entries in Table 3:

- I do not know what the stone disc fragments were used for. Three of them (two are refit) are shown in Figure 4. They appear to be fragments of a disc about 10 cm (6 inches) in diameter. Although the

data is missing from the database, I recall that they were of varying thickness from about 1 to 1.5 cm. The total weight was just over 90 grams. They are made of sandstone.

Table 1. Chipped Stone Artifacts.

Description	Count
Biface fragment	28
Burin	2
Cache Biface	3
Chopper	1
Core	50
Drill/fragment	29
Knife/fragment	30
Knife/Scraper	4
Point/fragment	272
Point preform	19
Scraper/fragment	28
Unidentified	6
Total	472

Table 2. Rough Stone Artifacts.

Description	Count
Chert nodule	31
Chert pebble	70
Chert fragment	42
Hammerstone/Anvil stone	38
Hematite	137.9 gm
Hoe	4
Nutstone	1
Pestle	1
Total (excluding the hematite)	187

Table 3. Pecked or Ground Stone Artifacts.

Description	Count
Adze/fragment	2
Possible Ornament fragment	5
Stone fragment	1
Vessel fragment	9
Total	17

Table 4. Ceramic Artifacts.

Description	Count
Potsherds	
Vinette I	71
Probable Vinette I	1
Probable Vinette Dentate	15
Unidentified	5
Clay fragment	1
Unidentified fragment	2
Total	95

- The stone fragment in the table was of the same stone as many of the adzes and adze fragments found at the Macauley complex. This stone has been identified as slate, probably from Vermont, by Dr. Jeffrey Over of the Department of Geological Sciences at SUNY Geneseo. I could see no evidence of grinding on this fragment, however. It was small, 3.1 gm in weight. The stone vessel fragments will be discussed in detail later in this report.

Ceramic Artifacts

Table 4 lists the ceramic artifacts found at Blue Jay Ridge. Most of the potsherds were Vinette I (Ritchie and MacNeish 1949:100). The dating of the Vinette Dentate potsherds will be discussed later in this report. The distribution map of the potsherds appears here as Figure 5.

Other Artifacts

The bone artifacts are shown in Table 5. Dr. Barbara Welker of the SUNY Geneseo Department of Anthropology made the identification of these artifacts. There were eight bags containing charcoal from Blue Jay Ridge. The total weight of this charcoal, including the foil in which it was wrapped, was about 96 grams. The distribution map of the charcoal and bone appears here as Figure 6.

Table 5. Faunal Artifacts.

Description	Count
Probable deer longbone	5
Medium sized mammal phalange	3
Medium sized mammal metapodial bone	4
Possible turkey phalange	1
Mammal longbone and skull bone	8
Possible turtle carapace	4
Unknown	1
Total	26

Table 6. Projectile Points and Identifiable Fragments.

Point Cluster	Count	Time Period	Ref
Lamoka	125	3500 – 2500 B.C.	129
Brewerton	19	2980 – 1723 B.C.	115
Genesee	10	2980 – 1723 B.C.	159
Susquehanna	11	1700 – 700 B.C.	167
Meadowood	13	1300 – 500 B.C.	171
Dickson (Note 1)	2	800 – 300 B.C.	192
Snyders	1	200 B.C. – 200 A.D.	201
Pentagonal	1	500 – 905 A.D.	217
Triangular	2	800 – 1300 A.D.	227

Table 7. Radiocarbon Dates.

Sample Number	Sample Source	Corrected Date
2	S5/W50	1734 to 1635 B.C.
4	N10/W15	325 to 204 B.C.
6	S5/W60	400 to 233 B.C.
7	N5/W60	1892 to 1714 B.C.
7520	N15/W100	2290 to 2137 B.C.

Table 8. Intensity of Occupation.

Point Cluster	Point Count	Possible Years	PPY
Lamoka	128	1000	0.13
Brewerton	19	1200	0.02
Genesee	10	1200	0.01
Susquehanna	11	1000	0.01
Meadowood	12	800	0.02

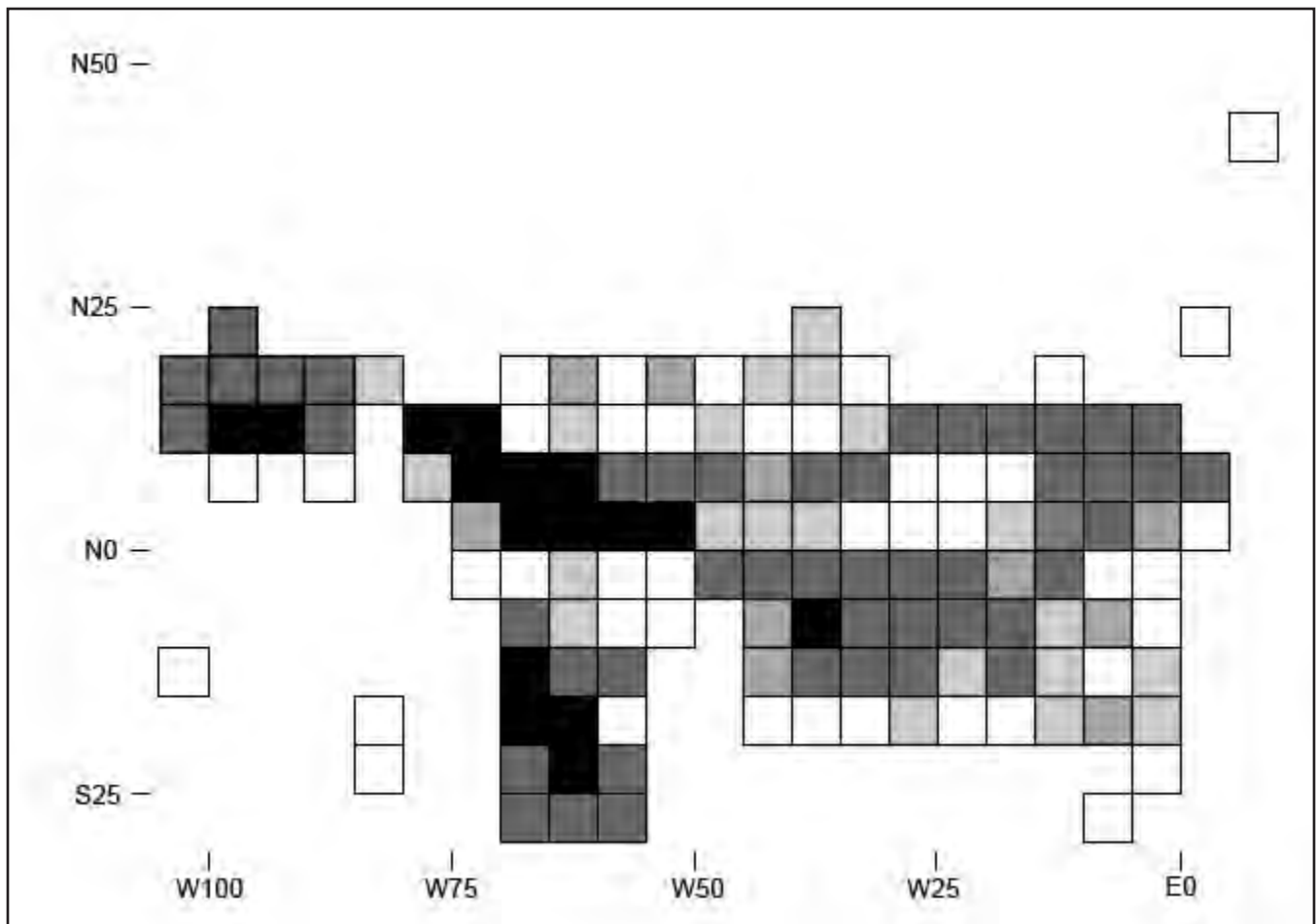


Figure 3. The site map showing the distribution of the debitage found at the site.

