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Subsistence in the Shrinking Forest: Native and Euro-American Practice in 19th-Century Connecticut

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SUBSISTENCE IN THE SHRINKING FOREST: NATIVE AND EURO-AMERICAN PRACTICE IN 19^{TH}-CENTURY CONNECTICUT

A Thesis Presented

by

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ABSTRACT

SUBSISTENCE IN THE SHRINKING FOREST: NATIVE AND EURO-AMERICAN PRACTICE IN 19TH-CENTURY CONNECTICUT

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Southeastern Connecticut in the 19th century represented a setting in which Native Americans living on reservations were residing in close proximity to Euro-American communities. The Mashantucket Pequot, an indigenous group who in the 19th century resided on a state-overseen reservation, and their Euro-American neighbors both utilized local and regional resources in order to achieve their subsistence goals. This thesis seeks to explore the differences and similarities of the subsistence practices employed by these two groups. It further seeks to examine the centrality of forest landscapes to both Mashantucket and Euro-American subsistence, and to interpret the importance of the reservation to indigenous identity maintenance.

A comparative paleoethnobotanical analysis of two 19th-century households, one of them a reservation Mashantucket Pequot homestead and the other a Euro-American one, is used to achieve these goals. Charred macrobotanical material, specifically seeds,

nutshell, and wood, recovered from discrete features at these two archaeological sites were processed, examined, quantified, and interpreted in order to access facets of both groups' practices. After placing the sites and the results of botanical analyses in local and regional historical contexts, conceptual issues of identity, labor participation, and subsistence informed an overall intepretation of indigenous and Euro-American subsistence practice during this period.

The results of this research revealed that Mashantuckets and Euro-Americans were, for the most part, utilizing different subsistence practices in order to achieve similar subsistence goals. By utilizing a combination of traditional and novel strategies, Mashantuckets navigated and mitigated both the difficult physical and complex social landscapes in which they lived. Mashantucket Pequots were more willing or more compelled than their Euro-American neighbors to adaptively change their strategies in order to preserve many of their long-term traditions and, most importantly, continue their presence on the reservation.

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CHAPTER I

INTRODUCTION

Connecticut's 19th-century landscapes were complex. It is important to specify the plural because the term "landscape" has both literal and symbolic forms. Landscapes can simultaneously be physical, social, economic, and political. Connecticut during the Industrial Revolution represented a space in which each of these landscapes was woven into a complicated patchwork that presented certain advantages and challenges to its inhabitants. As such, navigating the many landscapes of Connecticut required a certain social savvy. This thesis examines the social practices of two households, one of them inhabited by Mashantucket Pequots and the other by Euro-Americans. By analyzing the plant remains left behind by the people living at these two sites I examine the subsistence and land use strategies that they employed in order to successfully navigate and mitigate their daily lives. Human utilization of plants was extremely varied and complex during the 19th century, and by observing the ways in which people and plants co-existed in this environment, I look to glean information concerning subsistence, practice, and identity.

During the 19th century, the Mashantucket Pequot were a group of Native Americans who resided in southeastern Connecticut. The Mashantucket and Eastern Pequot were the descendants of an indigenous group known as the Pequots who had controlled a great deal of land in southern New England prior to the 17th-century arrival of Dutch and English settlers. After the devastating outcome of the Pequot War in the

1630s, the Pequots were split into two groups and allocated two distinct colonially overseen reservations in the second half of the 17th century (Campisi 1990:118-119). These new land bases consisted of small portions of former Pequot territories. The Mashantucket reservation would come to be an element of central importance in the production of what James Merrell (2003:133) called the "new core" of identity for Indian people. By comparing the subsistence strategies and social practices of a household on the reservation with a Euro-American household in nearby Stonington, Connecticut, this thesis seeks to explore the centrality of the reservation landscape in Mashantucket subsistence and identity maintenance.

Identity and Subsistence

This study focuses primarily upon the importance of subsistence and the concept of multifaceted cultural identity and its expression, particularly in relation to daily practices involving engagement with the landscape. Cultural continuity and change are, among other things, facets of identity and were major factors in the lives of both indigenous peoples and Euro-Americans in the 19th century. Although both households discussed herein experienced change and continuity, their individual daily challenges forced them to experience them differently. Households located on the Mashantucket Pequot reservation modified their subsistence practices to negotiate the difficult realities of reservation life. Euro-American households in southern Connecticut similarly broadened their subsistence strategies in order to mitigate a rapidly changing environment and a fluctuating economy that made their previous way of life more difficult. While the shifts in practice taken for the purposes of surviving this quickly altering landscape meant change, in many ways these two communities maintained an overall cultural continuity.

For many decades, archaeologists have treated continuity and change as mutually exclusive concepts when inferring the identity of past peoples. More recent studies of colonial lifeways have suggested otherwise. Silliman (2009:226) states that "ideas about culture change and continuity have lost their polar opposition," going on to say that "for social agents, communities, or households to move forward, they must change and remain the same." The households in this study expressed change in order to ensure their continued subsistence. The achievement of subsistence goals through a combination of novel and traditional subsistence practices allowed both households to sustain their overall cultural identity.

It is particularly important to understand the non-dichotomous nature of cultural change and continuity for an overtly political reason. Quoting Silliman (2009:227) again: "Archaeologists and the general public have tended to see increasing reliance by Native Americans on market goods over the course of the nineteenth century as evidence of cultural change or, more perniciously, as signs of acculturation." In this work I offer evidence contrary to this notion. Furthermore, I provide evidence that Euro-Americans simultaneously shifted toward reliance upon goods indigenous to New England and commonly associated with Native American culture while not falling victim to the "pernicious" charge of acculturation.

Pequot subsistence strategies changed as time passed and reservation populations dwindled. McBride (1990:108) points out that "by the second half of the eighteenth century both the documents and Pequot archaeological sites reflect more European subsistence practices." Contrary to simplistic theoretical notions that place the Pequots squarely in an acculturative model, McBride, Silliman, and others have gone on to interpret the adoption by Mashantuckets of certain European materials and practices as agentive methods of adaptation rather than as an attempt to assimilate to Euro-American norms. Speaking of the Eastern Pequot experience during the same period, Silliman (2009:226) states that "for social agents, communities, or households to move forward, they must change and remain the same… [T]he incorporation of so-called 'European/Euro-American' objects into Indigenous cultural practices in ways that insure their survival as individuals, families, and communities should not lead us to interpret them in terms of loss or passive acquiescence."

If we take Silliman's idea and extend it not only to objects but also practices (such as Euro-American styles of land tenure and subsistence) and from the Eastern Pequot to the Mashantucket, we can understand McBride's observation as simultaneous and purposeful continuity and change for the preservation of cultural identity. The primary result of successful achievement of subsistence goals in the 19th century was a continued Mashantucket presence on the reservation. That continual occupation allowed the Mashantucket Pequot to conserve and reaffirm their understandings of group identity and preserve a land base that would be vital to later tribal legal activism and economic development.

This thesis employs a household-level of analysis to aid in revealing the many facets of colonial subsistence. A household can be defined as "a group of people coresiding in a dwelling or residential compound, and who, to some degree, share householding activities and decision making" (Blanton 1994:5). In this way, the household does not refer to the physical structure but rather the small community of individuals living within it. Historical records show that at least one of the sites studied in this thesis was maintained by a complex household, consisting of more than one generation with spouses, children, and indentured servants all sharing space and responsibilities. For the majority of this research, these two households will be regarded as aggregated units for the purposes of comparison.

The choice of the household scale was based on the concept that the household itself is representative of the culture in which it exists. It is a powerful lens with which to analyze society. Blanton (1994:10) points out that the household "embodies, to use Bourdieu's phraseology, 'taxonomic principles' particular to systems of culture; by living in the house, its occupants are constantly made aware of the principles, which are thus inculcated and reinforced." Thus, the household is part of a recursive relationship between the individuals living in it and the cultural structures with which they interact (Bourdieu 1977:89; Giddens 1979:206). Furthermore, studying at the household scale reveals how "social and cultural change begins with the choices, decisions, and actions of individuals" and is useful for "examining individuals in the world in which they lived" (King 2006:299).

That said, these households also exist within both physical and social landscapes at the regional level. The purpose of this study is not to break down the use of space within each household, but rather to compare two households who are experiencing different outside (regional, Atlantic, and global) pressures despite their being both contemporaneous and proximal. The reservation is central to this study as both a socially understood space and a scalar context. The Mashantucket Pequot reservation and the sovereign land that it encompassed were central to Mashantucket identity and community in the 19th century. Of course, these households also existed within regional and Atlantic frameworks, which will be referenced regularly, as macroeconomic, ecological, and socio-political changes that occurred during the 19th century likely had profound effects upon the lives of household members.

Comparative Analysis

Comparative analyses present certain advantages that make them both methodologically and theoretically powerful. Peregrine (2004:281) argues that "archaeology, to the extent that it is a discipline interested in processes of cultural variation and change, must include comparative methods," going on to state that "one cannot simultaneously examine a set of examples if one does not employ comparative methods." Attributing identity to sites (or the people we presume occupied them) is archaeologically difficult. Comparative analyses allow archaeologists to examine gradations in identity and subsistence choices by comparing the differences and similarities in material remains from more than one site. By comparing two cultures that existed simultaneously, that is to say existing in the same place *and* time, I further hoped to avoid an analysis that is overly deterministic or based upon the rightly-critiqued methods of direct ethnographic analogy (Trigger 2006). For this purpose, I chose comparative analyses defined by Trigger (2006:508-512) as associated with "middle-ranging theory."

Middle ranging theory argues that the behaviors of the people in each of these households be reconstructed not on historical analogy, but rather on an interpretation of the archaeological data (in this case macrobotanical remains) that they left behind

(Peregrine 2004:283). Cross-cultural comparisons like the one in this thesis are essential to creating middle range data and gaining a deeper understanding of all observed cultures (Binford 2001; Trigger 2004:44).

18th-and 19th-Century Southeastern Connecticut

The period discussed herein was one in which, according to Mancini (2009:6) and Merrell (2003:133), Mashantuckets created a "new core of identity." World events including the Industrial Revolution and the War for American Independence, along with more local happenings, shaped the subsistence strategies of both Mashantuckets living on the reservation and Euro-Americans living in nearby Stonington. After the wars of the mid to late 18th century, Mashantuckets saw their treatment by their colonial overseers shift because, as "Indians were no longer needed to fight on the frontier, colonial governments began to systematically limit Indian rights and exclude Indian people and interests (including much sought after Indian lands) from the body politic" (Mancini 2009:5). Euro-Americans felt pressures as well including environmental degradation due to widespread deforestation.

Both the reservation and Euro-American farmsteads represented social spaces to their inhabitants. The reservation was a central facet both of Indian identity and community cohesion for Mashantuckets in the 18th and 19th centuries, while Euro-American farmsteads in Stonington likely offered similar comforts to their inhabitants. These were spaces of deep tradition and long habitation that deserve an equally deep analysis. By understanding the history of these landscapes, we can construct a framework in which they can be interpreted.

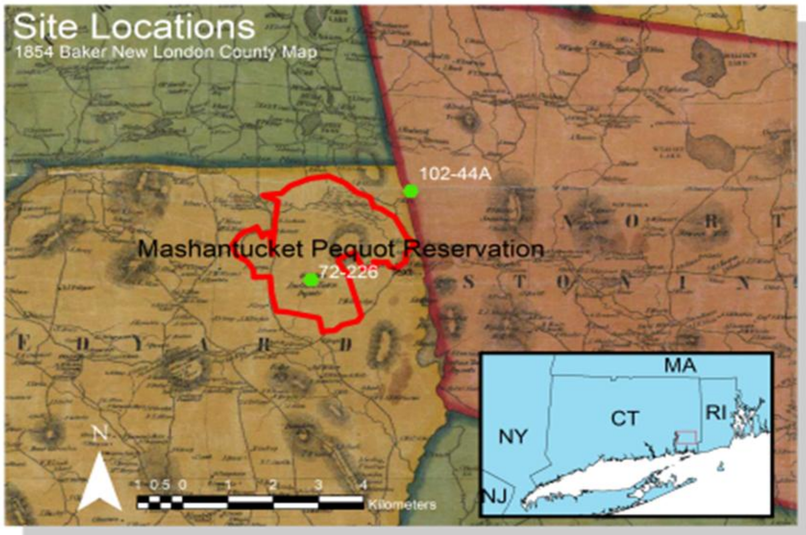
Both the physical and social landscapes of southern New England were altered significantly and continuously between the arrival of native peoples around 10,000 years ago and today. These transformations were recursive, greatly affecting the very inhabitants (and generations of their descendants) that wrought them. Both Native peoples and Euro-Americans found ways to mediate the challenges of their everyday life by interacting with and drawing from the landscape that defined this ever shifting region. Understanding subsistence practices is essential to understanding the importance of these landscapes to both indigenous and non-indigenous people.

As a means of understanding cultural practice, studies of subsistence make possible the comprehension of broader topics, including the effects of class and racial categories important to people living in the colonial world of 19th-century southern Connecticut (Pluciennik 2001:741). Pluciennik (2001:742) describes this phenomenon by stating "Changes in attitudes that raised the profile of subsistence can also be seen within colonial practices. The 'discovery' of the Americas and the changed nature of cross-cultural encounter, including extensive colonial settlement, meant that one of the inevitable points of conflict was land." The ownership or access to of land, which was tantamount to access to the resources necessary to sustain life, is a proxy for overall success in the realm of colonial subsistence. Land encroachment and the sovereignty required to defend one's right to land are key concepts in understanding cultural entanglement in 19th-century southern New England. The reservation, the cultural and real space which represented the sovereignty and the resource base for Mashantuckets, was therefore the basis for their potential success in subsistence.

Subsistence is, in essence, *all* the means (including new means made available by cultural interaction) by which a group of people survives in their daily lives. Plants are used for a wide variety of purposes: sustenance, medicine, recreation, as ornamental or garden plantings, and, particularly important to his study, fuel, making them central to an understanding of subsistence (Mrozowski et al 2008:700-702). It is because of this link between plant usage and subsistence that a paleoethnobotanical analysis was chosen as the basis for this thesis.

In order to facilitate a comparative analysis of subsistence strategies in Southeastern Connecticut, two sites previously excavated by the Mashantucket Pequot Museum and Research Center were chosen in consultation with museum staff. The previously unnamed reservation homestead, 72-226, and the Daniel Main homestead, 102-44A, were chosen to be the basis of this research. The two sites were selected because of their relative contemporaneity, close proximity, and their material and spatial similarities. Both sites were interpreted to be single-family homesteads, and both had features suggesting a major post-occupational burning event. Key differences, including the location of each site in relation to 19^{th}-century reservation boundaries, were also important in deciding which assemblages would best serve a comparative analysis (Figure 1.1).

Figure 1.1. Map Showing Locations of Sites Discussed in This Work



Several themes guided the interpretive elements of this thesis. The first was an interest in the centrality of the reservation landscape to both Mashantucket subsistence and identity maintenance. Second was the relevance of the forest landscape to both Mashantucket Pequot and Euro-American subsistence practice. Third was a desire to understand the ways in which labor participation played a role in indigenous cultural continuity. The last was to search for evidence refuting the myth of the destitute Indian, a historical misconception that shaped political dialogues central to the lives of New England's indigenous people in the 19th century. The continued relevance of this misinterpretation adds political weight to these interpretations. The following chapters will first frame the historical and methodological frameworks of the thesis and then offer possible interpretations and conclusions drawn from analysis.

CHAPTER II

HISTORICAL CONTEXT

Ecology and Economics: Shifting Forests and Changing Industry

At the time that the households discussed in this study were inhabited, the Mashantucket Pequot reservation and the town of Stonington were in a period of great economic and ecological shift. Both of these households were probably engaged in some form of agriculture as a part of their livelihood and subsistence. Because of these shared agricultural pursuits, it is important to examine both the tumultuous state of Connecticut's farm economy in the 19th century as well as the massive changes to the agro/sylvan landscape that had begun even prior to European arrival to the region.

Southern Connecticut's environment, which in the 19th century was a heavily altered and largely cleared forestland, was made up of a combination of indigenous species and European-introduced taxa. In fact, by 1900, 25% of the flora, 30% of the fish, 7% of mammals, and 4% of birds were non-indigenous (Irland 1999:59). Both Euro-Americans and native peoples worked to utilize a number of both indigenous and introduced plants and animals.

Agricultural practices related to both the production of domesticated grains and the raising of livestock increased throughout the colonial period. By the mid-19th century, farmers were growing corn, wheat, onions, potatoes, apples, cranberries, hops, peppermint, and many other domesticated crops in addition to supplementing their diets with collected fruits and berries. Livestock farmers were raising, among others, sheep, cattle, dairy cows, and poultry (Russell and Lapping 1982:214).

An increase in taxonomic richness was not the only change humans made to this landscape during the colonial era. William Cronon (1983:121) estimates that New Englanders burned around 260 million cords of firewood between the years 1630 and 1800. Deforestation, caused by economic developments associated with massive population growth starting in the 18th century, helped shape the world of colonial New England. In this section, a brief history of New England's macro- ecological and economic changes will be laid out so as to better understand the individual experiences of those families residing at these households. It is important to note that the methods for measuring forests in Connecticut have been based, since the 17th century, on economic commodity models (Irland 1999:467). Reconstructing a realistic picture of past environments based solely on the documents used in economic commodity models can be difficult because of their inherent author bias. The authors of these documents were bound to economic and social interests and were not concerned with creating a representation of a complete environment; rather they focused upon those elements most important to their particular interests.

Ecology and Economy in Southern New England: Ice Age to the 17th Century

Southern New England's ecology was largely shaped by the retreat of glaciers at the end of the last Ice Age around 12,000 years ago. The glaciers left a mixture of wet, poorly drained soils and sandy plains. Forests containing a mix of oaks, chestnuts, birches, and maples dominated the landscape. Pines grew in massive stands, rather than being scattered into forests as in the great forests of northern New England (Irland

1999:36-37). Native peoples molded this landscape in innumerable ways for millennia leading up to the period immediately preceding the arrival of Dutch and English settlers in the first half of the 17th century (Bragdon 1996; Cave 1996; Cronon 1983).

Agricultural practices intensified in the region between 1,000 and 700 years ago (Bragdon 1996:85). These new subsistence strategies helped shape both the native lifeways and the environment described by Verrazano and other early European explorers. Bragdon (1996:55-79) describes the existence of a tripartite settlement system in which semi-sedentary native peoples shifted among several resource bases in an annual pattern, always mobilizing in order to best take advantage of seasonal shifts in weather and environment. Spending parts of the year hunting, fishing, and practicing agriculture allowed native peoples in southern New England to diversify their subsistence strategies. This does not mean, however, that Native Americans did not affect their environment. The first European settlers misidentified the New England landscape as virginal and untouched. This was, of course, an incorrect interpretation based on Eurocentric perceptions of what constitutes an altered landscape.

The forests, shorelines, and uplands of southern New England had been deliberately altered by native peoples in both a physical and social sense prior to the arrival of Europeans. Those landscapes had, in turn, become a social space in which indigenous people lived out complex social lives. The burning of undergrowth and culling of trees lacking usefulness meant that the physical landscape was transformed in order to enrich the forest with resources. The formation of cross-culturally understood boundaries that simultaneously structured insider and outsider status within and between groups was also evident, leading to complex systems of cultural exchange (Bragdon 1996:3–54; Cronon 1983; Irland 1999).

Early Colonialism in the 17th Century

Prior to European arrival, native peoples had cleared and opened great swaths of land for agricultural development. Many Europeans took advantage of this by placing their homes and fields in the same places that native people, now driven off of their ancestral lands by disease and conquest, had toiled. During this period, wheat and barley were considered the most desirable crops to English settlers despite their being more expensive and more difficult to grow than the indigenous maize. By 1635, however, those same English colonists were growing a variety of vegetables, fruits, and grains in New England's rocky soils (Russell and Lapping 1982:21,23-24).

Europeans soon came to rely on more than just cleared lands for subsistence, because "though New England's soil was in general of only fair quality and its climate rigorous, a splendid growth of forest" covered most of its uncleared lands (Russell and Lapping 1982:93). These forests came to define New England for colonists who had so recently come from a land in which deforestation was a dire reality. Roger Williams (1643:138) wrote in *A Key into the Language of America* that Narragansetts would air their perception of English colonialist intentions by saying, "Why come the Englishmen hither? And meaning others by themselves; they say, it is because they want firing: for they, having burnt up the wood in one place (wanting draughts to bring wood to them) they are faine to follow the wood; and so to remove to a fresh new place for the wood's sake." European perceptions of the woodlands meant that from the earliest days of their arrival in North America, they viewed the forest as a commodity or as being full of commodities (Irland 1999:46).

European perceptions about the importance of woodlands and the products of the forest can be found in contemporary 17th-century town policies. Communities set up common woodlands to help protect stores of fuel wood (Russell and Lapping 1982:93). Irland (1999:129) states that this practice was to preserve wood for a variety of purposes and that "town and colony governments built public policies on the basic importance of fuelwood, sawtimber, shingles, barrel staves, and bark." Some towns in southern New England went so far as to begin banning the cutting of young trees, including oaks and walnuts less than one foot in girth (Russell and Lapping 1982:93).

