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CONTENTS:

Editor's Note 1

Letter from the President 2

An Update on Bifurcate-base Points from the Titicut Area . . *William B. Taylor* 3

The Whortleberry Hill Site: An Early Holocene Camp in Dracut, MA . . . . . *Martin G. Dudek* 12

Reflections of the Middle Archaic: A View from Annasnappet Pond . . . . . *Dianna L. Doucette* 22

The Rubin Farm Site, Norton, MA . . . . . *Jeff Boudreau* 34

Contributors 44

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Editor's Note

This issue of the *Bulletin* again focuses on the Archaic Period with a particular emphasis on sites in southeastern Massachusetts. The Archaic Period, extending from ca. 9,500 to 3,000 years ago, is the longest and in many ways most complex of the rather arbitrary units archaeologists traditionally have used to sub-divide the past. As these articles show, the Archaic Period was neither simple nor a single thing but a complex sequence of cultural traditions that reflected a changing environment as well as the technological and social ways Native people responded.

William Taylor starts with a review of the bifurcate-base points found in the Titicut area. These distinctive tools are considered a diagnostic marker for the Early Archaic Period, ca. 9,000 to 8,000 years ago. With more than 120 examples recorded from a small area along the upper Taunton River, Titicut has produced one of the largest collections of bifurcates yet reported in the Northeast. Taylor's regional survey is complemented by Martin Dudek's preliminary report on the Whortleberry Hill site in Dracut. Here a single bifurcate was recovered during a Phase III excavation project. What makes this recovery so significant is that we see this tool as part of a larger artifact assemblage, one associated with a possible dwelling, important environmental information and ^{14}C dates. As a result we begin to see bifurcates, perhaps for the first time in Massachusetts, within the context they were made and used. Dianna Doucette continues the story with a review of her work at Annasnappet Pond in Carver. Here the focus is on Middle Archaic sites and the evidence for increased regionalism between 8000 and 6000 years ago. Based on her meticulous excavations and analysis, Doucette provides us with a detailed case study, one that defines Middle Archaic sites and artifact assemblages in this headwaters area. Such case studies provide a foundation that makes broader regional comparisons possible. In the final article, Jeff Boudreau summaries his findings from the Rubin Farm site in Norton. This is an excellent example of another kind of case study – one based on years of surface collecting a single field. Through his discussion of spatial patterns and lithic technology, Boudreau demonstrates that this site had two components, one Middle Archaic and the other Late Archaic. His work shows how much important information can be drawn from carefully made surface collections.

This issue also contains two additional short pieces. The first is a letter to the general membership from Michael Volmar, the Society's President. The MAS faces many challenges as it enters its sixty-sixth year, ones familiar to most volunteer organizations. Mike's letter outlines some of the issues that we need to address in the coming year. Finally, Jeff Boudreau has created a poster that illustrates many of the Titicut bifurcates in detail and full color. Through his generosity, this poster will be available through the Robbins Museum, with a percentage of the cost contributed to the MAS. A small version of this poster is reproduced on the inside back cover.

As always, my deep thanks to the authors for their thoughtful contributions, to Shirley Blancke and Kathy Fairbanks for proof reading, and to Margaret K. Bradley for her assistance with editing and formatting.

James W. Bradley

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This is a critical time for small not-for-profit organizations like the MAS. Generally in the region and across the country museum and historical organizations are seeing less revenue, a drop in membership and fewer visitations. The MAS Board of Trustees is examining what we can do to maintain the financial health of the organization.

There are a number of difficult choices facing the MAS in the upcoming years. The MAS membership has an older demographic profile and we must endeavor to attract a younger constituency. The financial responsibility of maintaining the Robbins Museum has dragged the Society's budget into deficit for the last several years. As a largely volunteer organization, we need to find innovative ways to keep the good work going on that can accommodate the multiple responsibilities of life, work and family.

A few years ago the MAS spent some time investigating the possibility of separating the Society from the museum but in the intervening years the matter has largely been dropped. In order to address the financial situation, the board will revisit this topic and under what terms the Society might entertain such an endeavor.

The Society is in the process of revising its Code of Ethics, the set of standards for archaeological methods and reporting that all MAS members are required to meet. The board is planning to discuss what uniform standards in archaeological methods and reporting MAS members should follow.

Together we can begin to develop and implement a coordinated plan of work to meet our goals. As always the work needs committed volunteers from the board, the general membership, and local colleges and universities. Find out what you can do today! We look forward to hearing from you all.

Sincerely,

Michael A. Volmar PhD
President

An Update on Bifurcate-base Points from the Titicut Area

William B. Taylor

Introduction

As a new millennium begins, it seems an appropriate time to update the survey of bifurcate-base points that have been found within the Titicut area. Since my original article (Taylor 1976a), several additional specimens have been found or recognized in old collections. To date I have confirmed a total of 122 bifurcates recovered from a 1.5 mile stretch of the Taunton River. With one exception, I have personally examined all these points. It is unlikely that many more will be recovered since most were found through surface collecting on plowed fields. Today, farming is almost non-existent and many of these site areas have grown back into woods or been destroyed by housing developments.