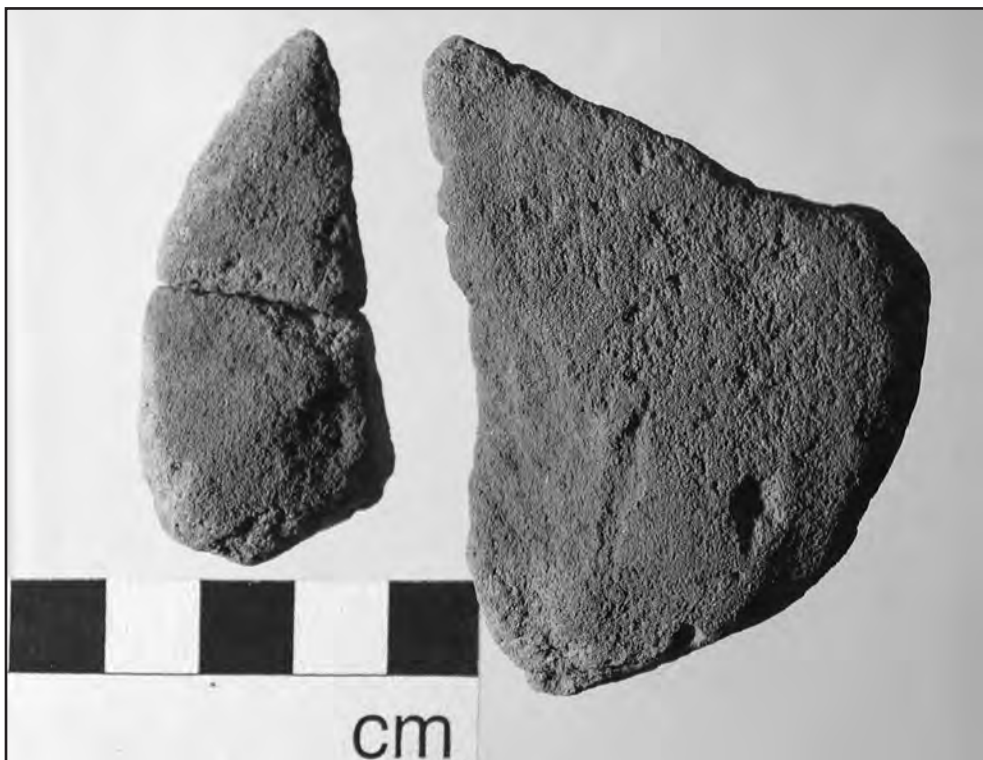


Figure 4. Three of the five stone artifacts found at Blue Jay Ridge. I have tentatively identified them as fragments of stone ornaments. The text describes these artifacts in detail.

Features

The records of four features that were uncovered at Blue Jay Ridge contained enough data to make a confident characterization. They are as follows:

- A large feature that covered most of units N15/W100 and N20/W100 was originally identified as two “rock features.” Many features at the Macauley Complex have been called rock features, usually with little other explanation. One possibility is that such features are earth ovens. This does not seem to be the case with this feature. One would expect to find considerable charcoal in the remains of an earth oven. There was a 25-inch-square deposit of charcoal in N15/W100, but this does not meet my definition of “considerable.” Hence this one joins many other of the mysterious “rock features.” The charcoal was sampled and dated; see Table 7.
- S10/W35 contained another “rock feature.”
- A hearth was found in N10/W15. The records contain a basin-shaped profile. A charcoal sample was taken and dated; see Table 7.

A fifth feature was described as a circular area, six inches in diameter, extending from 7 inches below the ground level to 30 inches deep, at which point the lake varve appeared, and further digging was halted. The excavator reports the circular

area was of dark clayey soil, surrounded by a hard coating of iron oxide. No further identification was made. It seems possible that it was the remains of a steel pipe, perhaps driven into the ground.

Analysis

The projectile points tell us who occupied the Blue Jay Ridge Site, and because these points have been found in many sites where reliable radiocarbon dates are available, we have a good idea of when BJR was occupied. Table 6 provides that information. In the preparation of Table 6, I have used the point cluster concept of Neil Justice (Justice 1995). He has grouped point types of similar regional distribution, time of manufacture, and technique of reduction. For example, he groups Bare Island, Normanskill, and Lamoka points in the Lamoka Cluster.

Another artifact class that gives us information about when the site was occupied is the potsherds. Table 4 lists three types of potsherds: Vinette I, Vinette II and Vinette Dentate. Vinette I pottery was made from about 900 B.C. to about 800 A.D. (Ritchie and MacNeish 1949:100; and Ritchie 1980:xxx). Vinette II dates from about 200 to about 500 A.D. (Ritchie 1980:xxx). Vinette Dentate dates from about 650 to about 850 A.D. (Ritchie 1980:xxxi).