By the second half of the 17th century, timbering became an increasingly important industry in Connecticut. Ship timbers, pitch, ship masts, and fuel wood for both the domestic and export market were harvested from New England's rich forests (Russell and Lapping 1982:93). Due to their being ideal for the production of ship masts, white pines became increasingly depleted as early as the 17th century (Irland 1999:7).

Native Americans had practiced forest burning for millennia in southern New England in order to clear underbrush and encourage certain species of plants and animals to flourish. European colonists adopted burning practices, but utilized them in a more destructive manner. This type of burning, primarily used to clear lands for grazing and planting, was also banned by some town governments because of the threat it posed to valuable forest commodities (Russell and Lapping 1982:94). Of course, forest burning for the purposes of land clearing speaks to English sensibilities of what constituted good agricultural practices. Euro-American settlers intended to create a system of agricultural production modeled on what they left behind in England. The growing of wheat and the raising of large livestock including sheep and cattle required large and open fields which did not exist prior to the colonial period. This dynamic created a tension between Euro-American farmers and colonial law-makers, who used legislation in an attempt to avoid the wide scale deforestation that was so devastating in England.

Some forestry policies came from local government, but many others were written by the English crown. The king placed restrictions upon the lumbering of white pine and other crucial taxa because of their importance in naval ship building. These laws were promptly ignored and broken by colonists (Cronon 1983:110-111). This practice of breaking laws deemed unenforceable by English colonists would directly affect the region's native population for the next three centuries.

By the middle of the 17^{th} century, Euro-Americans began forcibly shifting native land tenure practices in an effort to eradicate their traditional lifeways and take their remaining resources. As Cronon (1983:53) describes, "European perceptions of what constituted a proper use of the environment" as having "reinforced what became a European ideology of conquest." The English determined that native methods for utilizing land were illegitimate and therefore they had an inherent claim to those "unimproved" lands. Cronon (1983:63) further argues that it was "European, rather than Indian definitions of land tenure that led the English to recognize agricultural land as the only legitimate Indian property." Prior to European arrival, native people in Connecticut had a complex system of land use that shifted throughout the year. Land and resources were sometimes shared among groups and sometimes fiercely defended, but were always understood to be a part of a complicated ecology. Euro-Americans saw land improvement for grazing and agriculture as the only practices with the legitimacy necessary to imply ownership.

By the end of the 17th century, developments elsewhere in the English colonies augured a grim future for New England. Many of the Caribbean islands recently inhabited by European settlers had become so deforested that their overseers began importing lumber for barrels and staves from New England. Off the coast of neighboring Rhode Island, Block Island was largely deforested as early as the 1720s (Cronon 1983:63; Russell and Lapping 1982:94). These ecological crises were telling of what was in store for southern New England.

The Beginnings of Industry and Deforestation in the 18th Century

The 18th century began with an extensive breakup of public forestlands into private lots which were more often than not sold to industrial interests. Fiercely defended by townspeople for a century, these forest lands now became highly valuable private possessions (Russell and Lapping 1982:97-98). The cutting of lumber became increasingly common both for private household use and for industry. Colonists tended to use the best available lumber for their purposes and burn whatever was not the most valuable. They treated New England's forests "as if they would last forever" (Cronon 1983:111). This early forest disturbance was tied directly to waterways, which were the avenues of trade and exploration during the 18th century. Rivers and canals became the location of a growing mill industry as well as the centers of urban growth (Irland 1999:54).

The 18th century saw the beginning and early flourishing of the industrial era in southern New England. For Euro-Americans public schooling, increased literacy rates, and access to books augmented the acceptance of a scientific method in both agricultural and industrial endeavors (Russell and Lapping 1982:129-131). Improved infrastructure, including the building of bridges, roads, and canals, increased the size of the regional economy and the local demand for forest commodities. Local construction included the building of the first turnpike in New England in 1792, which connected nearby Norwich to the urban center of New London downriver. This development may have had a direct impact on the families living at 72-226 and 102-44A. Port blockades during the American Revolution in the 1770s and 1780s pushed New England further into the industrial era and resulted in the opening of industrial mills in Hartford as early as 1788 (Russell and Lapping 1982:129-132).

A population explosion at the end of the 18^{h} century expanded the demand for wood products that would push Connecticut further into an era of deforestation. Early industrial uses of trees during this period included the tapping of pines for pitch and turpentine and the cutting of hardwoods for fuel wood burning. Despite the increase in industry throughout the region, the majority of Connecticut's population was still participating in some form of agriculture, with those involved in animal husbandry being the most successful. The health of the livestock industry was due in part to the success farmers had in growing several species of grass (Russell and Lapping 1982:95, 131-133). The land clearing trend that had started a century earlier now accelerated, as the growing population increased the demand for fields suitable for pasture.

The fast growth of the lumber industry in the first half of the 18th century led to an equal decline in the second half. Deforestation became increasingly dire as the century concluded and economically important taxa like white pine and cedar were driven to near local extinction. These species, already rare when Europeans arrived in the region, were naturally replaced by the successional species of oak and maple when harvested. This factor made them an unsustainable crop (Cronon 1983:113; McCusker and Menard 1985:98-100). At the start of the 19th century a growing regional economy, population, and appetite for the products of the forest, coupled with a shrinking number of harvestable trees and a growing amount of cleared land for the raising of livestock had major effects upon the subsistence opportunities of Connecticut communities.

Shrinking Forests and Growing Fields in the 19th Century

The population of the Northeast doubled between the years 1790 and 1820. This unprecedented expansion would fundamentally alter the ways in which the inhabitants of this region utilized their landscape (Irland 1999:5). Along with this growth came a more apparent class system in which "there were families working under almost unimaginable handicaps, with barely enough to live on, who like Indians in a similar situation supplemented their few acres of corn and wheat and their hog or two with wild game, nuts, and berries, or went without" (Russell and Lapping 1982:134). Around the same time that 102-44A and 72-226 were inhabited, the emergence of new pressures caused a class shift that may have bought the subsistence of those of differing identities into more similar economic and perhaps social situations.

For Connecticut farmers, food culture became increasingly complex in the 19th century. Apple orchards became parts of the subsistence of daily life. This cultivated resource came to be a staple alongside the long-collected strawberries, cranberries, and raspberries. Turnips, potatoes, carrots, parsnips, beans, beef, pork, chicken, turkey, fish (including salmon, sturgeon, and herring), and nuts became more widely eaten as the diet of the average farmer began to have more breadth (Russell and Lapping 1982:161-162; 178-179).

Forest products continued to be needed by farmers as well, and despite the widespread sale of forests to industry earlier in the century, farmers still owned the great majority of Connecticut's forest lands. Unlike the larger states of northern New England, Connecticut was never a major contributor to the industrial forest complex. In Maine, New Hampshire, and Vermont, massive tracts of forests utilized solely for export wood harvesting were sometimes referred to as "paper plantations." Forest clearing in Connecticut was done for local industry, house and implement construction, and agricultural land clearing (Irland 1999:76-90,113).

The history of land ownership shifted continuously throughout the 18th and 19th centuries. The turnover of land through sales was highest during the mid- to late-18th century due to the dominance of low-density agriculture as the means of production for most of New England's population. Heavier agriculture and industrial development starting in the early 19th century led to longer term land tenures. Land sale turnover increased again in the late 19th and 20th centuries due to the great decrease in farming practices (Irland 1999:125). Both 102-44A and 72-226 were inhabited during the periods of greatest stability in land ownership. However, these long term and intense agriculture tenures had drawbacks for the overall environment in southern New England.

Land clearing for agriculture was the greatest cause of deforestation in the 19th century. Cronon (1983:114) points out that "perhaps surprisingly, the lumberer was not the chief agent of destroying New England's forests; the farmer was." Farmers cut and burned forests without utilizing the wood in any way in order to clear the way for fields to grow grasses, corn, wheat, rye, and barley. These crops were used to feed domesticated animals and people. Primarily utilized for the production of fuel wood and charcoal, those forests that were not cleared for agricultural land were cut heavily and on short rotations. By the middle of the 19th century, only a few of Connecticut's forest stands were older than thirty years (Cronon 1983:114; Foster 1992:753; Irland 1999:5, 37, 126-128, 271; Russell and Lapping 1982:97, 150-151). Over time, the repeated cuttings of timber forests, along with general neglect in management of the forest "left many of [Connecticut's] woods burdened with cull trees of poor form and quality" (Irland 1999:370).

At the peak of land clearing in 1860, forest area coverage was reduced from a height of 96% in 1600 to 29% (Table 2.1). Cronon (1983:126) points out that "deforestation was one of the most sweeping transformations wrought by European settlement in New England." This trend of rapid deforestation was an unforeseen consequence of the Euro-American colonial project in New England in general but was caused by many contributing factors worth examining. Household construction became increasingly complex and average house size grew in the 19th century. Household construction thus became a greater drain on woodland resources than in previous centuries. Forest fires were also a major source of disturbance during the 19th century. While some blazes were a result of industrial work, others were fires meant for clearing pastureland that went out of control, unintentionally burning thousands of acres of woodland (Cronon 1983:118-119; Irland 1999:55; Russell and Lapping 1982:177).

Table 2.1. Forest and Farmland Area of Connecticut, 1600-1997

Year	Forest Acres		Farm Acres	
1600	3,010,000	96%	-	-
1700	2,130,000	68%	-	-
1800	1,644,000	52%	-	-
1860	923,000	29%	2,504	81%
1900	1,276,000	41%	2,312	75%
1920	1,489,000	48%	1,899	61%
1945	1,907,000	61%	-	-
1970	1,823,000	60%	540	17%
1977	1,806,000	60%	470	15%
1987	1,776,000	57%	410	13%
1997	1,815,000	59%	380	12%

Table Source: (Irland 1999:123)
The highlighted rows represent the periods in which sites 72-226 and 102-44A were likely occupied

Prior to the blight at the beginning of the 20th century, chestnut accounted for approximately half of Connecticut's timber inventory, and along with hemlock represented the largest proportion of those trees cut for the production of tannin. Industry drove other aspects of deforestation as well: the railroads consumed huge amounts of wood for fuel and tracks, ice cutting required large amounts of sawdust, and approximately 45% of all iron smelted in the United States in the 1850s was done with charcoal. The entry of New England into the age of industry increased the amount of forestlands owned by large industrial corporations, who were often poor tenders (Irland 1999:58, 270-271; Russell and Lapping 1982:228).

Small wooden items were often produced in the home by Connecticut agricultural families looking for any way to earn extra income during slow seasons. Potash, a product used for making soap and gunpowder, was produced by farmers felling forestlands for grazing. Both these activities drew additionally upon forest resources. Shipbuilding demanded huge amounts of both pine and oak, which were prevalent in New England's mixed forests. A large schooner could require as much as 200-300 white oaks, and increased production during the 19^{th} century began to drain the landscape of these important taxa.

As industry increased in Connecticut, so too did the population's density and their appetite for fuel wood. As much as an acre of forest per year, or twenty cords, was required to sustain a single 19^{th}-century family in New England. Fuelwood prices doubled at the end of the 18^{th} century and continued to rise throughout the next hundred years. The domestic market, however, only accounted for part of the demand for lumber in New England. In 1850, before the forests of the Great Lakes and South were exploited, approximately half of the nation's lumber was cut in New England (Cronon 1983:117-121; Foster 1992:753; Irland 1999:55, 58, 270-272; Russell and Lapping 1982:97, 177, 228-229).

The second half of the 19^{th} century brought significant social and economic changes to the growing populations of southern New England. These shifts would come to affect not only every farmer in Connecticut, but also the now nearly forestless landscape. An increase in educational opportunities as well as the growth of many new industries and commercial enterprises afforded labor opportunities that would draw the sons and daughters of farmers away from the pursuit of agriculture. The poor and the landless were the most likely to join this shift away from the farm and towards the city.

Global events had an impact on the labor shifts that would end the era of the farmer in New England. The Napoleonic Wars significantly boosted the ship building industries of port cities in Connecticut, Rhode Island, and Massachusetts, creating an incentive that drew laborers away from rural farms and towards these budding urban centers. Increases in farming in regions of the United States that could easily outperform New England also decreased demands for the goods of its farms. This combination of "cheaper Midwestern farm products and the demand for labor in the industrializing cities triggered a massive decline in farming that returned some 20 million acres of cleared land to forest" (Irland 1999:320). Easier access to economic trade as a result of globalization and regionalization led to less of a reliance on local resources for New England's farmers. Unlike in northern New England states, no pulp industry developed in Connecticut. Instead, the forests regrew and were allowed to go fallow. So by the start of the 20th century, Connecticut's forests were regrowing, but not regrowing usefully (Irland 1999:126-127, 130, 320; Russell and Lapping 1982:180-181, 232-233). The growth of the suburban forest, which replaced the cleared but now underutilized grazelands and which now dominate Connecticut's landscape, had begun.

As the suburban forest came to cover most of Connecticut's farmlands in the 20th century, a great deal of its former economic value was lost. With little cleared farmland left and a forest with few harvestable timbers, Connecticut's economy largely shifted to one of a post-industrial nature. As a result, the number of farmers in the state fell precipitously, from a peak of 3.2 million in 1890 to around 230,000 in 1990. In 1960, 90% less lumber was harvested than a century earlier (Irland 1999:58, 123-124). Connecticut is now covered by a forest which has slowly lost its "economic, amenity, and wildlife values” (Irland 1999:115). While these economic and social shifts impacted the lives of reservation and Euro-American households, it is likely that the microhistories of the households themselves and the land bases on which they existed can also inform the analysis of this thesis.

A Brief History of the Mashantucket Pequot Reservation and 72-226

No historic records refer directly to the house located at 72-226. It is not known if this is due to the historic invisibility often associated with the households of people of color, or simply because of chance. Due to the paucity of historic data informing our understanding of the families who lived at 72-226, a broader history of the reservation will inform this work. Mashantucket Pequots experienced and participated in great shifts between the arrival of Europeans to southern Connecticut and the 20th century. By comprehending their experiences in a historical context we can begin to interpret their material remains.

To understand the centrality of the reservation to Mashantuckets in the 19th century, it is important to note its founding which has its roots in the first half of the 17th century. Tensions grew between the regionally dominant Pequots and newly arrived English settlers by the mid-1630s. As a result, English colonists, along with native allies from Narragansett and Mohegan territories, brought a war upon their Pequot enemies that culminated in the demographically devastating Mystic Massacre of 1637. The conflict, which would come to be known as the Pequot War left the Pequots with a legally banned identity and a vastly decreased population. The Connecticut colony enslaved whatever Pequots could be rounded up and splintered them into disparate groups. Between 200 and 300 warriors and their families were given to the Mohegans while another 120 were sent to the Narragansett. The rest were sold to plantations in the Caribbean or kept on as domestic servants (Campisi 1990:118; Cave 1996; McBride 1990:104-105).

This period of captivity would not last long. By the 1650s, most Pequots had freed themselves from their Mohegan and Narragansett overseers. The Eastern, or Paucatuck, Pequots under Caushawasett moved to a 280-acre reservation in Stonington in the year 1683. The Mashantucket Pequots under Cassacinamon separated from the Mohegans and moved to a reservation of around 2,000 acres split between two locations at Ledyard and Noank in the mid-1660s. Mashantuckets would only hold the lands at Noank for a half-century before they were allotted and sold off to Euro-Americans in 1712 (Campisi 1990:118-120; McBride 1990:106-107).

During the first half of the 18th century, a grant was given to white residents of Groton for grazing rights on Mashantucket lands perceived to be underutilized by English reservation overseers. The boundaries of this agreement were almost immediately overstepped. Mashantuckets responded with what began three centuries of legal battles with English and later American officials. There was filed a "petition from the sachem and sundry others of the Pequot Indians complain[ing] 'that the inhabitants of the town of Groton are continually cutting down and carrying away their timber and firewood'" (Connecticut Colony 1732:324-325). Here fuel wood was at the center of the controversy. Many of the lands that white settlers encroached upon from this moment until well into the 20th century were for the sake of this precious resource (Campisi 1990:121; Den Ouden 2005:3).

Land disputes of this type would continue through the 1750s until, in 1761, the General Council of Connecticut reduced the size of the reservation to 989 acres. This was in response to a dwindling on-reservation population in part due to the exodus of men heading to the front-lines of the French and Indian War (Campisi 1990:122-124; Den Ouden 2005; St Jean 1999:380-384). In 1762, the tribe numbered 176 individuals with between 20 and 30 families living on the reservation (Deforest 1851:137). Mashantuckets made another complaint to the State Council in 1785 concerning the "destruction of timber" by their neighbors in Groton (State of Connecticut 1785:57).

At the turn of the 19th century, the population of the reservation was further reduced by a number of historical factors. Many Pequot men were killed in wars, including the American Revolution. The spiritual endeavor known as the Brothertown Movement drew a great many Pequots to New York and Wisconsin a few years later. Still other Mashantuckets found themselves indentured on farms owned by white families or invested in the booming whaling industries of cities like Newport and New London (Campisi 1990:125; Mancini 2009:98-136; McBride 1990:107-108; Vickers 1997). The 1774 census revealed a reservation population of only 51 individuals. Censuses taken in the early 19th century put the number between 30 and 40 (Campisi 1990:125).

By the middle of the 19th century, women had taken over most of the sociopolitical life on the reservation. They represented the center of the community's cultural, political, and economic life (Den Ouden 2005). Campisi (1990:127-128) points out that this was in part due to the fact that "many men were forced to seek employment on neighboring farms, a condition that separated them from their families for weeks or months at a time. In most cases, the women remained on the reservation where they tended a few crops, made baskets, picked berries for sale, and raised their families." Besides these day-to-day activities, the tribe had three other ways of raising funds during the latter 19th century: they accrued interest from their bank accounts, they leased land to Euro-Americans, and they sold firewood. All of these activities, however, were controlled in part by colonially (and later, state)-appointed overseers.

These overseers had a great deal of power in determining how Mashantucket Pequots lived their daily lives. This did not, however, prevent reservation residents from influencing both who the overseers were and how they acted once they were in the position. Mashantuckets were active in selecting their overseers, whom they viewed as *their* representatives, rather than as representatives of the state. This made sense, since the overseer's salary was drawn from Mashantucket accounts. The community had overseers removed on several occasions, most often for inactivity. Most overseers spent less than three days a year on business relating to the reservation despite being paid a salary throughout the year. There were also many opportunities for, and accusations of, abuse of the powers given to overseers by the state. One of the most common complaints by Mashantuckets in the latter half of the 19th century was that overseers sold firewood culled from reservation forests for their own profit (Campisi 1990:126-132).

Legal frustrations continued into the middle of the 19th century for Mashantuckets. A pair of acts was passed by the state's General Assembly in 1854 and 1855 that made the sale of Pequot reservation lands possible. Decisions concerning which land would be sold would be made by a committee of non-Pequots. These acts led to the sale of over 600 acres in 1855, diminishing the reservation to approximately 180 acres in total size. The money from these sales was meant to serve as funding for welfare activities relating to the tribe. Since overseers had oversight of these funds, the land sales of 1855 led to an increased control by overseers of tribal finances relating to health care, food and fuel purchases, and funeral expenses (Campisi 1990:132-3).

Despite the increase in power of overseers that came in the latter half of the 19th century, Mashantuckets continued to carve out their own paths to economic and social sovereignty. Women continued to make small sums selling baskets and berries, and Mashantucket men continued to be successful on Euro-American farms and in the whaling fleets (McBride 1990:107-108; Vickers 1997).

Since there are no historic records or maps that refer directly to the house at 72-226, we must rely primarily upon archaeological methods for dating the occupation period of this site and thus placing it within this historical context. The reservation household is too new to produce accurate absolute dates from sources such as radiocarbon dating and therefore, mean ceramic dating is the best means available. The site has a calculated mean ceramic date of 1837 (Appendix Table 6). The site lies in the heart of the historic reservation boundaries, thus reliably suggesting that it is a Mashantucket Pequot household. Excavated archaeological features at 72-226 imply that the house burned down sometime after abandonment. Ceramics recovered during excavations are very typical for the era and are similar to those found at the Euro-American occupied 102-44A. These include high proportions of pearlware, whiteware, and transfer-printed earthenwares, all of which are very common in late 18th- and early 19th- century sites (Noël Hume 1970).

A Brief History of the Morgan/Bailey/Main Household at 102-44A

Unlike 72-226, the Euro-American families living at 102-44A are well documented in historic resources including wills, deeds, tax records, and censuses. Since these records are tied directly to the property on which 102-44A resides, it is much clearer who exactly deposited these archaeological remains. The household at 102-44A has a mean ceramic date of 1820 (Appendix Table 6), and historic resources suggest a period of occupation of circa 1769 to 1880. The research that informed the following section was conducted in 2002 and 2003 by historians at the Mashantucket Pequot Museum and Research Center (Mancini et al 2003:1-3).

The dwelling house at 102-44A was likely built between 1769 and 1776 by Elijah Morgan, who purchased the 56-acre Stonington lot on which it resided during that period. He sold the property at a loss to his son, Jonathon Morgan. Jonathon, his wife Mary, their four children, and Jonathon's parents are listed as having lived on the lot in a 1790 census. Later that decade, Jonathon bought an additional 75 acres, bringing his holdings up to around 130 total.