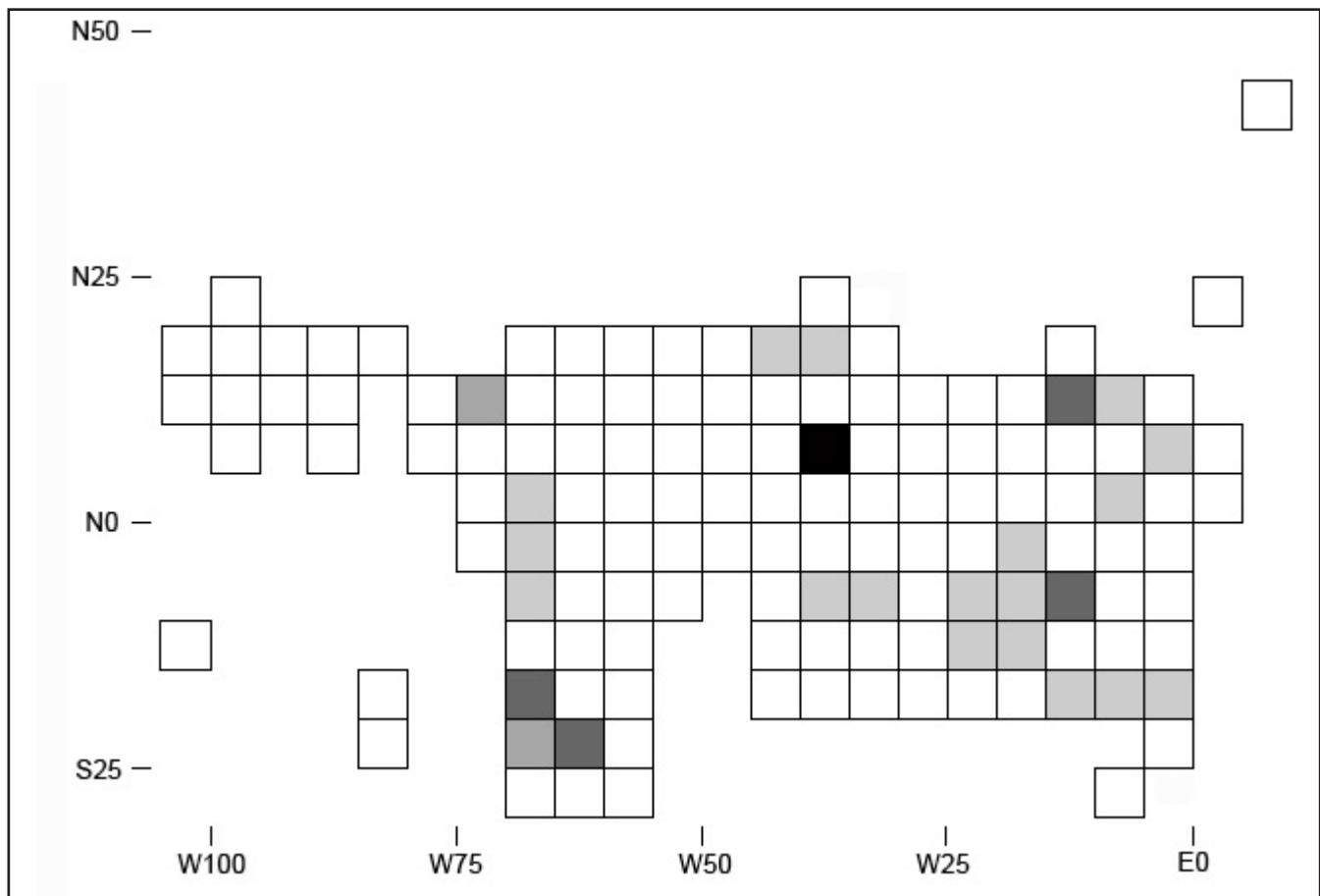


Figure 5. The distribution of potsherds found at Blue Jay Ridge.

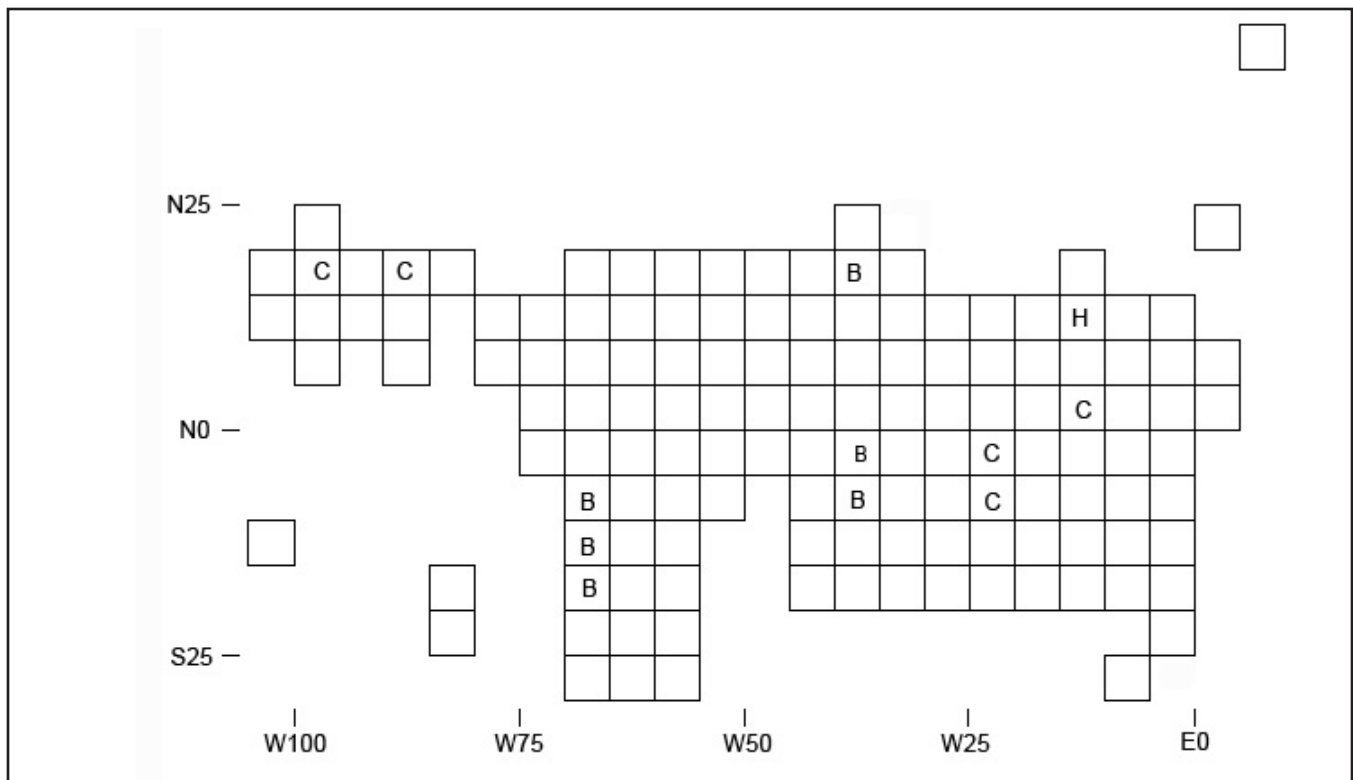


Figure 6. The distribution of floral and faunal artifacts from Blue Jay Ridge. The "B" in a square denotes a unit that contained one or more bags of bone. The details of the bone are presented in Table 5. Units which yielded charcoal are marked with a "C". Charcoal was also recovered from S60/W45, a unit not on the map.