In 1799, the Morgans sold 125 acres of the property and the houses thereon to his brother-in-law, Elijah Bailey. The Baileys lived in the house until sometime after 1810. Elijah deeded the property to his son, James, in 1836, who expanded it by 80 acres in 1840. James sold the property and the dwelling house along with 140 acres of land, a barn, and a crib to Thomas Main in 1846. Main is listed as living on the property with his wife and daughters in the 1850 census.

On that same census, a Mashantucket Pequot boarder/laborer named Sampson Fagins was listed as living on the property. While the census lists him as "a person of color," Fagins was in fact the son of Charles Fagins, who was black, and Hannah Miller, who was Mashantucket and who regularly appears in documents penned by 19th-century overseers. In the 1870s, another man named Thankful Johnson boarded with the Main family. The race of this man is unknown, but he was likely also a laborer.

The Main family left the house at 102-44A sometime during the 1870s or 1880s, and the house was completely abandoned by the following decade. Archaeological features at the site suggest that the house probably burned down sometime after abandonment. Ceramics recovered include proportions similar to 72-226, including large amounts of pearlwares, whitewares, and transfer prints typical of the era. There is, however, a greater richness of ceramics at 102-44A, including some earlier types of ceramics like creamwares and salt-glazed stonewares. A variety of hand-painted earthenwares were also recovered. The Morgan/Bailey/Main house was continuously occupied for around a century, and those living and working there left behind a rich deposit of material culture and macrobotanical remains.

CHAPTER III

MATERIALS AND METHODS

This chapter describes the materials analyzed and the methodologies utilized for the purposes of revealing facets of subsistence strategies at 72-226 and 102-44A. By understanding native and Euro-American reliance on the plant world for their successes and failures, a greater comprehension of their lifeways can be developed.

Methodology

Seven discrete features were uncovered and excavated during the 2003 excavations at 72-226 including two fireboxes, basins, post-molds, and several stains interpreted to be the result of the house burning down sometime after occupation (Table 3.1). Mashantucket Pequot Museum researchers working on the Lake of Isles project performed excavations in 2001 at 102-44A and uncovered seven discrete features. These included two fireboxes, basins, post-molds, an attached structure, a cellar floor filled with charred material, and a well (Table 3.1).

At both 72-226 and 102-44A, soil samples were taken by field technicians from each arbitrary or natural level within a feature. In some cases, the volume of these samples was arbitrary, but in other cases whole sections of features were sampled during bisection (Kevin McBride, 2012 pers. comm.). These samples were then hand floated in a sink using a fine meshed screen. Light fractions were taken by skimming disturbed floating sediments periodically during flotation. Heavy fractions were garnered from the settled remains at the bottom of the screen. This method is deemed effective for recovering a reasonably high percentage of botanical material but less effective than machine-assisted flotation (Wagner 1988:24). In some levels, flotation samples were not taken, but botanical materials were recovered during dry screening with ¼ inch mesh. Botanical materials from both flotation samples and dry screens were identified during the analysis phase of this research (Appendix Table 1).

Table 3.1. Description of Features Excavated at 72-226 and 102-44A

Site	Feature	Description	Number of Samples Analyzed	Volume (L)
72-226	1	Post-Mold	0	0.00
72-226	2	House Burn	6	7.00
72-226	3	Red Stain/Burn	1	12.00
72-226	4	Post-Mold	1	0.50
72-226	5	Basin	2	11.50
72-226	6	Firebox/Hearth	8	64.00
72-226	7	Firebox/Hearth	3	18.25
72-226 Total Number of Analyzed Samples			21	113.25
102-44A	1	Shallow Basin	2	22.00
102-44A	2	Firebox/Hearth	5	1.00
102-44A	3	Firebox/Hearth	6	80.00
102-44A	4	Well	0	0.00
102-44A	5	Post-Molds	0	0.00
102-44A	6	Attached Structure - Shed	3	8.00
102-44A	7	Cellar Floor	4	62.00
102-44A Total Number of Analyzed Samples			20	173.00
Total Number of Analyzed Samples			41	286.25

To expedite analysis each sample was separated using four geological sieves ranging in size from 2mm to 0.5mm. All remains that were not captured by the 0.5mm sieve were discarded. The largest samples were subdivided by 1/8th using a riffle splitter.

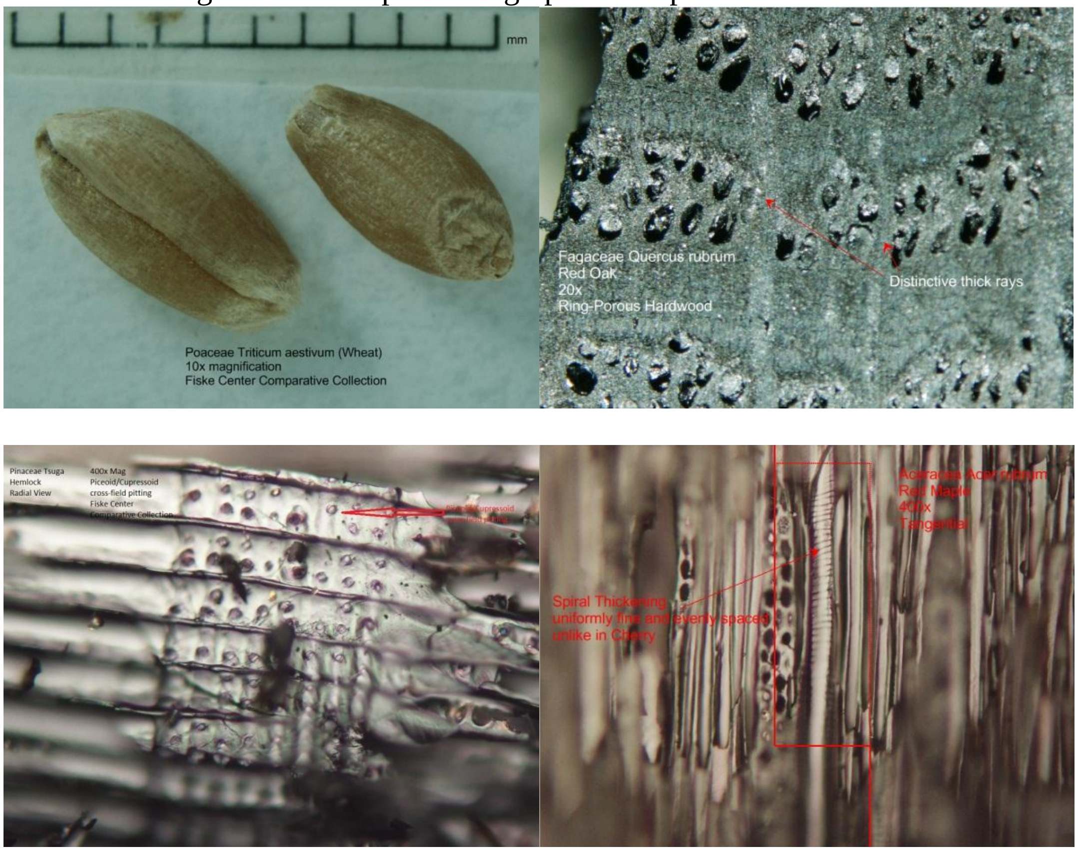
Seed counts reported for these samples were extrapolated from the subsample. The samples were then scanned using a 10 to 40-x magnification dissecting microscope. Charred wood and seeds were separated during scanning and identified to the most specific level possible. In some cases seeds and nutshells could be identified to species, but more often were described by genus or family. Seeds and nuts were identified using printed references (Martin and Barkley 1973; Montgomery 1977) and the University of Massachusetts Boston paleoethnobotanical comparative collection. In total, this research included the analysis of 286.25 l of floated soil and 4,881.84 g of botanical material.

Charred seeds are often associated with human activity, whereas uncharred remains are much less likely to be archaeological in many contexts (Miller 1988:50-51). Other paleoethnobotanists performing similar analyses at Mashantucket sites have elected to disregard uncharred remains for a number of reasons, including a likelihood of a taphonomic environment not conducive for preservation and the possibility that heavy bioturbation caused by rodents introduced modern seeds (Kasper and McBride 2010; Trigg and Bowes 2007; Trigg et al 2007). Examination of uncharred remains at 72-226 and 102-44A revealed examples of fresh rodent gnawing and a very different set of taxa not likely to have been present in the mid-19th century or not likely to have survived post-depositional environments. For these reasons, uncharred materials were noted but not included in statistical analyses or interpretation.

Charred wood remains made up the majority of recovered botanical materials at both 72-226 and 102-44A. In most cases, 25 pieces of charred wood (or all of the charred wood in cases where less than 25 were available) were chosen by grab sample from each of the 41 samples analyzed in this study. Each woody taxon tends to burn differently, with some breaking off into large or small pieces, some being warped, and some being turned to ash (Smart and Hoffman 1988:174). A grab sampling strategy, in which the wood pieces are chosen with special attention given to choosing fragments of different sizes and shapes, is used to reduce preservation biases (Smart and Hoffman 1988:176). The chosen examples were examined under 10- to 60-x magnification dissecting microscopes and, when necessary, with a 200- to 600-x magnification compound microscope in order to taxonomically identify them to the finest level possible. In most cases, as with the charred seeds, this meant an identification of the genus. Wood sample identification was aided by published resources (Hoadley 1990) and the paleoethnobotanical comparative collections housed at the University of Massachusetts Boston.

The production of a digital microscopic photographic comparative collection was an important element of this research. Mountings of charred and uncharred examples of common New England seed, nut, and wood taxa borrowed from the comparative collections at the University of Massachusetts Boston were photographed using bisecting and compound microscopes ranging in power from 10- to 600-x magnification. This digital database led to increased speed of identification during this project and will remain as a resource for future paleoethnobotanical researchers working on projects based in New England (Figure 3.1).

Figure 3.1. Examples of Reference Materials Created for the
Digital Microscopic Photographic Comparative Collection



Recovered remains from both 102-44A and 72-226 were quantified and compared in order to interpret facets of Euro-American and Mashantucket Pequot subsistence strategies in the 19th century. The following chapters reveal first the results of the analysis discussed here, then a set of interpretations of those results.

CHAPTER IV

RESULTS

Recovery

A manual sorting and scanning of the 41 samples led to the recovery and identification of 44 different taxa from morphological categories including charred seed, wood, nutshell, bark, cupule, kernel, and rind (Tables 4.1, 4.2). The recovery rate of charred seeds was low relative to similarly-scaled macrobotanical analyses of historic Mashantucket houses (Kasper and McBride 2010; Trigg et al 2007). Only 94 individually identified seeds and related plant parts were recovered including two corn cupules and one corn kernel. Two charred seeds of indeterminate taxon were also recovered but were excluded from the statistical analyses. In contrast, the recovery of charred nutshell was significantly higher and included 283 finds of both complete shells and fragments. The total weight of all charred nut was 32.58g (Appendix Table 4). A total of 946 identified wood samples from 14 different identified taxa and several broad, descriptive categories such as “softwood” or “hardwood” were also recovered. Charred wood samples made up by far the largest percentage of the total recovered botanical material and weighed a total of 1,082.22g. The majority, 758, of the analyzed charred wood fragments were of hardwood species like oak, chestnut, or birch, while 146 came from softwood varieties such as hemlock, pine, and white cedar. A total of 30 samples of charred wood, weighing 0.76g, were determined to be unidentifiable.

Table 4.1. List of Identified Taxa and their Raw Counts at 102-44A

Common Name	Scientific Name	Raw Count	Common Name	Scientific Name	Raw Count
Cultigen Seeds and Related Plant Parts			Other		
Corn Cupules	*Zea mays*	2	Bedstraw	*Galium* sp.	1
Corn Kernels	*Zea mays*	1	Dock	*Rumex* sp.	1
Cucumber/ Cantaloupe Seeds	*Cucumis* sp.	1	Goosefoot	*Chenopodium* sp.	31
Gourd Rind	Cucurbitaceae	10	Grass (wild)		4
Fruits and Berries			Jimsonweed	*Datura stramonium*	1
Bayberry	*Myrica* sp.	2	Knotweed	Polygonaceae	3
Cherry (wild)	*Prunus* sp. (wild)	1	Mint	*Mentha* sp.	1
Chokeberry	*Aronia* sp.	1	Nightshade	*Solanum* sp.	1
Crowberry	*Empetrum* sp.	2	Sedge	Cyperaceae	1
Elderberry	*Sambucus* sp.		Sedge	*Carex* sp.	1
Grape	*Vitis* sp.	1	Plantain	*Plantago lanceolata*	1
Huckleberry	*Gaylussacia* sp.	10	Wood		
Raspberry	*Rubus* sp.	14	Maple	*Acer* sp.	27
Sumac	*Rhus* sp.	1	Birch	*Betula* sp.	2
Nutshell			Hickory	*Carya* sp.	2
Butternut	*Juglans cinerea*	91	Chestnut	*Castanea* sp.	74
Chestnut	*Castanea* sp.	1	Juniper	*Juniperus* sp.	1
Hazel	*Corylus* sp.	10	Pine	*Pinus* sp.	22
Hickory	*Carya* sp.	151	Oak	*Quercus* sp.	155
Walnut	*Juglans nigra*	5	Hemlock	*Tsuga* sp.	105
Walnut/Butternut	*Juglans* sp.	15	White Cedar	*Thuja* sp.	11
			Walnut/ Butternut	*Juglans* sp.	9

Table 4.2. List of Identified Taxa and their Raw Counts at 72-226

Common Name	Scientific Name	Raw Count	Common Name	Scientific Name	Raw Count
Cultigens			Nutshell		
Wheat	*Triticum aestivum*	1	Acorn	*Quercus* sp.	1
European Cereal		1	Hickory	*Carya* sp.	7
Fruits and Berries			Walnut/ Butternut	*Juglans* sp.	2
Sumac	*Rhus* sp.	1	Wood		
Bayberry	*Myrica* sp.	2	Maple	*Acer* sp.	48
Other			Hickory	*Carya* sp.	4
Goosefoot	*Chenopodium* sp.	2	Chestnut	*Castanea* sp.	169
Purslane	*Portulaca* sp.	1	Walnut/ Butternut	*Juglans* sp.	12
Dock	*Rumex* sp.	1	Pine	*Pinus* sp.	10
Hornbeam	*Carpinus* sp.	1	Oak	*Quercus* sp.	91
Pondweed	*Potamogeton* sp.	1	Hemlock	*Tsuga* sp.	1
Bittersweet	*Celastrus* sp.	1	Beech	*Fagus* sp.	2

Quantification

The ubiquity of all recovered wood, nut, and seed species was determined by dividing the number of samples in which a taxon was recovered at a given site by the total analyzed samples at that same site (Table 4.3). Ubiquity is an important tool in determining the relative importance of a specific taxon in inter-site analyses. It cannot be used to compare disparate taxa within a site due to differences in preservation factors associated with each seed type such as coat thickness and general hardiness. This makes it impossible to compare two different seed taxa based on ubiquity (Popper 1988:60-64). Ubiquities, instead, are used for comparing the same taxon across more than one context (Hubbard 1980:53; Popper 1988:61). This makes ubiquity a particularly sensible analysis choice for research based on multi-site comparison.

Table 4.3. List of Identified Taxa and their Ubiquities

Common Name	Scientific Name	102-44A Ubiquity	72-226 Ubiquity
Cultigens			
Corn	*Zea mays*	10.00%	0.00%
Cucumber/Cantaloupe	*Cucumis* sp.	5.00%	0.00%
Wheat	*Triticum aestivum*	0.00%	4.76%
European Cereal		0.00%	4.76%
Gourd	Cucurbitaceae	5.00%	0.00%
Fruits and Berries			
Bayberry	*Myrica* sp.	5.00%	4.76%
Cherry (wild)	*Prunus* sp. (wild)	5.00%	0.00%
Chokeberry	*Aronia* sp.	5.00%	0.00%
Crowberry	*Empetrum* sp.	10.00%	0.00%
Elderberry	*Sambucus* sp.	5.00%	0.00%
Grape	*Vitis* sp.	5.00%	0.00%
Huckleberry	*Gaylussacia* sp.	10.00%	0.00%
Raspberry	*Rubus* sp.	20.00%	0.00%
Sumac	*Rhus* sp.	5.00%	4.76%
Nutshell			
Butternut	*Juglans cinerea*	30.00%	0.00%
Chestnut	*Castanea sp.*	5.00%	0.00%
Hazel	*Corylus* sp.	10.00%	0.00%
Hickory	*Carya* sp.	30.00%	19.05%
Acorn	*Quercus* sp.	0.00%	4.76%
Walnut	*Juglans nigra*	5.00%	0.00%

Common Name	Scientific Name	102-44A Ubiquity	72-226 Ubiquity
Walnut/Butternut	*Juglans* sp.	20.00%	4.76%
Other			
Bedstraw	*Galium* sp.	5.00%	0.00%
Dock	*Rumex* sp.	5.00%	4.76%
Goosefoot	*Chenopodium* sp.	20.00%	9.52%
Grass (wild)		10.00%	0.00%
Jimsonweed	*Datura stramonium*	5.00%	0.00%
Knotweed	Polygonaceae	15.00%	0.00%
Mint	*Mentha* sp.	5.00%	0.00%
Nightshade	*Solanum* sp.	5.00%	0.00%
Sedge	Cyperaceae	5.00%	0.00%
Sedge	*Carex* sp.	5.00%	0.00%
Purslane	*Portulaca* sp.	0.00%	4.76%
Hornbeam	*Carpinus* sp.	0.00%	4.76%
Bittersweet	*Celastrus* sp.	0.00%	4.76%
Pondweed	*Potamogeton* sp.	0.00%	4.76%
Plantain	*Plantago lanceolata*	5.00%	0.00%
Wood			
Maple	*Acer* sp.	45.00%	47.63%
Birch	*Betula* sp.	10.00%	0.00%
Hickory	*Carya* sp.	5.00%	14.29%
Chestnut	*Castanea* sp.	55.00%	80.95%
Juniper	*Juniperus* sp.	5.00%	0.00%
Pine	*Pinus* sp.	45.00%	33.33%
Oak	*Quercus* sp.	85.00%	71.40%
Hemlock	*Tsuga* sp.	70.00%	4.76%
White Cedar	*Thuja* sp.	15.00%	0.00%
Walnut/Butternut	*Juglans* sp.	15.00%	33.33%
Beech	*Fagus* sp.	0.00%	4.76%

Recovered seeds were grouped by type into three categories: cultigens, fruits and berries, and other. Cultigens, including wheat (*Triticum aestivum*), corn (*Zea mays*), and cucumber, cantaloupe, or gourd (all from the family Cucurbitaceae), could have been grown in fields owned by the families at 72-226 and 102-44A or were possibly purchased at market. If purchased, these crops would likely have been bought through overseers for the reservation family living at 72-226 (McBride 1997). None of the cultigens were particularly prevalent at either site, and no taxon was found at both sites. Recovery of cultivated taxa also revealed a pattern counter to notions of traditional cultural practices of crop production. Wheat and another European cereal were recovered from the reservation household at 72-226, while corn and gourd were found at the Euro-American 102-44A house site.

The fruits and berries category, which includes elderberry (*Sambucus* sp.) and raspberry (*Rubus* sp.), are more widespread and prevalent than cultigens across both sites. These generally include wild, collected, and edible berries that grow in a variety of environments local to both sites. It is likely that these taxa were purposefully collected for human consumption.

The last category of recovered seeds, the weedy (or other) taxa, includes goosefoot (*Chenopodium* sp.), dock (*Rumex* sp.), and bittersweet (*Celastrus* sp.). These plants grow in vast variety of environments but are especially common in waste or disturbed areas. They are utilized by humans in many ways including for food and medicine. The presence of weedy taxa in features at 72-226 and 102-44A is probably due in part to purposeful utilization by these families and in part due to chance. It is not uncommon for these types of seeds to accidentally blow into hearth fires or be present during a post-occupational house burn. Weedy taxa do, at the very least, inform us somewhat about the ecological history of these sites.

Much like fruit and berry seeds, recovered nutshells are often interpreted to be collected items used primarily for human consumption. Nutshells recovered include acorns (*Quercus* sp.), hickory nuts (*Carya* sp.), and walnut/butternuts (*Juglans* sp.), among others. Ubiquities and proportions were calculated as a means of quantifying nutshell finds. The equivalency in this case is that the different nutshell taxa share a usefulness and purpose for the humans who actively collected them. For nutshells, the proportion was determined by dividing the total weight of a given taxon at one site by the total nutshell weight at that same site. Significant differences in taxonomic richness and total recovered weight may be evidence of inter-site deviation in behavior, including breadth of species collection (Table 4.4).