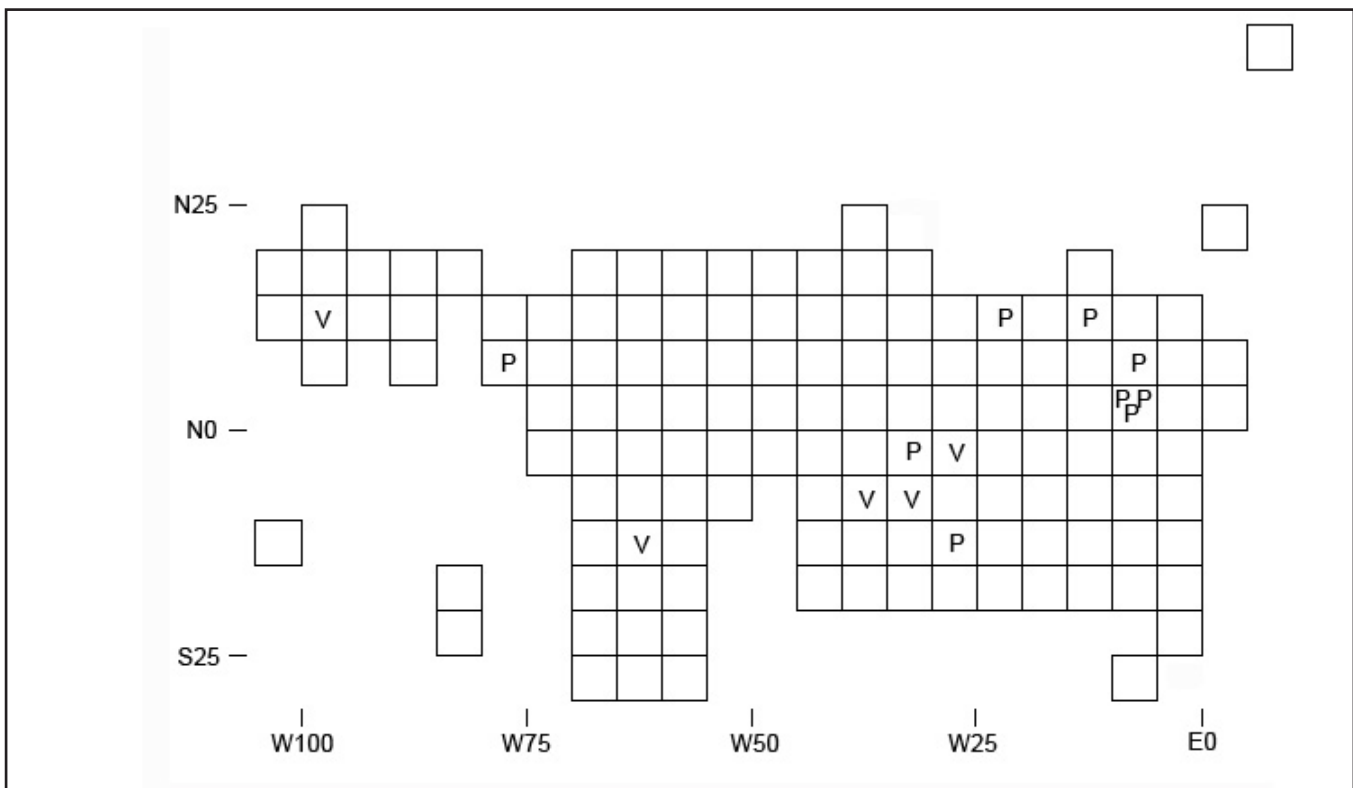


Figure 7. Location of the artifacts associated with occupation of the site by Susquehanna people. "V" indicates the location of a fragment of a stone vessel. "P" indicates a unit in which a Perkimen projectile point was found.

Five charcoal samples from Blue Jay Ridge were radiocarbon-dated. The results of those procedures are summarized in Table 7. It has been found that the relative percentages of the carbon isotopes have not been constant over the past several thousand years, and hence it has been necessary to correct for these changes in order to get accurate calendar dates. The correction in Table 7 was made using a computer program called <calib.6.02> (Stuiver and Reimer 1993). These dates are in the Late Archaic and the earlier part of the Early Woodland period. Although there are a few projectile points from Blue Jay Ridge that pertain to the Middle and Late Woodland periods, no radiocarbon dates from these time periods appear in the record.

Although we know relatively little about the specifics of the lifeways of the Late Archaic peoples, it is probable that they were hunter-foragers. Ritchie points out (Ritchie 1980:82) that this region, south of the Great Lakes, was mixed forest, affording mast for the game animals, primarily white-tailed deer. These acorns, hickory nuts, and perhaps other nuts probably also were a food resource for the people living here. The lakes and streams were sources for fish and other aquatic creatures. Such cultures have been studied by ethnographers in the past 150 years, and we assume that the Late Archaic people, the makers of Lamoka and Brewerton projectile points, lived similar lives. Parenthetically, an excellent source of information about such a culture is Richard Lee's book, *The !Kung San* (Lee 1979). The author (pages 116 to 157) describes a number of tools used by the !Kung San to perform daily tasks, and they are remarkably similar to the tools found at Native American sites dating to the Late Archaic, except that they are made of metal rather than stone.

Archaeologists believe that later people, Early Woodland people, were probably somewhat more sedentary, perhaps beginning horticulturists. This trend toward increased sedentism continued until the Late Woodland when maize agriculture became the major food source.

A metric that tells us something about the intensity of occupation, that is, how many people lived at a site at a given time, is what I have called Points per Year (abbreviated "PPY"). This measure is derived from the data in Table 6. PPY is the quotient of the number of points found by the number of years that particular point type was being used. The results of that calculation are in Table 8. This metric, despite the fact that it is probably not very accurate, tells us that the Lamoka people used the site far more than any of the later occupants.

Conclusions

The Blue Jay Ridge site was occupied by Native Americans from the Late Archaic through the Late Woodland. This is attested by the projectile point types found there. The other diagnostic artifacts and the radiocarbon dates of charcoal from the site support this conclusion. The major occupants, judged by the number of these artifacts, were the earliest of the Late Archaic peoples, the makers of Lamoka points.

Acknowledgements

This work would not have been possible without the help of many people. Rose Marie Chierici, who was then chair of the Department of Anthropology, allowed me access to the collection and provided me with a workplace and the resources of the department. Dr. Paul Pacheco was a source of information, ideas and criticisms. He deserves special thanks. Student helpers entered the data in the databases and did other needed typing. My thanks to all of you. Any errors or omissions are my responsibility.

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Macauley 11, One Site or Two?

Richard N. Maxson, State University of New York at Geneseo

Macauley 11 is one of the sites comprising the Macauley Complex. It is located on the east bank of the Genesee River about 3 miles south of Geneseo, New York. The site was excavated by students in a field school directed by Dr. Wendell Rhodes, then chair of the Department of Anthropology at SUNY Geneseo. From the projectile points uncovered at Mac 11, it is evident that the primary occupation of Mac 11 was by the Lamoka people. There are also a few Brewerton, Genesee, Susquehanna, and Meadowood points. Several observations indicate that the two loci at Mac 11 are unrelated.

Introduction

Macauley 11, abbreviated Mac 11, is a site in the Macauley Complex located on the Genesee River near Geneseo New York. It was excavated by students in field schools directed by Dr. Wendell Rhodes, then Chair of the Department of Anthropology at SUNY Geneseo. The site has not been given a Cda designation. This report is the result of an examination of the artifacts and the surviving records of the excavations.

The Site

Mac 11 is located on the east bank of the Genesee River a few hundred meters north of its confluence with Canaseraga Creek. Locus 1 is near the railroad bed. A map in a student notebook places the datum about 40 feet (12 m) east of the railroad bed. There are at least two reasons to believe that Locus 2 is further east and probably on the same ridge:

- There was little room between Locus 1 and the railroad bed for Locus 2.
- A map dated 1994 and prepared by Dr. Rhodes places Mac 11 some distance east of the railroad bed.

The west fence of the I-390 right-of-way is about 150 meters (500 ft) east of the railroad at the Mac 11 ridge. This section of I-390 was opened in 1982 (<wikipedia.org/wiki/interstate_390>), six or more years before the excavations at Locus 2. Hence this places an upper limit to the distance east of the railroad bed for Locus 2.

I have shown the location of Locus 1 in Figure 1. The figure is an enlarged photograph of the USGS 7.5-minute topo-

graphical map of the Geneseo quadrangle, dated 1978. I have added a scale and a north directional pointer to the map. As stated above, Locus 2 is probably east of Locus 1 and on the same ridge, although the ridges are not well defined as one goes eastward from the railroad bed.

Locus 1 is about 50 feet (15 m) above the river bed. In this area the topography is punctuated by a number of gullies that are the result of erosion caused by drainage from the ridge to the east of the site. Locus 1 is located on the relatively flat area between two of these gullies.

West of the river is the bed of a periglacial lake, Lake Geneseo, that extended several kilometers both to the north and to the south of Mac 11 (Muller 1988:125). The northern part of the lake bed has become the flood plain of the Genesee River. The lake bed is about three km (two miles) wide at the site. East of the Macauley sites the terrain rises gradually to a ridge that is about 180 m (680 ft) above the river bank.

According to the USDA Soil Survey of Livingston County New York (USDA 1956:map 3, 79), the soils at the site are Otawa loamy fine sand, rolling phase. The soils are "very strongly acid" (USDA 1956:78).

Excavation

Locus 1 was excavated in the summers of 1982 and 1983. The datum for Locus 1 was about 40 feet east of the abandoned railroad bed that runs along the east bank of the river. Thirty-seven five-foot-square units were excavated. Maps of Locus 1 are shown in Figures 2, 4, 6, and 7.

Locus 2 was excavated in the summers of 1988 and 1989. Twenty-six units were excavated at Locus 2. They were also five feet square. Maps of Locus 2 are shown in Figures 3, 5, 8, and 9.

In addition to the 5 ft x 5 ft units, several "test pits" were dug. At least some of these were two feet square and apparently were dug with shovels, and the soil was screened for artifacts. The location of only a few of these test pits is known with precision; hence I have not included the data from them in the analysis. The screen size is not recorded but was probably ¼ inch, based on the extant screens found in the Department of Anthropology a few years ago.

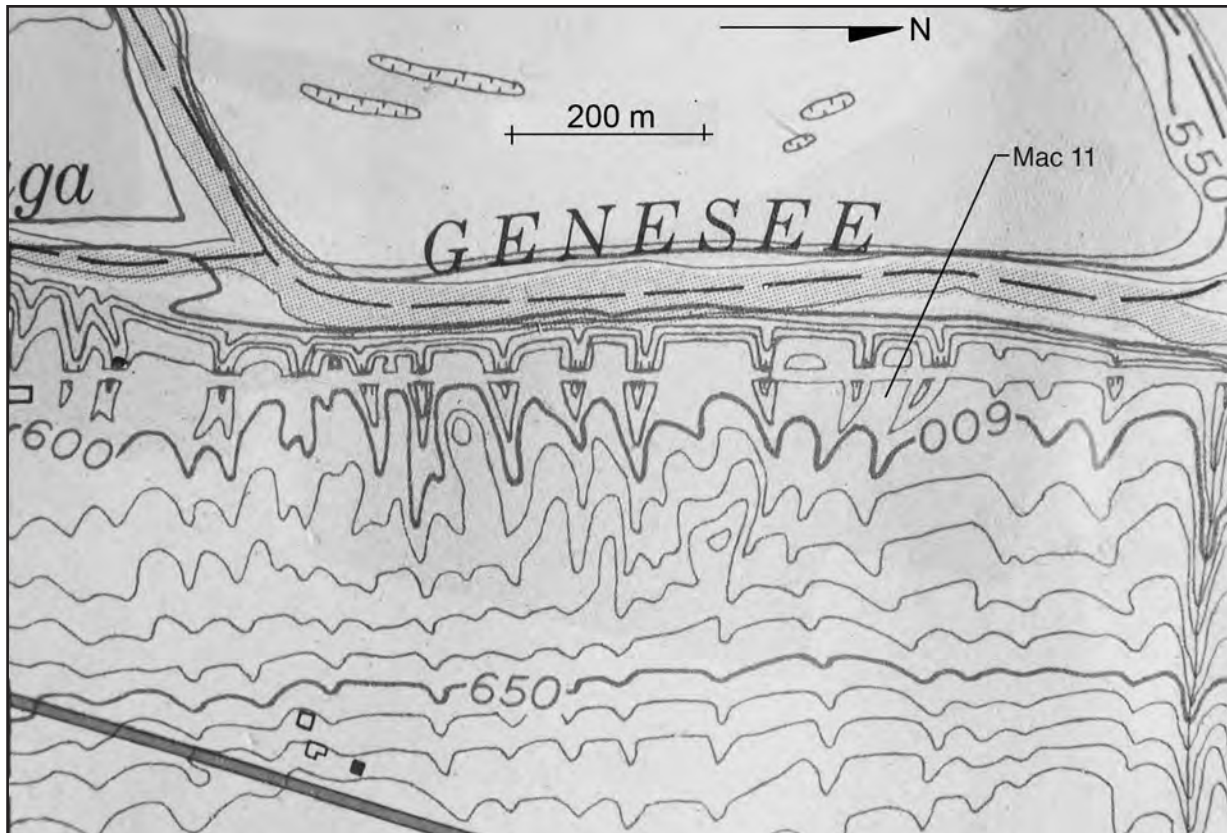


Figure 1. The Location of Mac 11, Locus 1. As discussed in the text, Locus 2 was probably on the same ridge and up the hill to the east.

Data

Lithics

There were 145 lithic artifacts discovered at Mac 11, exclusive of debitage. They were separable into three categories: chipped stone, rough stone, and ground stone. The data are presented in Tables 1, 2, and 3. The "Count, Other" column in each of these tables lists the number of artifacts that were found in test pits or in unidentified units. The angle of the working edge of the scrapers averaged 56.0° with a standard deviation of 5.6° . In addition to the above artifacts, there were more than 17,800 chert flakes and fragments.

I made plots of the number of lithic artifacts found in each unit of the excavation. Figure 2 is the plot of the lithics, exclusive of debitage, from Locus 1, and Figure 3 is a plot of the lithics found in Locus 2. Figures 4 and 5 are plots of the debitage from Loci 1 and 2, respectively. (Footnote 1)

Ceramics

The single potsherd found at Mac 11 was a Vinette I body sherd. It was found in Locus 2, N5/W25. Since there was only the one ceramic artifact, I put it in the "Other" database. There are 14 additional records in the "Other" database. These were all charcoal, varying from a count of 1 to "Many." One of these charcoal samples, recovered from a hearth, was sub-

mitted for radiocarbon analysis and an uncalibrated date of 3630 ± 145 B.P. was returned. Calibration of this date yields a chronological date of cal 2200-1775 B.C.

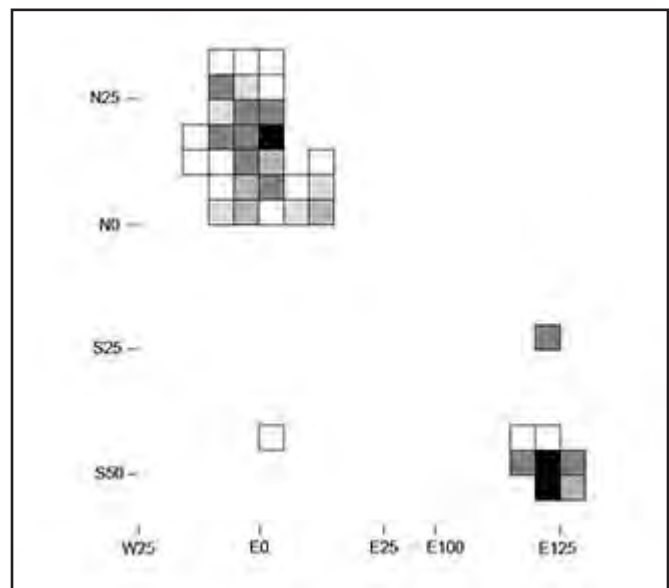


Figure 2. Mac 11, Locus 1: Lithic Artifact Density. Key: 15% shading denotes 1 artifact; 30% shading denotes 2-3 artifacts; 50% shading denotes 4-6 artifacts; 100 % shading denotes 7-10 artifacts.

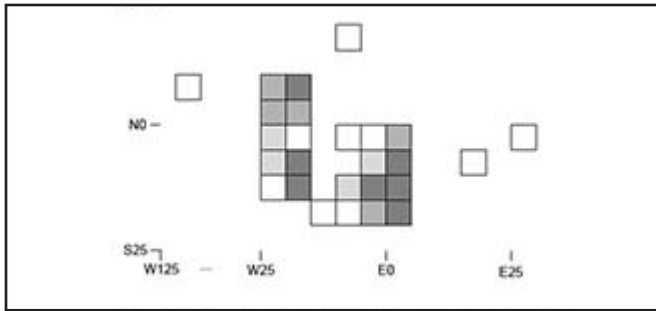


Figure 3. Mac 11, Locus 2: Lithic Artifact density.