Table 4.4. Nutshell Weight and Proportions at 72-226 and 102-44A

Taxon	102-44A Weight (g)	102-44A Proportion	72-226 Weight (g)	72-226 Proportion
Butternut	23.41	72.41%	-	-
Chestnut	0.31	0.96%	-	-
Hazel	0.65	2.01%	-	-
Hickory	7.24	22.39%	0.19	76.00%
Walnut	0.10	0.31%	-	-
Walnut/Butternut	0.62	1.92%	0.05	20.00%
Oak	-	-	0.01	4.00%
Total	32.33	100.00%	0.25	100.00%

Wood taxa recovered included hardwoods such as oak (*Quercus* sp.) and chestnut, (*Castanea* sp.) and softwoods like hemlock (*Tsuga* sp.) and pine (*Pinus* sp.). In total, 931 individual fragments of wood were identified to at least the family level. These samples totaled 724.83g with individual examples ranging in weight from .01g to over 200g. After dividing the samples into two categories, proportions and ranks were used to learn how the families living at 72-226 and 102-44A may have utilized the different identified wood taxa. An observed rank order is an ordered list of recovered taxa from those of greatest proportion to those of least proportion at a given site (Popper 1988:64-66). Constructed observed rank orders can then be used in a comparative manner to analyze similarities and differences between 72-226 and 102-44A or can be compared to idealized rank orders (Table 4.5, 4.6). Idealized rank orders, with which observed rank orders will be contrasted will be discussed in significant detail in Chapter V.

Table 4.5. Total Observed Wood Proportions and Ranks at 102-44A

Taxa	102-44A Observed Ratio	102-44A Observed Rank
Oak (Red and White Combined) *(Quercus)*	73.75%	1
Hemlock *(Tsuga)*	18.77%	2
Chestnut *(Castanea)*	3.61%	3
White Cedar *(Thuja)*	1.81%	4
Pine *(Pinus)*	0.86%	5
Walnut/Butternut *(Juglans)*	0.29%	6
Maple *(Acer)*	0.28%	7
Birch *(Betula)*	0.09%	8
Hickory *(Carya)*	< 0.01%	9
Beech (*Fagus)*	-	-

Table 4.6. Total Observed Wood Proportions and Ranks at 72-226

Taxa	72-226 Observed Ratio	72-226 Observed Rank
Chestnut *(Castanea)*	85.50%	1
Walnut/Butternut *(Juglans)*	5.12%	2
Oak (Red and White Combined) *(Quercus)*	2.09%	3
Maple *(Acer)*	0.99%	4
Hickory *(Carya)*	0.23%	5
Pine *(Pinus)*	0.18%	6
Beech (*Fagus)*	0.03%	7
Hemlock *(Tsuga)*	< 0.01%	8
White Cedar *(Thuja)*	-	-
Birch *(Betula)*	-	-

Description of Identified Seeds, Nutshell, and Wood Taxa

The following is a brief description of each taxon identified in this research including information regarding economic value, perceived medicinal properties, ecology, geographic distribution, and possible utilizations by colonial Euro-American and Native American communities. This information will aid in the analysis and discussion of the ways in which the families living at 102-44A and 72-226 interacted with plants in their environments and how they may have utilized them to achieve their subsistence goals. Taxa are organized categorically by type, with alphabetization by common name within them.

Cultigens

Corn (Poaceae, *Zea mays*)

Corn or maize is a New World domesticated cereal that was cultivated in New England hundreds of years prior to the arrival to the area of English colonists (Bragdon

1996). By the mid-19th century corn was one of the most widely dispersed domesticated plants worldwide. Maize can grow in both dry and wet areas, an advantage it holds over European-introduced cultigens including wheat (Sumner 2004:16). Corn was eaten widely by both humans and animals in the 19th century, although Euro-Americans were known to prefer non-indigenous domesticates over corn from the 17th century on. One Englishwoman described the bread made of corn as a "more convenient food for swine than for men" (Leighton 1986:283-284). Maize was eaten in many ways including ground, in breads, in puddings, and directly off the cob (Sumner 2004:14-18, 44-45). Native peoples used corn products to treat poison ivy and to make bread, hominy, and other foods. It was also widely used in rituals and was perceived to be a plant of significant spiritual importance (Tantaquidgeon 1972:55,77).

Cucumber/Cantaloupe (Cucurbitaceae, *Cucumis* sp.)

Cucumis is a cultivated crop, prized by English colonists as a healthful and tasty food that could be grown easily. Cucumbers were grown in gardens along with other vegetables and were eaten in mixed salads during the summer and pickled for the winter. Cantaloupes were also commonly eaten. Melons, which were once only eaten by "great personages," became increasingly available to the average household and more common in local markets over the course of the 18th and 19th centuries (Leighton 1986:342). *Cucumis* was used by colonists as a dermatological aid and to treat heartburn (Leighton 1986:287-288).

Wheat (Poaceae, *Triticum aestivum*)

Introduced to North America by the earliest European colonists, wheat represented one of the most important Euro-American plants, both economically and symbolically (Prance and Nesbitt 2005:51-53). Wheat was eaten and used by individuals of both Euro-American and Indian heritage by the 19th century. In the colonial period, wheat was as closely associated with Western notions of religion, cuisine, and culture as corn was to the indigenous populations of southern New England.

The growing of wheat required very different agricultural practices than the crops traditionally grown in New England prior to European colonization. The forced change in land tenure necessary for extensive cultivation of European cereals is often associated with the struggles of native peoples in the 17th through 20th centuries (Den Ouden 2005; Mancini 2009; McBride 1990). During the colonial period wheat tended to be a significantly more expensive grain than other widely available cereals like corn (Sumner 2004:48).

Fruits and Berries

Bayberry (Myricaceae, *Myrica* sp.)

Normally found in sterile soils near coastlines, bayberry is best known for the common usage of its fruit's wax in making candles. This function was so important to colonial perceptions of the plant that it was often referred to as candleberry in 18th-century historic resources. It was cultivated as of 1699 for its wax as well as its bark, berries, and leaves which were used medicinally by colonial peoples (Foster and Duke 1990:254; Leighton 1986:250; United States Forest Service 1949:244). Bayberry's bark was used by native peoples as a treatment for kidney diseases and as a blood purifier and its roots were used to treat gynecological problems (Tantaquidgeon 1942:29,76; 1972:74, 130).

Wild Cherry (Rosaceae, *Prunus* sp.)

The genus *Prunus* is represented by around 200 species of deciduous shrubs and small to medium trees found in dry woods. Their fruits were commercially and ecologically important as both human and wildlife foods, and they were commonly used as shrubby ornamentals in colonial gardens (Foster and Duke 1990:290; Leighton 1987:361; United States Forest Service 1949:283-284). In historic documents, English colonists described the fruit of wild cherries to be too bitter and drying to eat and instead preferred imported varieties (Leighton 1976:229; 1986:271). The wild cherry was utilized by native peoples as both a food source and a medicine, with the bark and fruit being used to treat diarrhea, cold, cough, and dysentery (Sumner 2004:116; Tantaquidgeon 1928:264; 1942:27, 78; 1972:74, 130). The seed found charred at 102-44A is of a size more commonly associated with the indigenous, non-cultivated variety.

Chokeberry (Rosaceae, *Aronia* sp.)

Chokeberries, represented by three closely related species of deciduous shrubs, were commonly used as ornamentals but were not cultivated extensively in North America. The berries are edible and are known to be eaten by both humans and animals such as deer and small mammals (United States Forest Service 1949:90).

Crowberry (Ericaceae, *Empetrum* sp.)

The weedy crowberry was used by colonial peoples as a garden ornamental. It also has edible berries that are eaten by humans and, more commonly, forest wildlife. *Empetrum* was used by native peoples as a diuretic and to reduce fever in children (Leighton 1985:38).

Elderberry (Caprifoliaceae, *Sambucus* sp.)

The roughly 20 species of elderberries worldwide usually appear as small trees or shrubs that grow in rich soils and in successional areas near the edges of forests. Cultivated as of 1761, *Sambucus* has berries that are edible when ripe but poisonous when not. These berries were sometimes utilized in wine making. The fruits of the elderberry are also an important element of their ecology as a food for birds and small to medium mammals (Bailey 1949:935; Foster and Duke 1990:240; United States Forest Service 1949:329-331).

European elderberries were used extensively in England and indigenous species replaced them as a continuation of this tradition when colonists arrived in North America (Leighton 1986:252). The elderberry was used medicinally by Euro-Americans to treat dropsy, purges, gout, and general inflammations (Leighton 1986:297). The shrub was also prized as an important ornamental in colonial gardens (Leighton 1987:362). Native peoples utilized elderberry medicinally including the use of the leaves and stems as a blood purifier, as a poultice for sores, swellings, and healing wounds, and as a treatment for jaundice (Tantaquidgeon 1942:26, 1978, 1972:31).

Grape (Vitaceae, *Vitis* sp.)

Vitis are usually tree climbing vines that flourish in alluvial soils along streams and roadsides, in moist areas, thickets, and in forests. In Europe, grapes were used to make wines and raisins. Upon arriving in North America early colonists hoped to replicate this process. After discovering that indigenous species of grape were not practical for this purpose, *Vitis* came to be viewed as a healthy food option and preserve ingredient grown in both rural and urban gardens. These New World grape species were cultivated as of 1656 (Foster and Duke 1990:300; Leighton 1976:232-233; 1986:412-413; Medve and Medve 1990:190-191; United States Forest Service 1949:374).

Huckleberry (Ericaceae, *Gaylussacia* sp.)

The huckleberry, a deciduous low shrub, was first cultivated in 1772. Its berries are edible and were eaten by both humans and forest wildlife (United States Forest Service 1949:188). Some native peoples used an infusion of huckleberry roots as a gastrointestinal aid (Speck et al 1942:34).

Raspberry (Rosaceae, *Rubus* sp.)

The raspberries, made up of around 400 species of mostly deciduous shrubs and vines that grow along roadsides, in fields, and at the margins of woodlands were prized in colonial times mostly for their edible fruit. Raspberry was first cultivated for that fruit in the late 19th century. Raspberry flourishes in cleared and burned areas. The many species of *Rubus* hybridize freely which can make identification to species difficult (Medve and Medve 1990:132-133, 146-147; Sumner 2004:120-121; United States Forest Service 1949:325).

The fruit of raspberry was used extensively in the colonial period to make preserves, pies, and wines (Sumner 2004:100-101). Leighton (1986:252) states that colonists believed raspberries to be good as a lotion for sores, toothaches, and eye irritation. Native peoples used *Rubus* as a part of a compound to treat many ailments including boils, impure blood, urinary tract infections, high blood pressure, and ailments of the gums (Herrick 1977:355).

Sumac (Anacardiaceae, *Rhus* sp.)

The sumacs, comprising roughly 150 species of deciduous shrubs, are generally found in dry, rocky soils. The foliage and bark of sumac is rich in tannin and is, in some species, poisonous to the touch. Some species of this shrub were cultivated as of the 1620s and became highly prized as ornamentals in colonial gardens (Foster and Duke 1990:250; Leighton 1987:362; United States Forest Service 1949:313). Colonists used sumac medicinally to treat toothache and fluxes, while native peoples utilized the roots of *Rhus* to treat venereal disease and its berries to treat diarrhea and sore throat (Leighton 1986:401; Tantaquidgeon 1942:28, 78; 1972:33, 75, 132).

Other Seed Taxa

Bedstraw (Rubiaceae, *Galium* sp.)

Bedstraw is a weedy plant that grows throughout the Western hemisphere as well as in the Old World. It usually thrives in thickets on dry roadsides (Leighton 1986:248-249; United States Department of Agriculture Plant Database). Its name is derived from the common practice of using the plant to stuff pillows, but bedstraw is also useful in the process of curdling milk and dyeing cheese (Leighton 1986:248-249). Bedstraw was used by native people in a compound as a love potion (Herrick 1977:440).

Bittersweet (Celastraceae, *Celastrus* sp.)

Bittersweet, a deciduous woody vine, is most commonly found in rich thickets along fence lines or in thick woods. Bittersweet was cultivated originally in 1736 and was prized as an ornamental and as a staple in colonial gardens. It also served as an important element of forest ecologies as it provided game cover and food for small to medium mammals and birds (Foster and Duke 1990:298; Leighton 1986:375; United States Forest

Service 1949:125). An infusion of bittersweet was used by native peoples to treat liverspots, the roots for consumption, and a poultice for skin eruptions (Tantaquidgeon 1942:66,82, 1972:37).

Dock/Sorrel (Polygonaceae, *Rumex* sp.)

Dock and sorrel are weedy taxa found throughout the Northeast, primarily flourishing in waste areas and acidic soils (Foster and Duke 1990:214). In the colonial period *Rumex* was commonly used by Euro-Americans as a type of lettuce to eat with meat and sauces (Leighton 1986). Similarly, the leaves of *Rumex* were used as a foodstuff in pies, salads, and other dishes by native peoples. Native New Englanders also utilized *Rumex* as a blood purifier, and as a treatment for jaundice and stomach ailments (Tantaquidgeon 1942:28, 78; 1972:33, 59, 75, 132). Euro-Americans were known to use the plant to treat fluxes, and would boil the leaves in vinegar for itches (Leighton 1986).

Goosefoot (Chenopodiaceae, *Chenopodium* sp.)

Chenopodium, which is represented by approximately 150 species worldwide, was a staple crop in the agricultural complex of the native peoples' of the Northeast prior to the arrival of Europeans. Goosefoot thrives and grows in cleared, burned, or disturbed areas and at the edges of fences and roadways. It can commonly be found growing in gardens, fields, and waste areas (Foster and Duke 1990:216; United States Department of Agriculture Plant Database). Mohegans, Pequots, and other native people in southern New England cooked and ate *Chenopodium* in a number of dishes (Tantaquidgeon 1972:83). Goosefoot was used in an infusion to treat diarrhea and as part of a compound in the treatment of burns and as a gynecological aid (Herrick 1977:316).

Hornbeam (Betulaceae, *Carpinus* sp.)

Hornbeam is a small deciduous tree that flourishes in rich, moist soils found in the understory of mixed forests (United States Forest Service 1949). An infusion of root and bark was used by New England native peoples as a tonic and as a gynecological aid (Tantaquidgeon 1942:68).

Jimsonweed (Solanaceae, *Datura stramonium*)

Jimsonweed is an annual weed with a purple and white flower often used in colonial gardens but also found in waste areas (Foster and Duke 1990:182; Leighton 1987:305). The plant is poisonous and can be fatal if consumed (Cox 1985:270). The seeds were sometimes used as a hallucinogen, but were also used to treat asthma, alcoholism, pain, and hemorrhoids (Bowes 2009:43; Tantaquidgeon 1942:31,74). Jimsonweed was also used by native peoples as a poultice to treat cuts and bleeds (Tantaquidgeon 1972:72,128).

Mint (Lamiacaeae, *Mentha* sp.)

Mints are perennial herbs found most often in waste areas, pastures, on roadsides, or in fields. The usually flourish in damp soils (Foster and Duke 1990:68; Moerman and Moerman 1990:94-97). Mints were often cultivated in gardens as their oils were used in salads and in medicines (Leighton 1986:343-344).

Nightshade (Solanaceae, *Solanum* sp.)

Nightshade is represented by many species of weedy plants that grow in disturbed soils and waste areas and are particularly prevalent in areas adjacent to gardens, yards, and fences. Some species of nightshade have edible fruits, while the fruits of others are poisonous (Foster and Duke 1990:42). Native peoples in the Northeast used a compound containing the root of nightshade to treat fever (Tantaquidgeon 1942:80).

Knotweed (Polygonaceae, *Polygonum* sp.)

The knotweeds, encompassing many species, are usually weedy or woody herbs that inhabit nearly all types of environments but are especially prevalent in waste areas. Nearly all parts of the plant are edible and would have been eaten widely in the colonial period (Foster and Duke 1990:160). Knotweeds were used medicinally by native peoples as a part of a poultice or decoction to treat fever, chills, headaches, diarrhea, and general stomach issues (Herrick 1977:313).

Plantain (Plantaginaceae, *Plantago lanceolata*)

The plantains are an invasive weedy taxa found in waste places, along roadsides, and in open fields. It was originally introduced to the Northeast by European colonists (Foster and Duke 1990:72; Medve and Medve 1990:54-55). Plantains were eaten as a leafy vegetable and steeped in teas by native peoples. Northeast natives also used the plant medicinally as a poultice for bruises, burns, and snake and insect bites (Medve and Medve 1990:54-55; Tantaquidgeon 1928:266; 1942:66, 82; 1972:37, 74, 83). Euro-Americans grew plantains in their gardens as a medicine to treat fluxes, ulcers, arthritis, and inflammation of the eyes (Leighton 1986:366).

Purslane (Portulacaceae, *Portulaca* sp.)

The purslanes are an edible weedy plant comprising over 100 species worldwide, with only a few being common in the Northeast of North America. They were found in waste areas and were especially prevalent in recently disturbed soils (Foster and Duke 1990:96; Medve and Medve 1990:26-27). Purslanes were often grown purposefully by colonial gardeners in between beds, where they flourished. They were eaten by colonial and native people alike as an herb or leafy green, often in salads with oil, salt, and vinegar. Purslane was used medicinally as a treatment for cough, ulcers, inflammation, fluxes, tooth pain, and as a poultice for bruises and burns (Herrick 1977:318; Leighton 1986:371-372; Medve and Medve 1990:26-27; Sumner 2004:34). Historic resources suggest that purslane was commonly used by morally-minded colonists to "extinguish the heat and virtue of natural procreation" (Leighton 1986:371-372).

Pondweed (Potamogetonaceae, *Potamogeton* sp.)

Pondweed is a freshwater aquatic found throughout North America. *Potamogeton* is an important part of freshwater ecologies (United States Department of Agriculture Plant Database). Some native groups were known to use pondweed to make strong cordage useful in the production of nets and rope (Zigmond 1981:53). It is possible that the presence of pondweed in hearths at archaeological sites suggests the utilization of local freshwater sources for water, as pondweed could have been carried in and then inadvertently charred during the cooking process.

Sedge (Cyperaceae, *Carex* sp.)

The sedges, consisting of between 800 and 900 species worldwide, are a grass-like plant found in wetlands and uplands (United States Forest Service 1949). The leaves of these plants were used for basketry and matting by native peoples (Moerman 1998:99). Sedges were used in native medicines for stomach troubles and as an emetic (Herrick 1977:275). The presence of sedges in archaeological sites can be interpreted as evidence of fresh water utilization. Sedge seeds would have to be carried in and inadvertently charred to be present in a hearth feature.

Nut and Wood

Beech (Fagaceae, *Fagus* sp.)

The beeches include ten species of medium-sized deciduous trees often found in rich woods. They were first cultivated around 1800. The beech has edible nuts and was, during the period, used as a garden ornamental. Beech was prized as a quality fuel wood and was also used for charcoal production, and the construction of baskets and crates (Foster and Duke 1990:288; United States Forest Service 1949:174-175; Panshin and Zeeuw 1970:559). The bark of the beech was used by native peoples as a wash for poison ivy, and as a treatment for consumption while the leaves were used to treat burns (Herrick 1977:302; Speck 1942:34).

Birch (Betulaceae, *Betula* sp.)

There are approximately seven species of birch in North America, each of them a deciduous tree or shrub. Some species were used for lumber, some as ornamentals, and still others for fuel, furniture, toys, agricultural implements, doors, sashes, and pulpwood, and by native peoples to make canoes, baskets, house coverings, and utensils (Panshin and Zeeuw 1970:555; Speck 1951:258; United States Forest Service 1949:99-103). Birches are found in rich woods and are also "pioneer species that quickly establish cover on cut-over and burned lands" (United States Forest Service 1949:99). Birch bark is very useful as kindling to start fires, but was also used as a cathartic or emetic in native medicine (Foster and Duke 1990:294; Medve and Medve 1990:200-201; Tantaquidgeon 1928:266, 1942:25, 1970:128).

Butternut (Juglandaceae, *Juglans cinerea*)

Found in similar environments as walnut, butternut was valued for crafting furniture, cabinetwork, boxes, crates, sashes, doors, and toys and has nuts which are equally good sources of nutrition. Butternut was reported to be cultivated as of 1633 (Panshin and Zeeuw 1970:539; United States Forest Service 1949:201). A compound of butternut bark was used by Native Americans to treat toothache and tuberculosis, as well as a laxative and a treatment for bleeding wounds (Herrick 1977:294-295).

Chestnut (Fagaceae, *Castanea* sp.)

Chestnut is a medium-sized deciduous tree that grows in mixed forests throughout New England. The tree was nearly wiped out by a blight caused by the sac fungus *Cryhonectria parasitica*, thought to originate in Asia, starting in 1904 (Freinkel 2007:28-47). Prior to this event, chestnut was "ranked as one of [the] most important and valuable timber species" (United States Forest Service 1949:112). Cultivated since 1800, *Castanea* had many uses including fence posts and poles because of its high durability and hardness, furniture, sashes, doors, and plywood for house construction (Panshin and Zeeuw 1970:560-561). Tannin, a chemical leached from organic material and used in the industrial tanning process, is particularly prevalent in chestnut and "only in the case of chestnut…is the extraction of tannin economical, and this is because the extracted wood chips are then" reused for other purposes (Brown et al 1952:738). *Castanea* nuts are also a good food source and can be eaten with little to no processing when removed from the tree (United States Forest Service 1949:112). Chestnut leaves were used by native peoples to treat rheumatism, colds, and whooping cough (Tantaquidgeon 1928:265; 1972:71,128). Jacobucci (2006:105) used pollen analysis to conclude that in the centuries leading up to the colonial period, chestnut became a dominant taxon on the Eastern Pequot reservation and that there was a "very real possibility that human intervention played in important role in the increase of this species".

Hazelnut (Corylaceae, *Corylus* sp.)