Key: 15% shading denotes 1 artifact; 30% shading denotes 2-3 artifacts; 50% shading denotes 4-6 artifacts.

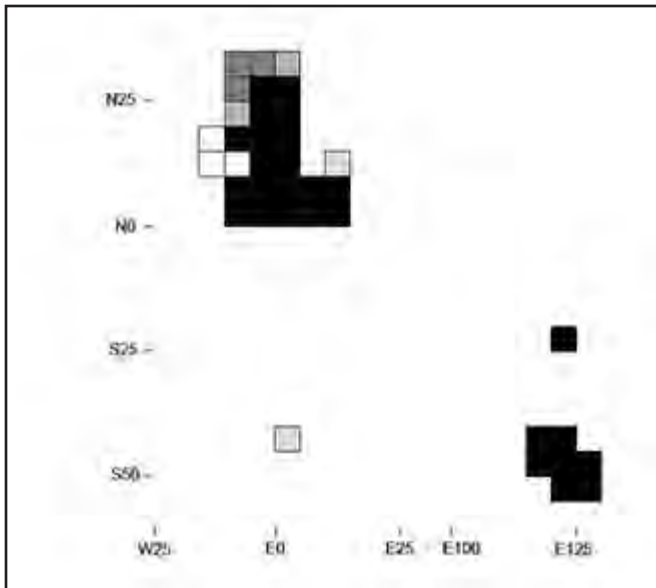


Figure 4. Mac 11, Locus 1: Debitage Density.

Key: 15% shading denotes 1-6 flakes and fragments;
30% shading denotes 7-34 flakes and fragments;
50% shading denotes 35-195 flakes and fragments;
100% shading denotes 196-1,128 flakes and fragments.

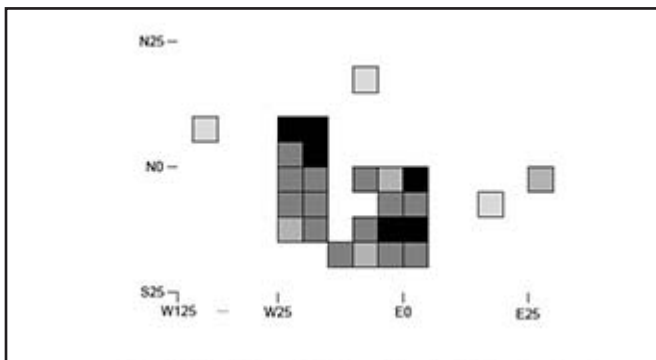


Figure 5. Mac 11, Locus 2: Debitage Density. Key:

15% shading denotes 1-6 flakes and fragments;
30% shading denotes 7-34 flakes and fragments;
50% shading denotes 35 to 195 flakes and fragments;
100% shading denotes 196-1,126 flakes and fragments.

Features

The data about features is incomplete. Five of the six possible features recorded by the student excavators were called fire pits, hearths, or possible hearths by the excavators. The sixth was reported as a "soil discoloration." Only one of the six records contained enough data to make a confident characterization. It was a hearth, located in unit Locus 1, N15/W5 and was reported to contain charcoal, fire-reddened soil, and FCR. It had a basin-shaped profile. It was this hearth that was dated to about 2000 B.C. as mentioned above.

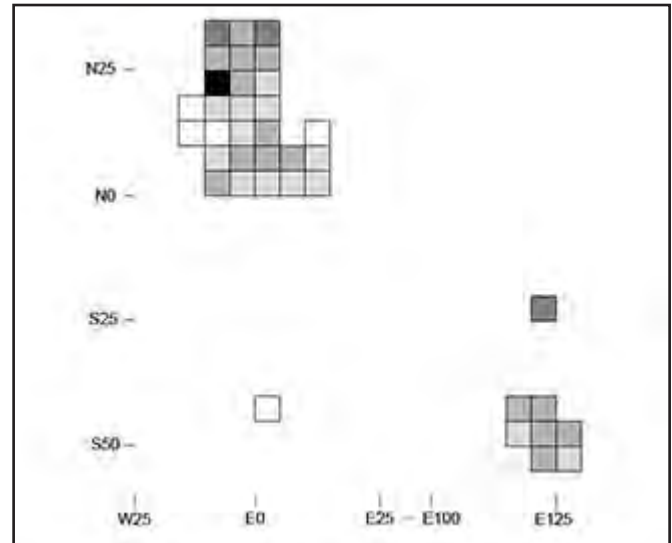


Figure 6. Mac 11, Locus 1: Percentage of Large Debitage by Count. Key: 15% shading denotes 1 to 12 percent of large debitage; 30% shading denotes 13 to 24 percent of large debitage; 50% shading denotes 25 to 36 percent large debitage by count; 100% shading denotes 37 to 48 percent of large debitage.

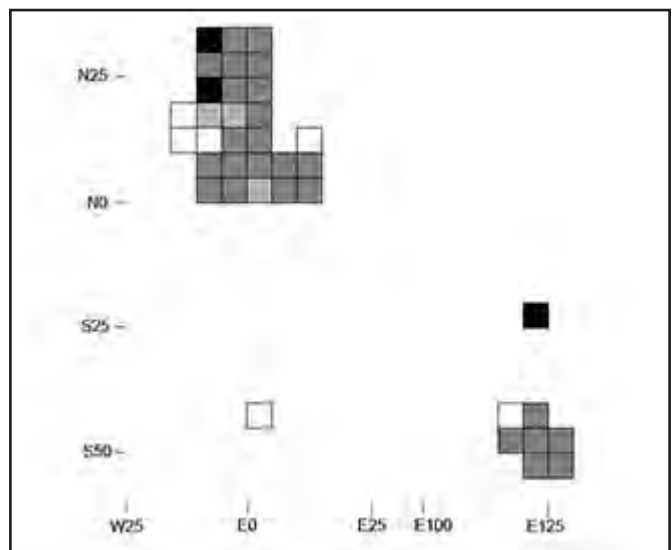


Figure 7. Mac 11, Locus 1: Percentage of Large Debitage by Weight. Key: 30% shading denotes 24 to 45 percent of large debitage; 50% shading denotes 46 to 68 percent of large debitage; 100% shading denotes 69 to 90 percent of large debitage.

Analysis

Times of Occupation

The best measure we have of the time of occupation of Mac 11 are the projectile point styles found there. The following table presents the data from the site. I have used the cluster concept of Justice (Justice 1995:9) to group the data. The Date column in the table contains Justice's data of the dates when these point styles were in wide usage. Justice uses calibrated carbon dates when he refers to the times during which point styles were in wide use (1995:10).

Another clue as to the time(s) of occupation is afforded by the potsherd data, limited though it is. The single Vinette I potsherd dates to the Early Woodland – i.e., from the last millennium B.C and the first few hundred years of the next. It would be more conclusive if the potsherd and the Meadowood point were found near each other, but this was not the case; the point was found in Locus 1 and the Vinette 1 sherd came from Locus 2. Another possible clue, again qualified by the small amount of data, is the presence of two stone vessel fragments which probably date to Susquehanna times. Both of those fragments were found in Locus 1.

A more direct bit of data about time of occupation is the radiocarbon date from the hearth in Locus 1, N15/W5. This

date was about 2000 B.C. which places it in the Brewerton and Genesee phases.

Looking at all the above data it appears that all the occupations were sparse except for the Lamoka presence in the Late Archaic.