There are approximately 15 species of the shrubby plant hazelnut, which naturally inhabits thickets at the margins of forests. Cultivated as early as 1798, *Corylus* has edible nuts that are eaten by wildlife and can be easily collected, processed, and stored for human consumption (Foster and Duke 1990:256; United States Forest Service 1949:151-153). Medicinal uses for hazelnut during the historic period included the treatment of hay fever and gastrointestinal problems (Herrick 1977).

Hemlock (Pinaceae, *Tsuga* sp.)

The hemlocks, comprising roughly ten species of medium to large evergreen trees, are most commonly found on hills and in rocky woods. In the colonial period, hemlock was most often used for the production of boxes and crates, as pulpwood, in tannin extraction, as an ornamental, and for framing, sheathing, roofing, and subflooring (Foster and Duke 1990:258; Panshin and Zeeuw 1970:478; United States Forest Service 1949:361). New England native peoples utilized the roots and twigs of hemlock medicinally for the treatment of rheumatism and stiff joints (Tantaquidgeon 1942:30, 80, 1972:36).

Hickory (Juglandaceae, *Carya* sp.)

The hickories are represented by 20 species of large trees found in mixed forests. Hickory wood was valued very highly as both a fuel wood and lumber (United States

Forest Service 1949:109-111). The wood was used widely for tool handles, furniture, and agricultural implements due to its hardness and strength. Hickory wood was also used for smoking meat and fuel wood because of its "high caloric value" (Panshin and Zeeuw 1970:543). Hickory nuts are a good source of fats, proteins, and carbohydrates and require little processing before consumption by humans (Gibbons and Tucker 1979:50). The bark of *Carya* was used as a gynecological aid and as a tonic while other parts of the plant could be used in a poultice to treat arthritis (Herrick 1977:297; Tantaquidgeon 1942:68).

Juniper (Cupressaceae, *Juniperus* sp.)

The approximately 40 species of juniper worldwide are evergreen shrubs or trees that are found in infertile soils and pastures and often grow near the seaside. They were commonly used in colonial gardens as ornamental hedges. Juniper wood was used for interior finishing, sashes, doors, and closet linings due to its moth-repelling qualities. It was also an excellent wood for posts and poles because of its high durability and resistance to rot. Juniper oil was regularly used in the colonial period for the production of gin (Foster and Duke 1990:262; Leighton 1987:370; Panshin and Zeeuw 1970:500; United States Forest Service 1949:205-210). Native peoples took the bark of juniper as a tonic, especially for "women's diseases" (Tantaquidgeon 1942:68,82, 1972:110) and were reported to "never burn it," for reasons not entirely understood by early English colonists (Leighton 1986:320).

Juniper was found in only one context: a construction feature at 102-44A. It was represented by a single uncharred medium-sized plank with obvious signs of working. Because it was uncharred, and therefore apparently submitted to an atypical set of preservation factors, the juniper weight was left out of most calculations analyzed in this paper.

Maple (Aceraceae, *Acer* sp.)

Maples are deciduous, medium to large trees and shrubs found in moist soils in fields and in rich hilly woods (United States Forest Service 1949:62-68; Foster and Duke 1990:268). Maple was commonly used for charcoal production, was valuable as a fuel wood, and was prized for furniture and flooring due to its hardness and quality of finishing. Maple was also regularly used to produce crates, toys, boxes, sashes, and doors (Panshin and Zeeuw 1970:603-604). Mohegans regularly used the sap of maple as a sweetener and to make syrup, while other native groups used an infusion of maple bark to treat coughs and the spitting up of blood (Speck 1917:311; Tantaquidgeon 1928:269; 1972:69, 128).

Oak (Fagaceae, *Quercus alba*, *Quercus rubra*, and *Quercus* sp.)

The oaks, represented by around 275 species worldwide and approximately 54 in the Americas, are small to large trees with edible nuts and highly valuable timber. Oaks are usually found in dry woods (Foster and Duke 1990:278, 280; United States Forest Service 1949:297-304). Oak's nuts, usually referred to as acorns, can be eaten but require a great deal of labor and processing due to their having high levels of inedible tannin (Medve and Medve 1990:204-5; Šálkováa 2011:139-147).

Quercus alba, or white oak, is often found in well-drained soils and was first cultivated in 1724. It was utilized extensively for lumber and fuel. White oak acorns can be eaten in very small doses without incurring tannin poisoning, but require processing for extensive use (United States Forest Service 1949:297-304). White oak was used to make fence posts, tight cooperage, flooring, furniture, and house construction because of its hardness and resistance to abrasion. It was also used as a high value fuel wood (Panshin and Zeeuw 1970:572). Red oak (*Quercus rubra*) is not as useful for posts because it is less resistant to decay but is utilized in other ways (Panshin and Zeeuw 1970:568). Oak was used by native peoples medicinally to treat coughs, hoarseness, sore throat, ulcers, bruises, and as a disinfectant. It was also used as a gynecological aid (Tantaquidgeon 1928:266, 1942:25,78, 1972:30,75,122).

For the purposes of the quantitative analyses used in this research, red and white oaks have been combined. Primarily, this decision was made to keep all woody taxa at the same specificity of identification, that is to say genus, in order to help regulate an even analytical scope.

Pine (Pinaceae, *Pinus* sp.)

Pine trees are evergreens that grow in dry, sandy soils and can either grow in large stands or be a part of a mixed forest consisting of both deciduous and evergreen species (Harlow 1957:34; Jacobucci and Bowes 2009:2-3). Pines, represented by roughly 80 species, were considered timber trees and were used for lumber, pulpwood, and poles but were also utilized as ornamentals for landscaping (United States Forest Service 1949:260-267). *Pinus* can also be found used in boxes, crates, caskets, toys, signs, and other small wooden objects and was selected for these purposes because of its uniform texture (Panshin and Zeeuw 1970:454). Resources from pine were used by native peoples to make an infusion for kidney disorders, a poultice for boils, and to treat colds and coughs. (Tantaquidgeon 1928:269, 1942:68, 1972:74, 130).

White Cedar (Cupressaceae, *Thuja* sp.)

The white cedars, comprising approximately six species, are medium sized evergreen tress normally found in swamps and rocky woods. *Thuja* is commonly referred to as white cedar because it is not a true cedar (*Cedrus)* which is a part of the Pinaceae family. Cultivated as of 1536, *Thuja* was often found in colonial gardens as an ornamental hedge used to protect planting rows from winter weather. Some white cedar lumber was valued highly because of its durability. This characteristic made white cedar an ideal and common choice for posts and poles throughout the colonial period. The leaves and branches of *Thuja* were used medicinally by Native Americans as a panacea (Foster and Duke 1990:90; Leighton 1987:373; Moerman 1998:557; Panshin and Zeeuw 1970:492; United States Forest Service 1949:354-356).

Black Walnut (Juglandaceae, *Juglans nigra*)

Represented by approximately 15 species of deciduous trees, walnuts are usually found in rich woods and were first reported to be cultivated in 1686. Walnut wood is highly valued for construction purposes, and its nuts are an important food source for humans and wildlife alike. Walnut was often used to craft furniture, trim, cabinetwork, doors, sashes, and frames and was prized as a landscaping ornamental (Foster and Duke 1990:276; Panshin and Zeeuw 1970:540; United States Forest Service 1949:201). Walnut was used by native peoples to treat inflammation, ringworm, fleas, and as an emetic and cathartic (Tantaquidgeon 1942:24,26, 1972:29).

Each of the taxa recovered from both 72-226 and 102-44A have their own histories. They thrived and died in the shifting ecological settings of the 19th century. Each species of fruit, berry, weed, cultigen, wood, and nut recovered was perceived by peoples of different groups to have many shades of meaning. The following chapter will explore some of those meanings and how each taxon recovered at each household might have been used by the families inhabiting that space and time.

CHAPTER V

INTERPRETATION AND DISCUSSION

The results reveal that the subsistence strategies and practices employed by those families residing at 72-226 and 102-44A were complex and varied. Interpreting these results, therefore, is likely to reveal that the lives lived by native and non-native people were fittingly complex. Regional realities such as deforestation, colonial power shifts, state and regional labor markets, and the powers imbued to reservation overseers by the colony/state of Connecticut may have been further factors. In this chapter, interpretations of the materials researched herein along with a discussion of their meanings is undertaken in an attempt to enlighten our understanding of 19^{th}-century subsistence, social practice, and labor.

A discussion follows in which I explore two topics. The first will be an analysis of each household's subsistence strategies and their interaction with regional and local labor. I address this issue in order to determine why each household chose different subsistence practices in order to achieve similar goals. Second, interpretations will be made of each household's utilization of forest resources, with a particular focus placed on wood and nuts. These issues are raised in order to determine the reasons for inter-site variability in recovered wood and nut taxa.

Subsistence Strategies and the Importance of Labor Participation

The primary goal of this thesis is to reveal the reasons these households selected different strategies to achieve similar subsistence goals. I will argue here that differential participation in the broad regional labor and commodity markets of the 19th century may have been a factor. Before discussing the differences, it is important to note that some material similarities between the two sites exist. Both sites had very low ubiquities, absolute counts, and richness of cultigen seeds, which included cereals like corn and wheat as well as garden crops. These low quantities may indicate that both groups were purchasing their grain ground into flour from local markets. A possible reason for this includes an agricultural focus on raising livestock rather than a focus on growing cereals. Chapter II revealed that livestock grazing was the most prevalent occupation in Connecticut during the 19th century. The results of this survey are insufficient to test whether this was the case at these households, but further zooarchaeological analysis or geochemical testing could reveal the extent to which animal husbandry was practiced at either site. It seems likely that these households were not garnering much revenue or foodstuffs from the growing of cultivated cereals. However, charred wood analysis at the sites reveal different means by which these families might have subsisted based on the commodities culled from their access to forest lands.

One possibility is that each family was producing tannin for either private use or for sale to local industries. Hemlock and chestnut, two taxa recovered at high rates at 102-44A and 72-226 respectively, were considered to be economically important during the 18th and 19th centuries. Because of their high tannin contents, these tree species were highly sought after by Connecticut's burgeoning tanning industry during the sites' occupations (Brown et al 1952:738; Hergert 1983). Tannin is a natural chemical compound used in leather tanning processes. While most tree species have some tannin in their bark, leaves, or heartwood, most are difficult or economically impractical to exploit.

In the case of hemlock, "tannic acid was leached from bark with water to form a weak solution in which hides might soak" (Hergert 1983:92). For this reason the tanning industry sought out hemlock from the earliest days of the colonial period. Chestnut was considered to be "the principal domestic source of tannin; obtained by soaking the wood chips in hot water and evaporating the resulting liquor to the desired concentration" (Panshin and Zeeuw 1970:561). It is also important to note that both of these processes, the soaking of hemlock barks and chestnut wood chips, left remains that were still suitable to use as fuel (Hergert 1983:93). This meant that these processes could have been carried out at both sites with the remains still appearing in hearth features. Brown et al (1952:738) point out specifically that "in the case of chestnut…the extraction of tannin is economical" because the wood chips are "reused for other purposes."

Tanning was primarily a cottage industry throughout the 17th and 18th century, with most households producing their own tannin (Hergert 1983). The 19th century brought a change, however, when small industrial tanneries grew along the river ways of southern New England. Proximity to stands of hemlock and chestnut were considered vital to the industry (Hergert 1983:92). Over time, however, the industry's access to these resources became barred. The deforestation of hemlock stands and "the death of the chestnut [due to blight] essentially left the tanning industry without a source of domestic tanning material" by the late 19th century (Hergert 1983:93).

With an industry desperate for forestland resources nearby and influenced by a long tradition of household production, I posit that the inhabitants of 72-226 and 102-44A may have utilized their wood for tannin production prior to consuming it for fuel. This could provide an explanation for the high proportion of hemlock in hearths at 102-44A and the overwhelming abundance of chestnut in the fireboxes at 72-226. Since both chestnut and hemlock were highly sought after for their high levels of and easily extractable tannin, each household may have been felling these specific trees for this purpose. Why one household chose chestnut and the other hemlock may be the result of differential access or differential knowledge of what trees were best suited for tannin production.

Similar practices were being performed by other native communities in the 19th century. Those with access to uncleared lands were finding a myriad of ways to turn their forestlands into profit. Writing in 1792, Daniel Gookin (1792:184) pointed out an example in Massachusetts in which Indians earned "many a pound, by cutting and preparing shingles and clapboards, which sell well at Boston and other English towns adjacent." It is not hard to imagine reservation Mashantuckets making similar use of their forest resources to turn tannin into profit. While this offers an explanation for the high proportions of certain woody taxa, it does not explain many of the weedier plants prevalent at both sites.

Weedy taxa can be used as evidence for a number of archaeological interpretations. Some types of weedy plants are eaten as food, others used as medicines, and most can inform an understanding of the landscape. The use of medicinal plants has been described as an important element of those practices associated with promoting good health and overall well-being in a community (Mrozowski et al 2008). The presence of a wide variety of taxa not catalogued as cultigen or fruit/berry (described herein as “other”) could be evidence of both medicinal and other practices. The following tables provide a list of the relevant taxa, their ubiquities, and their common usages as described in detail in Chapter IV (Table 5.1, 5.2).

It is crucial to note, however, that the relatively low raw counts and ubiquities limit the interpretability of these households’ seed remains. It is difficult to extrapolate medicinal and other types of plant utilization based on such a small representative sample. What follows are a few ways in which household members may have used the plants from which recovered seeds originated. They do not suggest a high degree of probability that they were actually used in these ways.

Table 5.1. 72-226 Uses of Weedy Plants

Common Name	Scientific Name	Ubiquity	Uses
Goosefoot	*Chenopodium* sp.	9.52%	Treat diarrhea, burns, gynecological aid. Food.
Purslane	*Portulaca* sp.	4.76%	Treat cough, ulcers, inflammation, fluxes, tooth pain, bruises, burns. Food.
Dock/Sorrel	*Rumex* sp.	4.76%	Blood purifier. Treat jaundice, stomach aches, fluxes, itches. Food.
Hornbeam	*Carpinus* sp.	4.76%	Used as tonic. Gynecological Aid.
Pondweed	*Potamogeton* sp.	4.76%	Used to make cordage.
Bittersweet	*Celastrus* sp.	4.76%	Treat liverspots, consumption, skin problems.

Table 5.2. 102-44A Uses of Weedy Plants

Common Name	Scientific Name	Ubiquity	Uses
Bedstraw	*Galium* sp.	5.00%	Used to stuff pillows, in cheese processing, as a love potion.
Dock/Sorrel	*Rumex* sp.	5.00%	Blood purifier. Treat jaundice, stomach aches, fluxes, itches. Food.
Goosefoot	*Chenopodium* sp.	20.00%	Treat diarrhea, burns, gynecological aid. Food.
Jimsonweed	*Datura stramonium*	5.00%	Used as hallucinogen. Treat asthma, alcoholism, pain, hemorrhoids, cuts.
Nightshade	*Solanum* sp.	5.00%	Treat fever.
Sedge	Cyperaceae sp.	10.00%	Treat stomach ache. Used as emetic. Used to make baskets and matting.
Plantain	*Plantago lanceolata*	5.00%	Treat bruises, burns, bites, fluxes, ulcers, arthritis, eye problems. Food.

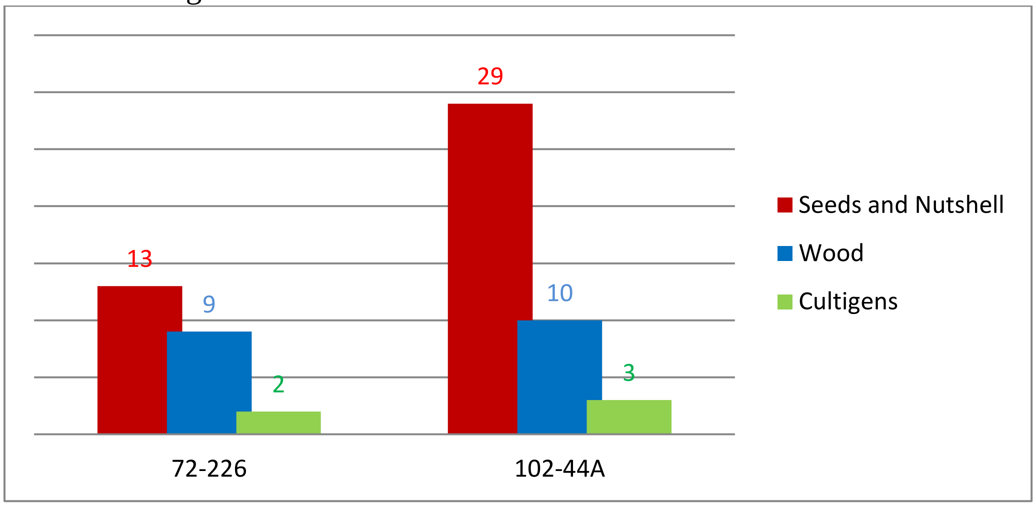
According to these findings, it is possible that individuals at 72-226 and 102-44A may have been creating medicines to treat a wide variety of ailments including burns, bruises, diarrhea, stomach ailments, gynecological problems, blood impurities, and jaundice. Several of these plants are used not on their own, but as parts of tonics or poultices. Considering the wide variety of taxa represented, it is possible that complex combinations were used to make such tonics and poultices, which, according to Tantaquidgeon (1928, 1942, 1972) and others, were commonly used as household cures (Herrick 1977; Leighton 1976, 1985, 1986, 1987; Speck 1917). Other seeds could have come from plants used to create cordage, netting, or other household items that would have been important for filling other roles in subsistence practices. Most of these plants grow in cleared and disturbed areas and their presence fits the environmental patterns presented throughout this thesis.

Thus far, interpretation has been limited to practices at the household level. The data recovered in this study, however, can also be used to explore the means by which Euro-Americans and Mashantucket Pequots acted in their social and economic spaces at the regional scale. Reflected in these results are interesting differences in the ways in which these two groups achieved their subsistence goals by engaging with regional economies.

Mashantucket participation in the labor market during the colonial period was highly fluid. Many employers including whaling vessel owners, trans-Atlantic shippers, industrial factories, and agriculturists were desperate for labor in the 19th century, and Mashantuckets living on or near the reservation often filled their gaps (Mandell 2008:27-34). Taxonomic richness, which is an absolute count of the number of unique taxa recovered, may help validate historic accounts of Mashantucket labor and their tendency to be away from the reservation for long periods of time.

Figure 5.1 shows the number of seed and nut taxa recovered from each site as well as the same statistics for charred wood and cultigens. A comparison of the taxonomic richness of wood and cultigens reveal similarities in the usage of these category. In contrast, there is a significant difference between the sites in regards to seeds and nutshell. There were more than twice as many seed and nut taxa recovered from the Stonington Euro-American household than from the household located on the reservation.

Figure 5.1. Taxonomic Richness at 72-226 and 102-44A



*See tables 4.1 and 4.2 for complete list of taxa from each site. Taxonomic richness is an absolute count of the number of unique taxa recovered from each site.

I posit that this difference in richness reflects the amount of time spent by individuals at each homestead. The lower taxonomic richness at 72-226 may be the result of fewer meals and a relatively lower plant diet breadth at this site. Due to the increased participation by Mashantuckets, especially men, in the regional economy and the nature of their labor, Pequots were often off-reservation for days, weeks, or months at a time. Mashantucket women also spent long periods of time away from the reservation selling handmade wares like baskets and brooms (Law 2008; Mandell 2008:xvii). Mashantuckets may have been taking their meals on the Euro-American farms to which they were indentured or on whaling vessels on which they labored. The most significant differences are among fruits, berries, and nutshells which imply that there is a larger breadth of local collected food plants at the Euro-American household. While it is unlikely that the reservation household was regularly abandoned altogether, it is possible that its total population at any given time was lower than that of the household at 102-

44A. This decreased intensity of occupation may be a factor in the lower numbers of local taxa recovered.

It is possible that families at 102-44A prepared and took meals at home more often than those at 72-226. The interpretation of taxonomic richness supports historic documents that portray the residents at 102-44A as farmers and employers of people of color. In addition to the owners, two boarders, one of whom was a Mashantucket Pequot, lived and worked at 102-44A (Mancini et al. 2003). Meals at 102-44A would have required the use of a variety of raw materials including cultigens, nuts, and berries. The higher proportion of fruits and berries to cultigens implies that the inhabitants of 102-44A relied more heavily upon the resources of the woodlands and farm fringes to support a varied diet than the inhabitants of 72-226.

Some limitations to this analysis must be noted. Due to differing sampling strategies at the time of excavation, more soil was available for analysis at the Euro-American 102-44A (286.25 l) than at the Mashantucket 72-226 (173 l). This larger amount of soil could account for some of the deviation in richness since it does increase the chance that rarer taxa would be recovered. A second consideration that must be accounted for is period of occupation. Historic records suggest a length of occupation at the Euro-American household of more than a century. Although this analysis affords no way to accurately test it, length of habitation at 72-226 may have been shorter. However, the similarities in the richness of wood and cultigen taxa revealed in Figure 5.1 add some support to the interpretation that the differences in taxonomic richness at these two households are the result of subsistence practices rather than of sampling bias.