Site Utilization

It seemed to me that there was a large amount of debitage at Mac 11. Following up on my suspicion that these were, in reality, two separate sites, I computed the amount of debitage at Locus 1 and at Locus 2. The average number of flakes/fragments per unit at Locus 1 was 370. The average number of flakes/fragments per unit at Locus 2 was 118, yielding a ratio of about three to one. Although I did not compute a standard deviation, you can see from Figures 4 and 5, that there was quite a lot of variation in the count per unit at both sites.

I have spent some effort applying some of the ideas of Mass Analysis, developed a few decades ago by Stanley Ahler (1989). Ahler believed that one could tell, by an analysis of the size and weight of debitage, which stage of tool production had been practiced at a location. One critic of this hypothesis believed that the picture was more complex (Andrefsky 2007:396). Andrefsky argued that a site was more likely to be a palimpsest of various stages of tool production, perhaps from different time periods and/or people of different cultures, superimposed on each other. I find this argument compelling. However, it seems completely plausible to argue that large amounts of large debitage point to locations of primary reduction. The problem is: how much is "large"? Furthermore, do you measure "large" by count or by weight, or by both?

The data from Mac 9 seemed to indicate that counts of large debitage (the total of Sizes 3 and 4) of 40 or 50 percent of the total count of debitage was unusual and might indicate an area of primary reduction. (See Footnote 1 for the procedures I used for sizing debitage.) I have plotted both percent-count and percent-weight of large debitage (i.e., combining Sizes 3 and 4) for both loci at Mac 11. Figures 4 and 5 show this data for Locus 1 (*Footnotes 2 and 3*); Figures 6 and 7 present that data for Locus 2. (*Footnote 3*). It is obvious that 40 percent of the total count will produce more, probably far more, than 40 percent of the total weight of debitage.

Looking at Figures 6 and 7, those showing Locus 1 data, the area between N15 and N30 might be a candidate for an area of primary reduction. In particular, unit N20/W10 is the only unit in which the count of the largest flakes is above 40% of the total count, and the weight of the largest flakes is more than 80% of the total weight.

Figures 8 and 9 show the data from Locus 2. Again, there is only one unit in Locus 2 (S5/W5) in which the count of the largest flakes is more than 40% of the total count and the weight of the largest flakes is greater than 80%. There are several units in Locus 2 where the %Weight is in the seventies, though many of them do not have particularly high %Counts. These data indicate that perhaps we have located two areas where primary reduction may have taken place; it is too early

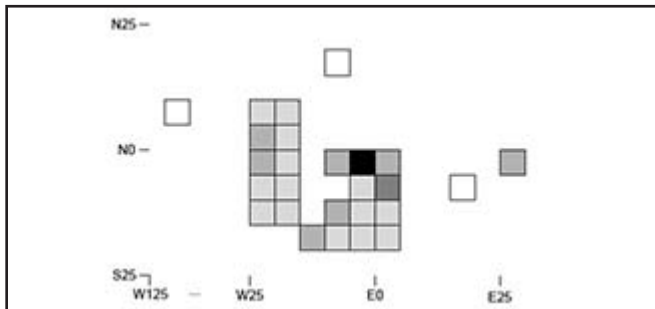


Figure 8. Mac 11, Locus 2: Percentage of Large debitage by Count. Key: 15 % shading denotes 1 to 12 percent of large debitage; 30% shading denotes 13 to 24 percent of large debitage; 50% shading denotes 25 to 36 percent of large debitage; 100% shading denotes 37 to 48 percent of large debitage.

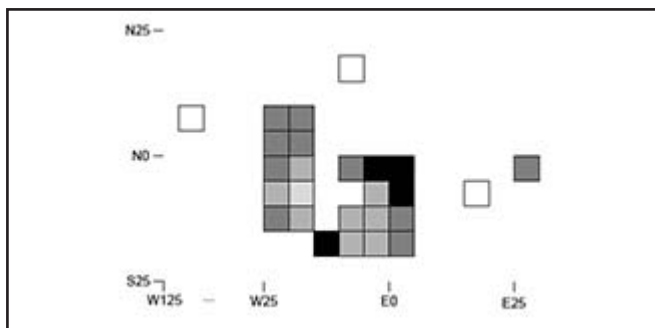


Figure 9. Mac 11, Locus 2: Percentage of Large Debitage by Weight. Key: 15% shading denotes 1 to 23 percent of large debitage; 30% shading denotes 24 to 45 percent of large debitage; 50% shading denotes 46 to 68 percent of large debitage; 100% shading denotes 69 to 90 percent of large debitage.

Table 1. Mac 11 Chipped Stone Artifacts.

Description	Count, Locus 1	Count, Locus 2	Count, Other	Total
Biface fragment	0	5	0	5
Core	2	1	0	3
Drill/fragment	2	1	0	3
Knife/fragment	7	2	0	9
Point/fragment	45	14	2	61
Point preform	1	2	0	3
Scraper	4	1	0	5
Total	61	26	2	89

Table 2. Mac 11 Rough Stone Artifacts.

Description	Count, Locus 1	Count, Locus 2	Count, Other	Total
Chert nodule	10	4	3	17
Chert pebble	3	7	0	10
Hammerstone/anvil stone	6	7	0	13
Hematite	4	4	0	8
Hoe	2	2	0	4
Polycrystalline quartz	1	0	0	1
Total	26	24	3	53

Table 3. Mac 11 Ground Stone Artifacts.

Description	Count, Locus 1	Count, Locus 2	Count, Other	Total
Adze fragment	1	0	0	1
Vessel fragment	2	0	0	2
Total	3	0	0	3

Table 4. Mac 11 Projectile Points and Identifiable Fragments.

Point Style	Count, Locus 1	Count, Locus 2	Age Range (B.C.)
Lamoka	24	4	3500-2500
Brewerton	2	3	2980-1723
Genesee	1	0	2980-1723
Susquehanna	2	1	1600-700
Meadowood	1	0	1300-500
Total	30	8	

Table 5. Mac 11 Intensity of Occupation.

Point Style	PPY, Locus 1	PPY, Locus 2
Lamoka	0.02	0.004
Brewerton	0.002	0.002
Genesee	0.001	--
Susquehanna	0.002	0.001
Meadowood	0.001	--

to tell if this method is accurate enough to be able to assert that with confidence.

Intensity of Occupation

In earlier reports of sites in the Macauley Complex, I have used a metric that I have called "Points per Year" to give some idea about the intensity of use of a site by different groups. Probably the site was occupied by many different groups and on an episodic basis. The arithmetic for calculating Points per Year (PPY) is simple. One merely divides the point count for each point style by the number of years that those points were in wide use. The raw data are in the above Table 4 and the results of the calculations are in Table 5.

These data show low usage of the site during all periods of occupation and very low usage for all but the Lamoka occupation at Locus 1. I doubt that these numbers have much better than order-of-magnitude accuracy, but they do give us some hints about who used the site and when.

Subsistence

The discovery of projectile points at the Mac 11 Site (or Sites) is evidence of hunting, probably of white-tailed deer as well as smaller animals. No bone was recovered from the site, but the acidity of the soil probably has precluded their survival. The lack of survival of shellfish remains may also have been due to soil acidity. Neither netsinkers nor any other evidence of fishing found at Mac 11. However, it is difficult to believe that these resources were not part of the diet of the occupants; most of the other Macauley sites had numerous netsinkers. The widespread growth of oak and hickory trees in the Genesee Valley makes it probable that their nuts were also part of the diet of the inhabitants. Unfortunately remains of such usage, unless carbonized, do not survive in the local climate.