Weaknesses in this interpretation due to low recovery rates of seeds from food taxa are ameliorated by very high rates of recovery of nutshell. The amount of nutshell recovered from 102-44A is much higher than that found at 72-226 by all statistical analyses including raw counts, proportions, ubiquities, and richness (Appendix Table 4, Table 5.5). Every category of seed taxa was more highly represented at 102-44A than at 72-226 (Appendix Tables 2, 3, and 4). The categorical exception to these richness trends is cultigens. Only a few cultigen seeds were recovered from either site. While this low recovery rate was unsurprising, the types of cultigens found at 72-226 and 102-44A raised interesting questions about the nature of plant usage in regards to identity maintenance and cultural continuity.

There are some signs that long-term culture change was at work at both sites at least in regards to the raw materials selected for food preparation. The cultigens recovered at both sites were completely antithetical to expectations. Corn and gourd, indigenous species to the western hemisphere and used by native peoples in southern New England for a millennium, were found exclusively at the Euro-American inhabited 102-44A. Wild cherries, described by Leighton (1986:271) as unpalatable to European tastes in the 17th and 18th centuries, were also found at 102-44A. In contrast, wheat and another unidentified cereal of definite European origin, but no indigenous corn, were recovered from hearths at 72-226. Answering the question as to why these individuals were acting counter to the notions we, as researchers, expect is an important step in understanding culture change and the not-mutually-exclusive idea of cultural continuity at these two sites.

These findings provide evidence to discount notions of a one-sided acculturative model during the reservation period, at least in regards to food. Here, we see both Euro-Americans and Native Americans selecting ingredients traditionally associated with the opposite group. Does this suggest that each culture was moving towards the other, towards hybridization? More likely, this is evidence that individuals at both sites were participating widely in what was quickly becoming a regional, Atlantic, and even global economy that was exploding in both breadth and complexity. The inhabitants of both 102-44A and 72-226 were participating in varied forms of production, procurement, and the labor that made these possible for the purposes of their households' subsistence. Participation in this complex system allowed them to select from a greater number of plants than ever before.

With the exception of two corn cupules at 102-44A, all of the recovered cultigens came from hearth or firebox features. This may be evidence that these plants played a part in the household foodways and subsistence of both sites. There is no reason not to believe, but no way to confirm using only this macrobotanical evidence, that some of the dishes being created and served at both 72-226 and 102-44A were not based in deep notions of traditional food culture and cuisine. The foods, and by this time the ingredients (be they indigenous to North America, Western Europe, or elsewhere), were likely imbued with a great deal of cultural meaning relating to both Euro-American and indigenous cultural practices. Combining this evidence with an in-depth analysis of the zooarchaeological remains, material culture, and use of space could help shed light on a broader picture of foodways at both 72-226 and 102-44A.

By analyzing the subsistence practices and the importance of labor participation at these two households, certain patterns were revealed. While both groups strived to achieve similar subsistence goals, they chose very different strategies to achieve them. Higher taxonomic richness suggests the centrality of household labor and local resources for the individuals living at 102-44A. In contrast, historical records and a lower richness are evidence of a heavier reliance on regional and Atlantic wages and resources at 72-226. Both sites do share one thing in common, however: a significant interaction with and dependence on the forest.

Harvesting the Forest: The Importance of Wood as Fuel and Nuts as Food

In Chapter II it was revealed that anthropogenic changes to the environmental landscapes immediately surrounding these sites were major. Depending on the type and magnitude of these changes, a differential access to fuel wood was created. Euro-American land tenure practices that began to affect the landscape as early as the first half of the 17th century were in widespread usage by the turn of the 19th century. The reservation, however, may have represented an area of sheltered preservation for trees. Pollen analysis completed at the nearby Eastern Pequot reservation supports this hypothesis (Jacobucci 2006). Contrary to the general trends represented by Figure 5.2, the Eastern Pequot reservation experienced an increase in the presence of certain arboreal pollen during the period of European colonialism. Most notable were large increases in the relative amount of chestnut, walnut/butternut, maple, and hickory on or near the reservation during this period (Jacobucci 2006:58). These are all taxa that appeared in higher proportions at the Mashantucket household than at the Euro-American one.

Figure 5.2 was produced from data in Table 2.1 in which Irland (1999:123) shows the change over time of different types of land coverage in non-reservation Connecticut. The periods of occupation for each site, as determined by mean ceramic date and historic records and discussed in detail in Chapter II, are superimposed as colored bars. Both sites were occupied at the nadir of forest coverage and the, presumably related and converse, peak of farm coverage. This chart, however, represents the findings of research done on Euro-American settlements. The charred wood data collected from 72-226 suggests clearly that this trend had less of an effect on native access to high quality fuel woods.

Figure 5.2. Land Coverage Change in Connecticut 1600-1997

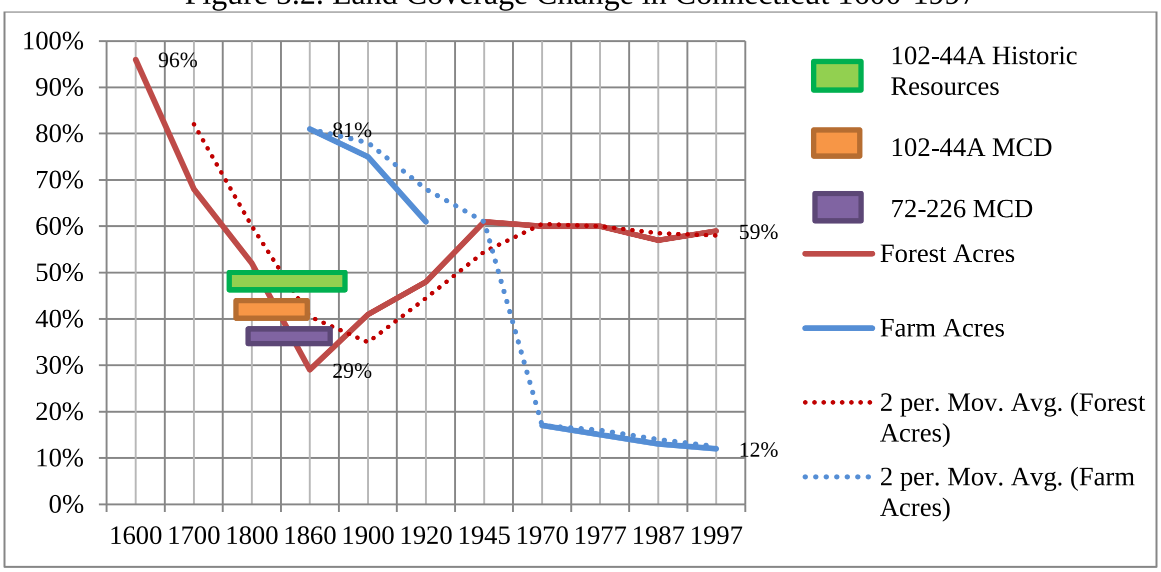


*Figure Data Source: Irland 1999:123. Percentages of land coverage were plotted on a line chart. A 2-period moving average trendline was added in order to better visualize the trends over time. The three bars represent the periods of occupations for 72-226 and 102-44A determined by use of mean ceramic dating and historical resources. No data are available for farmland coverage prior to 1860, but qualitative data suggest that 81% represents its near peak.

The dawn of the Industrial Revolution and the corresponding increase in Atlantic trade that coincided with the ending of the War for Independence (1775-1783) led to an aggressive harvesting and clearing of Connecticut's forestland. Mashantucket Pequots participated in these expanding economies in a more peripheral way than their Euro-American neighbors, providing mostly labor rather than the resources of their land base (Mancini 2009; McBride 1990; Vickers 1997; Witt 2007:41-43, 100-103). Although this type of market participation was less lucrative in the short-term, it may have benefited the reservation community by providing them with easier access to higher quality woods for the purposes of fuel wood and lumber for construction. The results of comparative charred wood analysis of 72-226 and 102-44A support this hypothesis.

Ideal and observed rank orders were constructed in order to quantitatively compare wood choice and usage at the two households. Rank orders allow the analysis of wood resource access by giving comparative data. Ideal ranks quantify an objective interpretation of wood quality for each taxon recovered. Observed ranks contrast this by showing the actual choices made by household members. The difference between these two can reveal facets of consumer choice and elucidate the realities of resource access.

Each feature from which samples were taken was determined to be either functionally associated with house and outbuilding construction or with "thermal" hearths or fireboxes. These categories, inclusive of all 14 features, were aggregated after consulting excavator feature assessments. The charred wood from features associated with the post-depositional burning of the houses was categorized as "construction" (Table 5.3). Wood samples chosen from hearths and fireboxes were interpreted to be the remains of fuel selected and used for heating and cooking and were categorized as "thermal" (Table 5.4). As with seeds, and for the same reasons, uncharred wood remains were disregarded and generally went unidentified. A special exception was several large, obviously worked wood planks found in Feature 1 at 102-44A. These planks were treated as artifacts separate from the charred wood analyses. The decision to disregard these planks from statistical calculations was based upon their having enough mass to skew results and that their not being charred suggested they were submitted to different post-depositional preservation factors.

The results of analyses of charred wood from these two groups were then converted into the "observed" proportions and ranks. "Idealized" ranks were then built by determining and averaging different characteristics associated with the two aggregated functions. In order to create the idealized construction ranks an average value was calculated from the bending strength, hardness, and durability (resistance to decay) of each recovered taxon (Panshin and De Zeeuw 1970:504-505,627-629). For the thermal rank, the gross calorific value, which roughly represents the burning heat value, was ranked for each species of wood (Hale 1933:7-12). By comparing the idealized rank to the observed rank of each site, interesting patterns emerge (Table 5.3, 5.4).

Table 5.3. Rank Orders of Wood Recovered from Construction Features

Taxon	Ideal Construction Rank	72-226 Observed Construction Proportion	72-226 Observed Construction Rank	102-44A Observed Construction Proportion	102-44A Observed Construction Rank
Hickory *(Carya)*	1	0.24%	5	-	-
Oak (Red and White Averaged) *(Quercus)*	1	0.49%	3	76.65%	1
Chestnut *(Castanea)*	2	89.00%	1	2.99%	3
Maple *(Acer)*	3	0.47%	4	0.03%	8
Walnut/ Butternut *(Juglans)*	3	5.18%	2	0.30%	6
Beech (*Fagus)*	4	-	-	-	-
White Cedar *(Thuja)*	4	-	-	1.81%	4
Birch *(Betula)*	5	-	-	0.07%	7
Hemlock *(Tsuga)*	6	-	-	17.26%	2
Pine *(Pinus)*	6	0.06%	6	0.47%	5

*Ideal Construction ratings from Panshin and De Zeeuw (1970:504-505, 627-629) and are based upon a combination rating of bending strength, hardness, and durability.

Table 5.4. Rank Orders of Wood Recovered from Thermal Features

Taxon	Gross Calorific Value	Ideal Thermal Rank	72-226 Observed Thermal Proportion	72-226 Observed Thermal Rank	102-44A Observed Thermal Proportion	102-44A Observed Thermal Rank
Hickory *(Carya)*	30.6	1	0.13%	7	-	-
Oak (Red and White Averaged) *(Quercus)*	28.95	2	15.32%	2	23.58%	2
Beech (*Fagus)*	27.8	3	0.26%	6	-	-
Birch *(Betula)*	26.2	4	-	-	0.50%	7
Maple *(Acer)*	24	5	5.24%	3	4.15%	5
Chestnut *(Castanea)*	20.2	6	51.57%	1	12.81%	3
Hemlock *(Tsuga)*	17.9	7	0.13%	7	40.49%	1
Walnut/Butternut *(Juglans)*	17.4	8	4.32%	4	-	-
Pine *(Pinus)*	17.1	9	1.18%	5	6.74%	4
White cedar *(Thuja)*	16.3	10	-	-	1.72%	6

*Ideal Thermal ratings from Hale (1933:7-12) and are based on gross calorific value (millions of BTU per air-dry cord).

Charred wood recovered from construction features at both sites were generally highly ranked. At both sites, a heavy reliance on a single high-quality construction material is evident. Oak is the predominant wood selected for the purposes of building at 102-44A, whereas at 72-226 chestnut fills this role. These are both top-ranked woods, and their dominance suggests that household members had both an access to and a knowledge of the best possible materials. There is evidence, however, that the reservation families had modest advantages in these regards. First, top-ranked hickory only appears at 72-226, though only in small quantities. Second, the recovered wood at 72-226 is nearly all hardwood of the best quality, while most of the non-oak woods at 102-44A are much lower quality soft woods. Hemlock, by far the second most prevalent wood selected at the Euro-American homestead, is ranked last in quality among recovered taxa. While perhaps the families at 102-44A had access to a fairly abundant source of oak when building their house, it would seem that their other choices were limited.

Thermal features reveal a greater dissimilarity. Charred wood recovered from these features evidences that the reservation family at 72-226 again relied heavily on chestnut, but with a wider variety of other taxa represented than in construction features. Oak, hickory, maple, beech, and walnut/butternut are all represented in significant quantities. Again only a very small amount of softwood was recovered in these features. The most surprising finding here is the very high prevalence of hemlock at 102-44A, considering its very low rank. A large quantity of pine and white cedar, also very low quality, is only partially offset by the significantly lower proportions of oak.

Dissimilarities in the composition of thermal and construction features at these sites may signify differential access to resources. I posit that these variations were due, at least in part, to differences in practice by Euro-Americans in Stonington and native families living on the reservation. A contrast is evident in Connecticut's overall forest coverage (Irland 1999:123) and the makeup of forest lands on Connecticut reservations (Jacobucci 2006:58). This reality likely had a direct impact on the consumer choices of families living within and outside the boundaries of the Mashantucket Pequot reservation. Woodlands on the reservation, which were protected from the effects of wide-scale deforestation, may have left Mashantucket Pequots with access to stands of older, better quality woods for fuel and construction purposes. Although the families living at 72-226 and other 19th-century Mashantuckets were harvesting their forests for fuel and construction materials, less widespread and purposeful clear cutting for the creation of pastureland may have left many forest stands untouched. The increased participation of both Mashantucket men and women in alternative markets of labor during the 19th century was likely a factor in the relatively low levels of clear-cutting. This was not the case off-reservation, where Euro-Americans were clear cutting thousands of acres of unused forests for pasture (Cronon 1983). Perhaps not consciously, but nonetheless effectively, native peoples living on the Mashantucket Pequot reservation may have avoided the worst effects of the deforestation felt more acutely by non-natives in nearby Stonington.

As discussed in chapter II, Pequots protested repeatedly to state colonial legislators about the destruction and theft of their forestlands. Land encroachment was a constant concern and complaint of reservation communities throughout Connecticut starting as early as the 17th century, but for the Pequots, wood theft was considered particularly damaging. Whether the theft was perpetrated by corrupt overseers who sold fuel wood for personal profit and without permission or by Euro-Americans who entered reservation lands in order to cut valuable timber, this violation of reservation boundaries and colonial law was perceived as egregious by Mashantuckets (Holmes 2007:87-89).

The findings here do not directly reveal practices of resource theft on the part of Euro-Americans, but they do show the conditions in which such theft would be likely. The overall lower quality of the charred wood recovered from 102-44A is evidence that their access to this vital resource was barred when compared to Mashantuckets living on the reservation. If Euro-Americans living at 102-44A and elsewhere in Stonington were struggling to find adequate and quality fuel for their hearths, they may have been desperate enough to ignore colonial and state laws protecting reservation forests.

Another insight is gained by comparing the results of construction and thermal features at both sites. Most of the analyses in this research are synchronic, revealing evidence of subsistence practices and fuel choice in only one period of time. By ignoring the functional purposes of the features and directly comparing them, however, a limited diachronic analysis can be used. Similarities in ideal construction and thermal rankings ensure that wood selections for these two purposes vary only slightly. General patterns exist, including the overall higher ranking of most hard woods and the generally low quality ranking of soft woods. These similarities allow for some comparability. The majority of the contents of construction features are likely the remains of wood utilized by household members sometime around the building of the houses in the late 18th or early 19th centuries. In contrast, hearth remains from thermal features likely represent the fuel wood burns of the last few weeks of the occupation, sometime in the latter half of the 19th century. By comparing these two results, an analysis of change and continuity over time can be made.

This diachronic analysis reveals a difference between the two sites. At least in regard to overall wood choice, the household at 72-226 was more able to continue in their practices by relying heavily on chestnut and other high quality hardwoods over the course of the 19th century. At 102-44A, a larger shift is made from the beginning to the end of occupation. An apparent availability and reliance on oak diminishes, with the late century period being dominated by the use of low quality softwoods and a general move from a reliance on monoculture to a diversification of taxonomic choice. This analysis lends support to the claim that the large scale deforestation described by Irland (1999) was having a more acute impact on Euro-Americans living off the reservation.

Although these differences are notable, similarities in wood choice exist between the sites. Both families relied on a wider variety of woods to fuel their hearths than they did to build their houses. This is evidenced by a more even distribution of wood usage among the recovered taxa in thermal features, unlike in construction features where a heavy reliance on oak (102-44A) and chestnut (72-226) is evident. The quality of woods in thermal features is also generally lower than in construction features for both households. Considering the dominance of wood as a fuel source, it seems unlikely that the individuals at these two sites would not have superior knowledge of the thermal quality of different taxa. It is therefore reasonable to assume these trends are due more to a lack of availability than of awareness.

Of course the forest held more for Euro-Americans and Mashantucket Pequots than just fuel wood. Evidence suggests that both households were relying heavily on woodlands to support their diet. Gathered resources from the forest appear to have been an important part of both households' subsistence strategies. Nuts were by far the most prevalent food product found in this macrobotanical analysis. Nuts, especially wanuts/butternuts and hickory nuts, are an excellent source of calories and vitamins. Their quality as a foodstuff and their prevalence at both sites suggests that nut procurement was an important activity in the yearly cycle of food procurement for both households. The primary differences (and sometimes similarities) between these households' strategies can, at least in part, be explained by their presence on and off the reservation and of the ecological realities of each site's location. Table 5.5 gives evidence that individuals at both 72-226 and 102-44A were making decisions based on prior knowledge and expertise when selecting which trees they would harvest for wood and which they would save for nut collection. This type of informed preservation would have allowed these families to make the most of their available resources. Although the act of preserving trees in order to better collect the nuts was not a new practice for either Euro-Americans or Native peoples, it is possible that the specific taxa of tree selected for preservation may have shifted over time (Bragdon 1996; Kevin McBride, 2012 pers. comm.).

Table 5.5. Nutshell and Wood Proportions at 72-226 and 102-44A

Taxa	72-226 Wood Proportion	72-226 Nut Proportion	102-44A Wood Proportion	102-44A Nut Proportion
Walnut/Butternut	5.12%	20.00%	0.29%	74.64%
Chestnut	85.50%	0.00%	3.61%	0.96%
Hickory	0.23%	76.00%	< 0.01%	22.39%
Oak	2.09%	4.00%	73.75%	0.00%

* Taxa that show patterns of household choice for the purposes of wood or nut procurement have been highlighted.

By comparing the proportion of wood and nutshell (produced by dividing the weight of a specific taxon by the total weight of wood or nutshell recovered from each site), patterns of choice and informed selection were revealed. The importance of chestnut, both for fuel and construction, to the native community at 72-226 and the equal importance given to oak for similar reasons at 102-44A is evident here. An overwhelming majority of the wood from each site came from these two taxa, respectively. In both cases, the corresponding nut was absent. This result suggests that those at 72-226 were deliberately selecting to harvest chestnut wood despite the apparent effect that chestnut nuts became unavailable. A similar treatment of oak at 102-44A may be more understandable, as acorns are less nutritious and less palatable than chestnuts and require a great deal more processing due to their high tannin content (Šálkováa 2011). It is important to note that preservation factors may have skewed these results because both acorns and chestnuts are thin shelled and are more likely to be burned to ash or be destroyed by post-deposition factors or pre-deposition processing than thicker shelled nuts like hickory or walnut.

In contrast to this are the results of the same analysis when applied to the major nut taxa at each site. At 72-226, walnut/butternut nutshell represents four times as much of the proportion as does the wood. At 102-44A, the proportion of wood is 250 times higher than nutshell. This trend makes some sense, since walnut/butternut nuts are highly nutritious and require little processing and the wood is of middling quality for both construction and thermal purposes.

An unexpected trend is found in the results for hickory. There is 330 times more hickory nutshell than hickory wood, by proportion, at 72-226. Hickory represented the highest ratio of nutshell at this site. Only 0.01g of hickory wood was recovered from all of 102-44A, whereas hickory nuts are the second most prevalent at this site, representing 22.39% of the total recovered. This is surprising because hickory is the highest quality wood for both construction and fuel. It is the most valuable wood of all those recovered, yet it appears in only trace amounts in the charred wood of either site. The high ubiquity of hickory nuts forces us to abandon the theory that hickory trees were unavailable to inhabitants of these two sites. Instead we must conclude that the families at 72-226 and 102-44A were choosing to preserve these valuable trees in order to harvest the nuts that were such an important aspect of their overall diet and subsistence.