Conclusions

The issue raised earlier about whether Mac 11 is one site or two appears to me to be decided in favor of the "two site" hypothesis. Locus 1 seems to be different from Locus 2 in a number of ways. It seems quite clear from the data in Table 5 that most of the occupation of Locus 1 was by people of the Lamoka phase. Locus 2 seems to be more evenly mixed between Lamoka and Brewerton artifacts. Both of these sites are probably the result of many different periods of occupation, probably by people of different cultures. Clearly, both sites were occupied by stone tool-makers, though both the debitage density and the projectile point density speak to Locus 1 as being more heavily used.

Acknowledgements

First of all, I must thank Rose Marie Chierici, Chair of the SUNY Genesee Department of Anthropology, for permitting my access to the Mac 11 artifacts and for the provision of a workplace and equipment. Paul Pacheco, as always, has been a valuable source of information and suggestions. He has also

been a sounding board for some of my wilder ideas. Esmeralda Askenas did the unglamorous task of entering the data into the databases. Any errors are, of course, mine alone.

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Footnotes:

Note 1. Size 1 debitage was those flakes that would fit inside a one-centimeter square; Size 2 debitage was those flakes that would fit inside a two-centimeter square; Size 3 debitage was those flakes that would fit inside a four-centimeter square; Size 4 debitage was those flakes that were too large to fit inside the four-centimeter square. This was a tedious and time-consuming procedure. However, I believe that this method gave a more accurate idea of the size of the piece of chert from which the flake had been struck than using sieves to separate the sizes.

Note 2. The debitage from three of the units in Locus 1 were intermixed. These were units N10/W10, N10/W15 and N15/W15. I opted to ignore the data from these units because it is impossible at this date to obtain counts or weights of the debitage for these units. Hence you will find these units to have no entries in Figures 4, 6, and 7.

Note 3. When I was calculating percentages of the various sizes and weights of debitage, if the total count of flakes was 20 or less, I judged that the percentages were not likely to be meaningful. Hence those units are blank in the figures.

IN MEMORIAM***Annette Yvonne Wilson Nohe (1935-2017)***

Annette Nohe, longtime member of the Lewis Henry Morgan Chapter, passed away on April 3, 2017. She was predeceased by her husband Jim, also a NYSAA member, and is survived by her children: Kathleen (Linda Harlow) Nohe, Victoria (Daniel) Sackett, and James (Lynn) Nohe. Annette was born to Byron and Annette Wilson in Moulton, Texas, in 1935 and attended Victoria Community College. After moving north as a young bride, she helped to run her husband's dental office in Victor, while raising her family.

History and archaeology were passions for Annette, however, and she soon joined the Morgan Chapter, becoming an active and engaged member. She participated in most of the Chapter's excavations and activities over the years. Fulfilling one of her dreams, she went on to earn a Bachelor's degree in Anthropology at St. John Fisher College. Annette served in a number of Morgan Chapter positions, and as Secretary of the NYSAA for several terms. She also played a number of roles at the Rochester Museum & Science Center—first as volunteer and then part-time staffer in the Anthropology Department, and in more recent years, as a research assistant for the Seneca Archaeology Research Project and the Genesee River Valley Cultural Affiliation Project. Her dogged perseverance and attention to detail made her a valued member of those research teams.

Volunteering for the Red Cross was also a source of pride for Annette, particularly her role on their disaster team following Hurricane Katrina in Louisiana. She was a member of the Victor Community Chorus, St. John's choir, the Ontario County Historical Society and the Canandaigua Chapter of the DAR.

Annette will be greatly missed by the Morgan Chapter members and all who knew her.

by Martha L. Sempowski



Annette Yvonne Wilson Nohe (1935-2017)

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yards	yd	kilometers	km
miles	mi	hectares	ha

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Tables

If at all possible, tables should be set up in the same word processing format as the text. They should be as simple as possible and include a short descriptive title above the table itself. Tables should be numbered consecutively as they will appear in the text. All tables should be referenced in the text.

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References Cited

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1. Book with single author

Bradley, James W.

- 1987 *Evolution of the Onondaga Iroquois: Accommodating Change 1500-1655 A.D.* Syracuse University Press, Syracuse, New York.

2. Book with multiple authors

Burt, William H., and Richard P. Grossenheider

- 1976 *Peterson Field Guides: Mammals*. 3rd ed. Houghton Mifflin, Boston.

3. Edited book (author is editor)

Morris, William (editor)

- 1978 *The American Heritage Dictionary of the English Language*. Houghton Mifflin, Boston.

4. Translated book

Van den Bogaert, Harmen Meyndertz

- 1988 *A Journey into Mohawk and Oneida Country 1634-35*. Translated and edited by Charles Gehring and William Starna. Syracuse University Press, Syracuse.

5. Reprinted book

Hale, Horatio E., editor

- 1963 *The Iroquois Book of Rites*. Reprinted with an Introduction by William N. Fenton, University of Toronto Press, Toronto. Originally published 1883, D.G. Brinton, Philadelphia.

6. Multivolume set

Thwaites, Reuben G., editor

- 1959 *The Jesuit Relations and Allied Documents: Travel and Explorations of the Jesuit Missionaries in New France, 1610-1791*. 73 vols. Reprinted, Pageant, New York. Originally published 1896-1901, Burrows Brothers, Cleveland.

7. Titled volume in a series

Wray, Charles F., Martha L. Sempowski, and Lorraine P. Saunders

- 1991 *Tram and Cameron: Two Early Contact Era Sites. Charles F. Wray Series in Seneca Archaeology*, Vol. II, edited by Charles F. Hayes III. Research Records No. 21. Rochester Museum & Science Center, Rochester, New York.

8. Article in an edited book

Wade, Mason

- 1988 French Indian Policies. In *History of Indian-White Relations*, edited by Wilcomb E. Washburn. *Handbook of North American Indians*, Vol. 4, William G. Sturtevant, general editor, pp. 20-28. Smithsonian Institution, Washington, D.C.

9. Article in a journal

Murray, Jean E.

- 1938 The Early Fur Trade in New France and New Netherland. *Canadian Historical Review* XIX:367.

10. Article in edited volume in a series

Noble, William C.

- 1992 Neutral Iroquois Smoking Pipes. In *Proceedings of the 1989 Smoking Pipe Conference*, edited by Charles F. Hayes III, Connie C. Bodner, and Martha L. Sempowski, pp. 41-49. Research Records No. 22. Rochester Museum & Science Center, Rochester, New York.

11. Presented paper

Ceci, Lynn

- 1985 Shell Bead Evidence from Archaeological Sites in the Seneca Region of New York State. Paper presented at the Annual Conference on Iroquois Research, Rensselaerville, New York.

12. Dissertation or thesis

Drooker, Penelope B.

- 1996 *The View from Madisonville: Continuity and Change in Late Prehistoric Protohistoric Western Fort Ancient Interaction Patterns*. Ph.D. dissertation, State University of New York, Albany. University Microfilms, Ann Arbor, Michigan.

13. Manuscript in press

Brown, William T.

- 2000 Early Days in Livingston County. New Horizons Press. In Press.

14. Unpublished manuscript

Wray, Charles F.

- 1978 Field notes: Fugle Site. MS on file, Rochester Museum & Science Center, Rochester, New York.

15. Web pages and electronic documents

Sharp, John

- 2008 Washington District of Columbia Biographies: Louis Deblois. Electronic document, http://genealogytrails.com/washdc/bio_deblois_1.html, accessed July 15, 2009.

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