CHAPTER VI

CONCLUSION

This work has implications for understanding the diachronic shifts that are crucial to uncovering the processes of long-term cultural continuity and change and will be critical in the creation of such a study at Mashantucket. Several research projects have produced synchronic data sets of Pequot subsistence practices on reservation sites from the Paleoindian period through the 20^{th} century (Cipolla et al 2007; Kasper and McBride 2010; Mancini 2002; McBride 2002; Trigg and Bowes 2007; Trigg et al 2007). This study will be essential in tying many disparate conclusions into one comprehensive narrative that illuminates the subtleties of subsistence in regards to paleoethnobotanical data at Mashantucket. On its own, this thesis evidences several points about Mashantucket Pequot and Euro-American subsistence practices in the 19^{th} century.

A number of factors including but not limited to environment, social status, access to economic modes of production, access to commodities, and simple individual choice affected the practices and materiality of these two households. By comparing the subsistence strategies of these two households this analysis allows the drawing of certain conclusions concerning the subsistence practice and identity maintenance of reservation Mashantuckets. Both external and internal factors motivated the people of these households to subsist in the ways in which they chose.

Political, economic, and legal conflicts were some of the forces that affected Mashantucket subsistence options. The actions of overseers and colonial governors, the theft of land and property by neighboring Euro-Americans, and the influence of the Industrial Revolution simultaneously provided novel opportunities for Mashantuckets while eliminating access to other subsistence strategies rooted in deep tradition. Social pressures, including the idealistic desire of some Euro-Americans to encourage Mashantuckets to practice European-style land tenure further reduced the subsistence options of some reservation Indians. The myths of the vanishing and destitute Indian, common discourses of the 18th and 19th centuries, created a perception of hopelessness surrounding the cause of native peoples and encouraged a false impression that reservation indigenes were unable to sustain themselves (O'Brien 2010). Other pressures were physical. Reservation lands were specifically chosen by settlers who "granted" them because of their poor quality. This was true of the lands at Mashantucket, and their poor quality still further limited subsistence choices.

This thesis provides evidence of how Mashantuckets mitigated these challenges in order to maintain their overall subsistence. In some ways, the indigenous people living at 72-226 made similar choices to their Euro-American neighbors. Interpretations presented here suggest each family may have used their fuel wood to produce tannins prior to burning and that each household was willing to use cultigens traditionally associated with the opposite group. If correct, these interpretations reveal that both households were willing and capable of choosing to participate in the larger regional economy either to produce goods for industry or to utilize new resources.

In other ways these households varied significantly. The continuation of long term traditional practices, associated with activities repeated by Mashantuckets for centuries and related to the preservation and successful management of reservation forestlands afforded the members of the reservation household varied fuel wood and food choices (Bragdon 1996; Kasper and McBride 2010; McBride 2001; Trigg et al 2007; Trigg and Bowes 2007). Mashantuckets engaged in their regional economy and engaged in novel labor practices in order to fully take advantage of all subsistence options, ranging farther from home and eating fewer meals at the homestead than their Euro-American neighbors. By utilizing a combination of traditional and novel subsistence practices, Mashantuckets managed to navigate and mitigate the hardships of their colonial environment.

The central finding of this thesis is that 19^{th}-century Mashantuckets and Euro-Americans utilized different subsistence practices in order to achieve similar subsistence goals. The centrality of the forest landscape to both Euro-Americans and Mashantuckets is evident; however this research also suggests that Mashantuckets were more likely to engage with novel subsistence opportunities in order to achieve their goals and thus preserve their place on the reservation. Mashantucket willingness to participate in cultural change paradoxically allowed them to preserve their identity and their resources throughout the 19^{th} century. Since the reservation was central to Mashantucket group identity as well as providing them with a resource base, it was vital that their physical presence remained. The subsistence strategies employed by Mashantuckets made it possible for them to preserve their place on the reservation into the 20^{th} and 21^{st} centuries.

APPENDIX

TABLES

1: Expanded Diagnostic Information

Site	Sample	Type	Feature	Description	Volume (L)	Weight (g)	Wood Sample Weight (g)
72-226	1	Thermal	6 (Firebox)	Flotation	7.00	26.55	0.28
72-226	2	Thermal	6 (Firebox)	Flotation		7.51	0.42
72-226	3	Thermal	6 (Firebox)	Flotation	3.00	5.64	0.72
72-226	4	Thermal	6 (Firebox)	Flotation	13.00	49.24	0.74
72-226	5	Thermal	7 (Firebox 2)	Flotation	2.00	3.82	0.16
72-226	6	Construction	3 (Red Stain/Burn)	Flotation	12.00	16.65	0.32
72-226	7	Construction	2 (Linear Stain/House burn)	Flotation	7.00	10.19	1.09
72-226	8	Thermal	7 (Firebox 2)	Flotation	5.00	31.29	0.20
72-226	9	Construction	5 (Basin)	Flotation	5.00	6.20	0.07
72-226	10	Construction	5 (Basin)	Flotation	6.50	3.39	0.15
72-226	11	Thermal	6 (Firebox)	Flotation	14.00	48.09	2.69
72-226	12	Thermal	6 (Firebox)	Flotation	9.00	42.85	0.25
72-226	13	Construction	2 (Linear Stain/House burn)	Dry Screen		40.60	31.84
72-226	14	Construction	2 (Linear Stain/House burn)	Dry Screen		12.70	6.06
72-226	15	Construction	2 (Linear Stain/House burn)	Dry Screen		25.58	10.90
72-226	16	Construction	4 (Post-Mold)	Flotation	0.50	53.24	0.35
72-226	17	Thermal	7 (Firebox 2)	Flotation	11.25	0.88	0.29
72-226	18	Thermal	6 (Firebox)	Flotation	14.00	42.71	1.11

Site	Sample	Type	Feature	Description	Volume (L)	Weight (g)	Wood Sample Weight (g)
72-226	19	Thermal	6 (Firebox)	Flotation	4.00	2.84	0.78
72-226	20	Construction	2 (Linear Stain/House burn)	Dry Screen		22.81	8.65
72-226	21	Construction	2 (Linear Stain/House burn)	Dry Screen		5.86	4.27
72-226 Total Volume and Weight :					**113.25**	**458.64**	
102-44A	1	Construction	1 (Basin)	Flotation	17.00	90.63	2.58
102-44A	2	Thermal	3 (Firebox - East)	Flotation	11.00	117.79	5.04
102-44A	3	Thermal	3 (Firebox - East)	Flotation	20.00	232.53	6.41
102-44A	4	Thermal	2 (Firebox - South)	Dry Screen		5.89	3.91
102-44A	5	Construction	7 (Cellar Floor)	Flotation	18.00	555.02	54.78
102-44A	6	Construction	6 (Attached Shed)	Flotation	8.00	9.43	0.07
102-44A	7	Construction	1 (Basin)	Flotation	5.00	18.82	0.17
102-44A	8	Thermal	2 (Firebox - South)	Dry Screen		2.66	1.03
102-44A	9	Construction	7 (Cellar Floor)	Flotation	13.00	69.46	5.50
102-44A	10	Construction	7 (Cellar Floor)	Flotation	16.00	175.67	39.94
102-44A	11	Thermal	2 (Firebox - South)	Dry Screen		1.34	0.91
102-44A	12	Thermal	2 (Firebox - South)	Dry Screen		3.63	1.66
102-44A	13	Thermal	3 (Firebox - East)	Flotation	25.00	98.68	12.95
102-44A	14	Thermal	3 (Firebox - East)	Flotation	20.00	41.78	7.97
102-44A	15	Thermal	2 (Firebox - South)	Flotation	1.00	1.48	0.33

Site	Sample	Type	Feature	Description	Volume (L)	Weight (g)	Wood Sample Weight (g)
102-44A	16	Construction	3 (Firebox - East)	Dry Screen		205.11	197.48
102-44A	17	Construction	6 (Attached Shed)	Dry Screen		22.49	14.37
102-44A	18	Construction	6 (Attached Shed)	Dry Screen		0.70	0.52
102-44A	19	Construction	7 (Cellar Floor)	Flotation	15.00	1105.46	24.43
102-44A	20	Construction	3 (Firebox - East)	Flotation	4.00	1664.63	275.97
102-44A Total Volume and Weight :					**173.00**	**4423.2**	
72-226 and 102-44A Total Volume and Weight:					**286.25**	**4881.8**	

2: Cultigen Counts by Sample

Site	**Sample**	**Type**	*Triticum aestivum*	European Cereal	*Zea mays* Cupules	*Zea mays* Kernels
72-226	1	Thermal				
72-226	2	Thermal				
72-226	3	Thermal	1			
72-226	4	Thermal				
72-226	5	Thermal				
72-226	6	Construction				
72-226	7	Construction				
72-226	8	Thermal				
72-226	9	Construction				
72-226	10	Construction				
72-226	11	Thermal				
72-226	12	Thermal				
72-226	13	Construction				
72-226	14	Construction				
72-226	15	Construction				
72-226	16	Construction				
72-226	17	Thermal				
72-226	18	Thermal		1		
72-226	19	Thermal				
72-226	20	Construction				
72-226	21	Construction				
72-226 Total			**1**	**1**	**0**	**0**
102-44A	1	Construction				
102-44A	2	Thermal				
102-44A	3	Thermal				
102-44A	4	Thermal				
102-44A	5	Construction				
102-44A	6	Construction				
102-44A	7	Construction				
102-44A	8	Thermal				
102-44A	9	Construction				
102-44A	10	Construction			2	
102-44A	11	Thermal				
102-44A	12	Thermal				
102-44A	13	Thermal				

Site	Sample	Type	*Triticum aestivum*	European Cereal	*Zea mays* Cupules	*Zea mays* Kernels
102-44A	14	Thermal				1
102-44A	15	Thermal				
102-44A	16	Construction				
102-44A	17	Construction				
102-44A	18	Construction				
102-44A	19	Construction				
102-44A	20	Construction				
102-44A Total			**0**	**0**	**2**	**1**
72-226 and 102-44A Total			**1**	**1**	**2**	**1**

Site	Sample	Type	Cucurbitaceae Sp. Gourd	Cucurbitaceae *Cucumis* Sp.	Total Count
72-226	1	Thermal			
72-226	2	Thermal			
72-226	3	Thermal			
72-226	4	Thermal			
72-226	5	Thermal			
72-226	6	Construction			
72-226	7	Construction			
72-226	8	Thermal			
72-226	9	Construction			
72-226	10	Construction			
72-226	11	Thermal			
72-226	12	Thermal			
72-226	13	Construction			
72-226	14	Construction			
72-226	15	Construction			
72-226	16	Construction			
72-226	17	Thermal			
72-226	18	Thermal			
72-226	19	Thermal			
72-226	20	Construction			
72-226	21	Construction			
72-226 Total			**0**	**0**	**2**

Site	Sample	Type	Cucurbitaceae Sp. Gourd	Cucurbitaceae *Cucumis* Sp.	**Total Count**
102-44A	1	Construction			
102-44A	2	Thermal			
102-44A	3	Thermal	10	1	
102-44A	4	Thermal			
102-44A	5	Construction			
102-44A	6	Construction			
102-44A	7	Construction			
102-44A	8	Thermal			
102-44A	9	Construction			
102-44A	10	Construction			
102-44A	11	Thermal			
102-44A	12	Thermal			
102-44A	13	Thermal			
102-44A	14	Thermal			
102-44A	15	Thermal			
102-44A	16	Construction			
102-44A	17	Construction			
102-44A	18	Construction			
102-44A	19	Construction			
102-44A	20	Construction			
102-44A Total			**10**	**1**	**14**
72-226 and 102-44A Total			**10**	**1**	**16**

3: Fruits, Berries, and Other Counts by Sample

Site	**Sample**	**Type**	Myricaceae *Myrica* sp.	Rubiaceae *Galium* sp.	Celestraceae *Celastrus* sp.	Rosaceae *Prunus* sp. (wild)	Rosaceae *Aronia* sp.
72-226	1	Thermal					
72-226	2	Thermal					
72-226	3	Thermal					
72-226	4	Thermal					
72-226	5	Thermal					
72-226	6	Construction					
72-226	7	Construction					
72-226	8	Thermal					
72-226	9	Construction					
72-226	10	Construction	2				
72-226	11	Thermal					
72-226	12	Thermal					
72-226	13	Construction					
72-226	14	Construction					
72-226	15	Construction					
72-226	16	Construction					
72-226	17	Thermal					
72-226	18	Thermal					
72-226	19	Thermal					
72-226	20	Construction					
72-226	21	Construction					
72-226 Total			**2**	**0**	**0**	**0**	**0**
102-44A	1	Construction					
102-44A	2	Thermal					
102-44A	3	Thermal					
102-44A	4	Thermal					
102-44A	5	Construction					
102-44A	6	Construction					
102-44A	7	Construction					
102-44A	8	Thermal					
102-44A	9	Construction		1			
102-44A	10	Construction	2				1
102-44A	11	Thermal					
102-44A	12	Thermal			1		
102-44A	13	Thermal					

Site	Sample	Type	Myricaceae *Myrica* sp.	Rubiaceae *Galium* sp.	Celestraceae *Celastrus* sp.	Rosaceae *Prunus* sp. (wild)	Rosaceae *Aronia* sp.
102-44A	14	Thermal				1	
102-44A	15	Thermal					
102-44A	16	Construction					
102-44A	17	Construction					
102-44A	18	Construction					
102-44A	19	Construction					
102-44A	20	Construction					
102-44A Total			**2**	**1**	**1**	**1**	**1**
72-226 and 102-44A Total			**4**	**1**	**1**	**1**	**1**

Site	Sample	Type	Ericaceae *Empetrum* sp.	Polyganaceae *Rumex* sp.	Caprifoliaceae *Sambucus* sp.	Chenopodiaceae *Chenopodium* sp.	Vitaceae *Vitis* sp.
72-226	1	Thermal					
72-226	2	Thermal					
72-226	3	Thermal					
72-226	4	Thermal					
72-226	5	Thermal					
72-226	6	Construction				1	
72-226	7	Construction					
72-226	8	Thermal					
72-226	9	Construction					
72-226	10	Construction				1	
72-226	11	Thermal		1			
72-226	12	Thermal					
72-226	13	Construction					
72-226	14	Construction					
72-226	15	Construction					
72-226	16	Construction					
72-226	17	Thermal					
72-226	18	Thermal					
72-226	19	Thermal					
72-226	20	Construction					
72-226	21	Construction					
72-226 Total			**0**	**1**	**0**	**2**	**0**
102-44A	1	Construction					1

Site	Sample	Type	Ericaceae *Empetrum* sp.	Polyganaceae *Rumex* sp.	Caprifoliaceae *Sambucus* sp.	Chenopodiaceae *Chenopodium* sp.	Vitaceae *Vitis* sp.
102-44A	2	Thermal				2	
102-44A	3	Thermal					
102-44A	4	Thermal					
102-44A	5	Construction					
102-44A	6	Construction				8	
102-44A	7	Construction					
102-44A	8	Thermal					
102-44A	9	Construction	1		1	19	
102-44A	10	Construction	1			2	
102-44A	11	Thermal					
102-44A	12	Thermal					
102-44A	13	Thermal		1			
102-44A	14	Thermal					
102-44A	15	Thermal					
102-44A	16	Construction					
102-44A	17	Construction					
102-44A	18	Construction					
102-44A	19	Construction					
102-44A	20	Construction					
102-44A Total			**2**	**1**	**1**	**31**	**1**
72-226 and 102-44A Total			**2**	**2**	**1**	**33**	**1**

Site	Sample	Type	Wild Grass	Betulaceae *Carpinus* sp.	Ericaceae *Gaylussacia* sp.	Solanaceae *Datura stramonium*	Polyganaceae
72-226	1	Thermal					
72-226	2	Thermal					
72-226	3	Thermal					
72-226	4	Thermal		1			
72-226	5	Thermal					
72-226	6	Construction					
72-226	7	Construction					
72-226	8	Thermal					
72-226	9	Construction					
72-226	10	Construction					
72-226	11	Thermal					

Site	Sample	Type	Wild Grass	Betulaceae *Carpinus* sp.	Ericaceae *Gaylussacia* sp.	Solanaceae *Datura stramonium*	Polyganaceae
72-226	12	Thermal					
72-226	13	Construction					
72-226	14	Construction					
72-226	15	Construction					
72-226	16	Construction					
72-226	17	Thermal					
72-226	18	Thermal					
72-226	19	Thermal					
72-226	20	Construction					
72-226	21	Construction					
72-226 Total			**0**	**1**	**0**	**0**	**0**
102-44A	1	Construction					1
102-44A	2	Thermal					
102-44A	3	Thermal					
102-44A	4	Thermal					
102-44A	5	Construction					
102-44A	6	Construction					
102-44A	7	Construction					1
102-44A	8	Thermal					
102-44A	9	Construction			5		
102-44A	10	Construction					
102-44A	11	Thermal					
102-44A	12	Thermal					
102-44A	13	Thermal	1			1	
102-44A	14	Thermal	3				
102-44A	15	Thermal					
102-44A	16	Construction					
102-44A	17	Construction					
102-44A	18	Construction					
102-44A	19	Construction			5		
102-44A	20	Construction					
102-44A Total			**4**	**0**	**10**	**1**	**2**
72-226 and 102-44A Total			**4**	**1**	**10**	**1**	**2**

Site	Sample	Type	Polyganacea *Polygonum* sp.	Potamogetonaceae *Potamogeton* sp.	Lamiaceae	Solanaceae *Solanum* sp.	Portulacaceae *Portulaca* sp.
72-226	1	Thermal					
72-226	2	Thermal					
72-226	3	Thermal					
72-226	4	Thermal					
72-226	5	Thermal					
72-226	6	Construction					
72-226	7	Construction					1
72-226	8	Thermal					
72-226	9	Construction					
72-226	10	Construction					
72-226	11	Thermal					
72-226	12	Thermal					
72-226	13	Construction					
72-226	14	Construction					
72-226	15	Construction					
72-226	16	Construction					
72-226	17	Thermal					
72-226	18	Thermal		1			
72-226	19	Thermal					
72-226	20	Construction					
72-226	21	Construction					
72-226 Total			**0**	**1**	**0**	**0**	**1**
102-44A	1	Construction					
102-44A	2	Thermal			1		
102-44A	3	Thermal				1	
102-44A	4	Thermal					
102-44A	5	Construction					
102-44A	6	Construction					
102-44A	7	Construction					
102-44A	8	Thermal					
102-44A	9	Construction					
102-44A	10	Construction	1				
102-44A	11	Thermal					
102-44A	12	Thermal					
102-44A	13	Thermal					
102-44A	14	Thermal					
102-44A	15	Thermal					

Site	Sample	Type	Polyganacea *Polygonum* sp.	Potamogetonaceae *Potamogeton* sp.	Lamiaceae	Solanaceae *Solanum* sp.	Portulacaceae *Portulaca* sp.
102-44A	16	Construction					
102-44A	17	Construction					
102-44A	18	Construction					
102-44A	19	Construction					
102-44A	20	Construction					
102-44A Total			**1**	**0**	**1**	**1**	**0**
72-226 and 102-44A Total			**1**	**1**	**1**	**1**	**1**

Site	Sample	Type	Cyperaceae	Cyperaceae *Carex* sp.	Anacardiaceae *Rhus* sp.	Plantago *Lanceolata* sp.	Total Count
72-226	1	Thermal					
72-226	2	Thermal					
72-226	3	Thermal					
72-226	4	Thermal					
72-226	5	Thermal					
72-226	6	Construction					
72-226	7	Construction					
72-226	8	Thermal					
72-226	9	Construction					
72-226	10	Construction			1		
72-226	11	Thermal					
72-226	12	Thermal					
72-226	13	Construction					
72-226	14	Construction					
72-226	15	Construction					
72-226	16	Construction					
72-226	17	Thermal					
72-226	18	Thermal					
72-226	19	Thermal					
72-226	20	Construction					
72-226	21	Construction					
72-226 Total			**0**	**0**	**1**	**0**	**10**
102-44A	1	Construction					
102-44A	2	Thermal					
102-44A	3	Thermal	1				

Site	**Sample**	**Type**	Cyperaceae	Cyperaceae *Carex* sp.	Anacardiaceae *Rhus* sp.	Plantago *Lanceolata* sp.	**Total Count**
102-44A	4	Thermal					
102-44A	5	Construction					
102-44A	6	Construction					
102-44A	7	Construction					
102-44A	8	Thermal					
102-44A	9	Construction					
102-44A	10	Construction				1	
102-44A	11	Thermal					
102-44A	12	Thermal					
102-44A	13	Thermal		1	1		
102-44A	14	Thermal					
102-44A	15	Thermal					
102-44A	16	Construction					
102-44A	17	Construction					
102-44A	18	Construction					
102-44A	19	Construction					
102-44A	20	Construction					
102-44A Total			**1**	**1**	**1**	**1**	**67**
72-226 and 102-44A Total			**1**	**1**	**2**	**1**	**77**

4: Nut Counts and Weights by Sample

Site	**Sample**	**Type**	Fagaceae *Quercus* sp.		Fagaceae *Castanea* sp.		Juglandaceae *Carya* sp.	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
72-226	1	Thermal					1	0.11
72-226	2	Thermal						
72-226	3	Thermal						
72-226	4	Thermal						
72-226	5	Thermal						
72-226	6	Construction						
72-226	7	Construction						
72-226	8	Thermal						
72-226	9	Construction					1	0.01
72-226	10	Construction						
72-226	11	Thermal	1	0.01				
72-226	12	Thermal						
72-226	13	Construction						
72-226	14	Construction						
72-226	15	Construction						
72-226	16	Construction					1	0.01
72-226	17	Thermal						
72-226	18	Thermal					4	0.06
72-226	19	Thermal						
72-226	20	Construction						
72-226	21	Construction						
72-226 Total			**1**	**0.01**	**0**	**0.00**	**7**	**0.19**
102-44A	1	Construction						

Site	Sample	Type	Fagaceae *Quercus* sp.		Fagaceae *Castanea* sp.		Juglandaceae *Carya* sp.	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
102-44A	2	Thermal					6	0.34
102-44A	3	Thermal			1	0.31		
102-44A	4	Thermal						
102-44A	5	Construction					34	2.24
102-44A	6	Construction						
102-44A	7	Construction						
102-44A	8	Thermal						
102-44A	9	Construction						
102-44A	10	Construction					8	0.32
102-44A	11	Thermal						
102-44A	12	Thermal						
102-44A	13	Thermal					38	1.05
102-44A	14	Thermal					44	1.72
102-44A	15	Thermal						
102-44A	16	Construction						
102-44A	17	Construction						
102-44A	18	Construction						
102-44A	19	Construction					21	1.57
102-44A	20	Construction						
102-44A Total			**0**	**0.00**	**1**	**0.31**	**151**	**7.24**
72-226 and 102-44A Total			**1**	**0.01**	**1**	**0.31**	**158**	**7.43**

Site	**Sample**	**Type**	Juglandaceae *Juglans cinerea*		Juglandaceae *Juglans nigra*		Juglandaceae *Juglans* sp.	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
72-226	1	Thermal						
72-226	2	Thermal						
72-226	3	Thermal						
72-226	4	Thermal						
72-226	5	Thermal						
72-226	6	Construction						
72-226	7	Construction						
72-226	8	Thermal						
72-226	9	Construction						
72-226	10	Construction						
72-226	11	Thermal					2	0.05
72-226	12	Thermal						
72-226	13	Construction						
72-226	14	Construction						
72-226	15	Construction						
72-226	16	Construction						
72-226	17	Thermal						
72-226	18	Thermal						
72-226	19	Thermal						
72-226	20	Construction						
72-226	21	Construction						
72-226 Total				**0.00**	**0**	**0.00**	**2**	**0.05**
102-44A	1	Construction						
102-44A	2	Thermal	2	0.20			9	0.50
102-44A	3	Thermal	3	4.62			2	0.07
102-44A	4	Thermal						
102-44A	5	Construction	29	8.48				
102-44A	6	Construction						
102-44A	7	Construction						
102-44A	8	Thermal						
102-44A	9	Construction					1	0.01
102-44A	10	Construction					3	0.04

Site	Sample	Type	Juglandaceae *Juglans cinerea*		Juglandaceae *Juglans nigra*		Juglandaceae *Juglans* sp.	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
102-44A	11	Thermal						
102-44A	12	Thermal						
102-44A	13	Thermal	17	0.71				
102-44A	14	Thermal	18	1.17	5	0.10		
102-44A	15	Thermal						
102-44A	16	Construction						
102-44A	17	Construction						
102-44A	18	Construction						
102-44A	19	Construction	22	8.23				
102-44A	20	Construction						
102-44A Total			**91**	**23.41**	**5**	**0.10**	**15**	**0.62**
72-226 and 102-44A Total			**91**	**23.41**	**5**	**0.10**	**17**	**0.67**

Site	Sample	Type	Corylaceae *Corylus* sp.	
			Count	**Weight (g)**
72-226	1	Thermal		
72-226	2	Thermal		
72-226	3	Thermal		
72-226	4	Thermal		
72-226	5	Thermal		
72-226	6	Construction		
72-226	7	Construction		
72-226	8	Thermal		
72-226	9	Construction		
72-226	10	Construction		
72-226	11	Thermal		
72-226	12	Thermal		
72-226	13	Construction		
72-226	14	Construction		

Site	Sample	Type	Corylaceae *Corylus* sp.	
			Count	**Weight (g)**
72-226	15	Construction		
72-226	16	Construction		
72-226	17	Thermal		
72-226	18	Thermal		
72-226	19	Thermal		
72-226	20	Construction		
72-226	21	Construction		
72-226 Total			**0**	**0.00**
102-44A	1	Construction		
102-44A	2	Thermal		
102-44A	3	Thermal	5	0.45
102-44A	4	Thermal		
102-44A	5	Construction	5	0.20
102-44A	6	Construction		
102-44A	7	Construction		
102-44A	8	Thermal		
102-44A	9	Construction		
102-44A	10	Construction		
102-44A	11	Thermal		
102-44A	12	Thermal		
102-44A	13	Thermal		
102-44A	14	Thermal		
102-44A	15	Thermal		
102-44A	16	Construction		
102-44A	17	Construction		
102-44A	18	Construction		
102-44A	19	Construction		
102-44A	20	Construction		
102-44A Total			**10**	**0.65**
72-226 and 102-44A Total			**10**	**0.65**

5: Charred Wood Counts and Weight by Sample

Site	Sample	Type	Hardwood		Diffuse Porous Hardwood		Semi-Diffuse Porous Hardwood	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
72-226	1	Thermal	9	0.09				
72-226	2	Thermal	7	0.12			1	0.02
72-226	3	Thermal	3	0.02	2	0.03		
72-226	4	Thermal	4	0.03				
72-226	5	Thermal	4	0.01				
72-226	6	Construction						
72-226	7	Construction	3	0.04				
72-226	8	Thermal	10	0.05				
72-226	9	Construction	5	0.01				
72-226	10	Construction	6	0.03				
72-226	11	Thermal	2	0.11				
72-226	12	Thermal	6	0.04				
72-226	13	Construction	3	0.37				
72-226	14	Construction						
72-226	15	Construction	7	1.68				
72-226	16	Construction	8	0.08				
72-226	17	Thermal	11	0.12				
72-226	18	Thermal			1	0.03		
72-226	19	Thermal	9	0.23				
72-226	20	Construction	2	0.63				
72-226	21	Construction						
72-226 Total			**99**	**3.66**	**3**	**0.06**	**1**	**0.02**
102-44A	1	Construction	5	0.52				
102-44A	2	Thermal						
102-44A	3	Thermal						
102-44A	4	Thermal			1	0.11		
102-44A	5	Construction	1	0.02				
102-44A	6	Construction	5	0.01				
102-44A	7	Construction	5	0.04				
102-44A	8	Thermal	4	0.06				
102-44A	9	Construction	2	0.15				
102-44A	10	Construction						

Site	Sample	Type	Hardwood		Diffuse Porous Hardwood		Semi-Diffuse Porous Hardwood	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
102-44A	11	Thermal						
102-44A	12	Thermal	2	0.02				
102-44A	13	Thermal						
102-44A	14	Thermal						
102-44A	15	Thermal	1	0.01				
102-44A	16	Construction						
102-44A	17	Construction						
102-44A	18	Construction						
102-44A	19	Construction						
102-44A	20	Construction						
102-44A Total			**25**	**0.83**	**1**	**0.11**	**0**	**0.00**
72-226 and 102-44A Total			**124**	**4.49**	**4**	**0.17**	**1**	**0.02**

Site	Sample	Type	Ring Porous Hardwood		Fagaceae *Castanea* sp.		Fagaceae *Quercus* sp.	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
72-226	1	Thermal			8	0.09	1	0.01
72-226	2	Thermal	5	0.08	5	0.08		
72-226	3	Thermal	5	0.15	3	0.10	1	0.01
72-226	4	Thermal	2	0.01	5	0.24		
72-226	5	Thermal					5	0.05
72-226	6	Construction					2	0.02
72-226	7	Construction			18	0.98		
72-226	8	Thermal			1	0.01	9	0.10
72-226	9	Construction					9	0.02
72-226	10	Construction					8	0.05
72-226	11	Thermal			18	2.16		
72-226	12	Thermal			6	0.10		
72-226	13	Construction			22	31.47		
72-226	14	Construction			3	6.06		

Site	Sample	Type	Ring Porous Hardwood		Fagaceae *Castanea* sp.		Fagaceae *Quercus* sp.	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
72-226	15	Construction			15	8.08		
72-226	16	Construction			7	0.09		
72-226	17	Thermal			11	0.14		
72-226	18	Thermal			16	0.81	4	0.13
72-226	19	Thermal			8	0.21		
72-226	20	Construction			22	7.82		
72-226	21	Construction			1	2.22		
72-226 Total			**12**	**0.24**	**169**	**60.66**	**39**	**0.39**
102-44A	1	Construction			12	1.24		
102-44A	2	Thermal						
102-44A	3	Thermal						
102-44A	4	Thermal	3	0.23	1	0.07		
102-44A	5	Construction						
102-44A	6	Construction					3	0.02
102-44A	7	Construction					14	0.09
102-44A	8	Thermal					13	0.81
102-44A	9	Construction			13	3.20		
102-44A	10	Construction			11	4.29		
102-44A	11	Thermal						
102-44A	12	Thermal			6	0.55		
102-44A	13	Thermal			2	0.57		
102-44A	14	Thermal			8	3.92		
102-44A	15	Thermal			2	0.04		
102-44A	16	Construction						
102-44A	17	Construction			14	9.14		
102-44A	18	Construction			4	0.49	1	0.03
102-44A	19	Construction			1	0.07		
102-44A	20	Construction					17	235.28
102-44A Total			**3**	**0.23**	**74**	**23.58**	**48**	**236.23**
72-226 and 102-44A Total			**15**	**0.47**	**243**	**84.24**	**87**	**236.62**

Site	Sample	Type	Fagaceae *Quercus alba*		Fagaceae *Quercus rubra*		Fagaceae *Fagus* sp.	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
72-226	1	Thermal	3	0.03			2	0.02
72-226	2	Thermal	2	0.04	1	0.02		
72-226	3	Thermal	3	0.03				
72-226	4	Thermal			4	0.30		
72-226	5	Thermal						
72-226	6	Construction	1	0.01				
72-226	7	Construction						
72-226	8	Thermal	2	0.01				
72-226	9	Construction	1	0.01				
72-226	10	Construction	6	0.04	1	0.01		
72-226	11	Thermal	2	0.10				
72-226	12	Thermal	11	0.09				
72-226	13	Construction						
72-226	14	Construction						
72-226	15	Construction						
72-226	16	Construction	8	0.15				
72-226	17	Thermal	1	0.01				
72-226	18	Thermal						
72-226	19	Thermal			5	0.24		
72-226	20	Construction						
72-226	21	Construction						
72-226 Total			**40**	**0.52**	**11**	**0.57**	**2**	**0.02**
102-44A	1	Construction	2	1.04				
102-44A	2	Thermal						
102-44A	3	Thermal	7	0.81				
102-44A	4	Thermal	3	0.47	4	0.35		
102-44A	5	Construction	8	8.31				
102-44A	6	Construction						
102-44A	7	Construction						
102-44A	8	Thermal						
102-44A	9	Construction	1	0.13	1	0.06		
102-44A	10	Construction	1	0.41	6	2.96		
102-44A	11	Thermal			1	0.03		

Site	Sample	Type	Fagaceae *Quercus alba*		Fagaceae *Quercus rubra*		Fagaceae *Fagus* sp.	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
102-44A	12	Thermal	3	0.11	5	0.36		
102-44A	13	Thermal	4	3.29	4	2.89		
102-44A	14	Thermal	1	0.36				
102-44A	15	Thermal	15					
102-44A	16	Construction	24	183.35				
102-44A	17	Construction						
102-44A	18	Construction						
102-44A	19	Construction	15	21.30				
102-44A	20	Construction	16	19.80				
102-44A Total			**100**	**239.38**	**21**	**6.65**	**0**	**0.00**
72-226 and 102-44A Total			**140**	**239.90**	**32**	**7.22**	**2**	**0.02**

Site	Sample	Type	Aceraceae *Acer* sp.		Juglandaceae *Carya* sp.		Juglandaceae *Juglans* sp.	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
72-226	1	Thermal						
72-226	2	Thermal	1	0.02				
72-226	3	Thermal	6	0.03	2	0.01		
72-226	4	Thermal	6	0.19				
72-226	5	Thermal	6	0.03				
72-226	6	Construction	21	0.29	1	0.01		
72-226	7	Construction					1	0.04
72-226	8	Thermal	1	0.01				
72-226	9	Construction	2	0.01				
72-226	10	Construction						
72-226	11	Thermal					3	0.32
72-226	12	Thermal	1	0.01			1	0.01
72-226	13	Construction						
72-226	14	Construction						
72-226	15	Construction			1	0.14	2	1.00

Site	Sample	Type	Aceraceae *Acer* sp.		Juglandaceae *Carya* sp.		Juglandaceae *Juglans* sp.	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
72-226	16	Construction					1	0.01
72-226	17	Thermal	1	0.01				
72-226	18	Thermal						
72-226	19	Thermal	3	0.10				
72-226	20	Construction					1	0.20
72-226	21	Construction					3	2.05
72-226 Total			**48**	**0.70**	**4**	**0.16**	**12**	**3.63**
102-44A	1	Construction						
102-44A	2	Thermal	1	0.05				
102-44A	3	Thermal	1	0.27				
102-44A	4	Thermal	1	0.29				
102-44A	5	Construction						
102-44A	6	Construction	6	0.01	2	0.01		
102-44A	7	Construction	2	0.01				
102-44A	8	Thermal						
102-44A	9	Construction					1	0.04
102-44A	10	Construction						
102-44A	11	Thermal	6	0.48				
102-44A	12	Thermal	8	0.57				
102-44A	13	Thermal						
102-44A	14	Thermal						
102-44A	15	Thermal	1	0.01				
102-44A	16	Construction						
102-44A	17	Construction					2	1.83
102-44A	18	Construction						
102-44A	19	Construction	1	0.14				
102-44A	20	Construction						
102-44A Total			**27**	**1.83**	**2**	**0.01**	**3**	**1.87**
72-226 and 102-44A Total			**75**	**2.53**	**6**	**0.17**	**15**	**5.50**

Site	Sample	Type	Betulaceae *Betula* sp.		Softwood		Pinaceae *Pinus* sp.	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
72-226	1	Thermal						
72-226	2	Thermal						
72-226	3	Thermal						
72-226	4	Thermal					1	0.05
72-226	5	Thermal					3	0.02
72-226	6	Construction					1	0.01
72-226	7	Construction						
72-226	8	Thermal					1	0.01
72-226	9	Construction						
72-226	10	Construction					2	0.01
72-226	11	Thermal						
72-226	12	Thermal						
72-226	13	Construction						
72-226	14	Construction						
72-226	15	Construction						
72-226	16	Construction					1	0.02
72-226	17	Thermal					1	0.01
72-226	18	Thermal						
72-226	19	Thermal						
72-226	20	Construction						
72-226	21	Construction						
72-226 Total			**0**	**0.00**	**0**	**0.00**	**10**	**0.13**
102-44A	1	Construction						
102-44A	2	Thermal			2	1.03		
102-44A	3	Thermal			1	0.12	6	1.10
102-44A	4	Thermal	1	0.20			2	0.11
102-44A	5	Construction			2	0.55	1	1.21
102-44A	6	Construction					4	0.01
102-44A	7	Construction			1	0.01		
102-44A	8	Thermal						
102-44A	9	Construction			1	0.04	2	0.05
102-44A	10	Construction	1	0.42				
102-44A	11	Thermal						
102-44A	12	Thermal						

Site	Sample	Type	Betulaceae *Betula* sp.		Softwood		Pinaceae *Pinus* sp.	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
102-44A	13	Thermal						
102-44A	14	Thermal					1	1.49
102-44A	15	Thermal					1	0.01
102-44A	16	Construction						
102-44A	17	Construction					2	1.47
102-44A	18	Construction						
102-44A	19	Construction					3	0.18
102-44A	20	Construction						
102-44A Total			**2**	**0.62**	**7**	**1.75**	**22**	**5.63**
72-226 and 102-44A Total			**2**	**0.62**	**7**	**1.75**	**32**	**5.76**

Site	Sample	Type	Pinaceae *Tsuga* sp.		Cupressaceae *Thuja* sp.		Unidentifiable	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
72-226	1	Thermal					2	0.02
72-226	2	Thermal					2	0.04
72-226	3	Thermal					1	0.01
72-226	4	Thermal					3	0.02
72-226	5	Thermal	1	0.01			5	0.03
72-226	6	Construction						
72-226	7	Construction					3	0.03
72-226	8	Thermal						
72-226	9	Construction					2	0.02
72-226	10	Construction					2	0.01
72-226	11	Thermal						
72-226	12	Thermal						
72-226	13	Construction						
72-226	14	Construction						
72-226	15	Construction						
72-226	16	Construction						

Site	Sample	Type	Pinaceae *Tsuga* sp.		Cupressaceae *Thuja* sp.		Unidentifiable	
			Count	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
72-226	17	Thermal						
72-226	18	Thermal						
72-226	19	Thermal						
72-226	20	Construction						
72-226	21	Construction						
72-226 Total			**1**	**0.01**	**0**	**0.00**	**20**	**0.18**
102-44A	1	Construction					1	0.10
102-44A	2	Thermal	15	3.26	7	0.69		
102-44A	3	Thermal	10	4.11				
102-44A	4	Thermal					1	0.04
102-44A	5	Construction	13	44.69			1	0.42
102-44A	6	Construction					5	0.01
102-44A	7	Construction			1	0.01	2	0.01
102-44A	8	Thermal						
102-44A	9	Construction	4	1.83				
102-44A	10	Construction	6	31.86				
102-44A	11	Thermal	4	0.34				
102-44A	12	Thermal	1	0.05				
102-44A	13	Thermal	15	6.20				
102-44A	14	Thermal	15	2.20				
102-44A	15	Thermal	1	0.12				
102-44A	16	Construction	1	14.10				
102-44A	17	Construction	6	1.49				
102-44A	18	Construction						
102-44A	19	Construction	6	2.74				
102-44A	20	Construction	7	9.74	3	11.15		
102-44A Total			**104**	**122.73**	**11**	**11.85**	**10**	**0.58**
72-226 and 102-44A Total			**105**	**122.74**	**11**	**11.85**	**30**	**0.76**

6: Recovered Ceramics and Mean Ceramic Dates

Site: 72 -226

Ceramic Type	Total	Mean	TPQ	TAQ
annular whiteware	1	1860	1820	1900
blue hand painted underglaze pearlware	3	1800	1775	1820
blue shell edged pearlware	8	1805	1780	1830
British brown stoneware untyped	2	1733	1690	1775
embossed green edged pearlware (feathers, scales, etc.)	1	1830	1820	1840
English scratch blue white salt glazed stoneware	2	1760	1744	1774
hand painted polychrome underglaze pearlware	4	1805	1795	1820
hand painted polychrome whiteware	1	1865	1830	1900
purple transfer printed whiteware	1	1865	1830	1900
red earthenware black lead glaze	1	1786	1700	1830
red transfer printed whiteware	27	1865	1830	1900
untyped creamware	16	1791	1762	1820
untyped pearlware	21	1808	1775	1840
untyped whiteware	61	1860	1820	1900

mean TPQTAQ 1837+/- 48.49 **total:** 149

TPQ: 1690 **TAQ:**1900

mean TPQTAQ range:1802-1871

mean ceramic date: 1837 +/- 32.84

MCD 2 sigma range: 1771-1903

Site: 102 -44A

Ceramic Type	Total	Mean	TPQ	TAQ
annular pearlware	7	1805	1790	1820
blue hand painted underglaze pearlware	42	1800	1775	1820
blue shell edge whiteware	4	1840	1820	1860
blue shell edged pearlware	22	1805	1780	1830
blue transfer printed pearlware	10	1818	1795	1840
blue transfer printed whiteware	37	1860	1820	1900
blue untyped decoration pearlware	11	1810	1775	1840
British brown stoneware untyped	5	1733	1690	1775
common cable polychrome slip creamware		1805	1795	1805
common cable polychrome slip pearlware	1	1810	1785	1835
embossed blue edged pearlware (feathers, scales, etc.)	1	1828	1820	1835
English scratch blue white salt glazed stoneware	4	1760	1744	1774
English white salt glazed stoneware untyped	5	1763	1720	1805
green shell edged pearlware	6	1810	1780	1840
hand painted polychrome overglaze creamware	1	1788	1765	1810
hand painted polychrome underglaze pearlware	48	1805	1795	1820
hand painted polychrome whiteware	27	1865	1830	1900
mocha pearlware	3	1817	1795	1840
Nottingham stoneware	1	1755	1700	1810
porcellaneous ware	15	1860	1820	1900

red earthenware black lead glaze	42	1786	1700	1830
red transfer printed whiteware	35	1865	1830	1900
untyped creamware	316	1791	1762	1820
untyped pearlware	273	1808	1775	1840
untyped whiteware	306	1860	1820	1900

mean TPQTAQ 1819**+/-** 47.19 **total:** 1222

TPQ: 1690 **TAQ:**1900

mean TPQTAQ range:1786**-**1853

mean ceramic date:1820 **+/-** 30.87

MCD 2 sigma range:1758-1882

***Note: Recovered ceramics and mean ceramic dates were identified, calculated, and provided by the Mashantucket Pequot Museum and Research Center.**

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