Summary of Bifurcate-base Point Sites

Let's take a closer look at the nine sites along the Taunton River where so many bifurcate-base points have been found. These sites are shown in Figure 1. We will start at the Titicut Bridge on Plymouth Street, what World War II Veterans now call Memorial Bridge, and move downstream along the Taunton River. The first field on the west side is part of the Cushman-Thompson Farm (Figure 1, #6). It contains twenty-four acres on the river and has one of the lowest elevations of all the Early Archaic. The low area often floods during spring rains. The land rises only five feet in a gradual slope extending west from the river to a small ridge that runs parallel to the river. A stonewall runs through the center of this property dividing it in

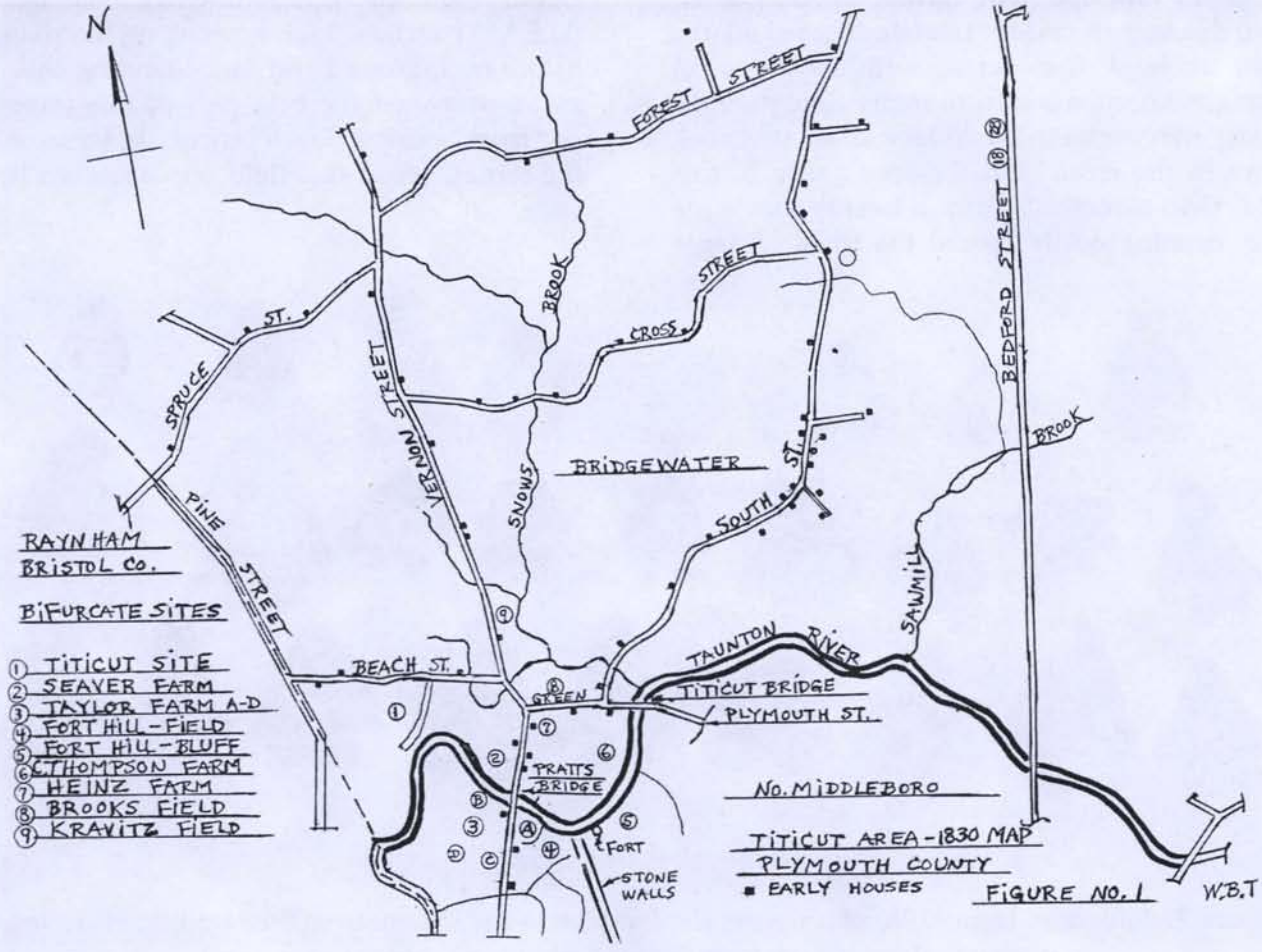


Figure 1. Location of sites discussed in the text.

half. On the western edge lies a small swamp with a spring fed brook that enters the Taunton River just above the rapids upstream of Pratts Bridge on Vernon Street. A small Early Archaic site of about one acre is located on the north side of the stonewall. This site has produced four bifurcates over the last fifty years. It has only been plowed a few times, however, evidence of a large quartz workshop has been exposed each time this site is plowed.

The Fort Hill Bluff site lies diagonally across the river (Figure 1, #5). This important Early Archaic site is on a steep bluff that rises sharply some thirty-five feet above the river. Atop this bluff was a Contact Period Indian fort excavated by the Cohannet Chapter of the M.A.S. in 1952 (Dodge 1953; Taylor 1976b). A spring lies on the hillside below the fort and at the water's edge sits Table Rock, a natural platform fourteen feet wide, twenty-five feet long and five feet above the river. Early explorers reported that Indian people fished from this large boulder. The site covered a large area, at least five acres, with evidence of aboriginal occupation from many time periods. Along the northern boundary a small brook flows to the river. On the south side of this field, twin stonewalls form a twenty-foot wide lane, running north toward the river. A large quartz workshop is located near the wall. A total of twenty-two bifurcate-base points have been found on this site through excavation and surface hunting (Figure 2).

The Fort Hill Field site (Figure 1, #4) begins south of the walled lane and around the bend of the river. This area is also a large field with at least five acres along the river. It too shows much evidence of occupation from Early Archaic to Historic times. An esker runs through this field in a north-south direction. On the eastern side lies a large swamp, with a brook flowing west under Vernon Street to the Taunton River. The fields surrounding this swamp, on the east side, have produced many artifacts. An excellent spring lies on the far southeastern side of this swamp. I surface collected these fields when they were plowed during the 1940s and also found artifacts when I used the land for a tree farm from 1977 to 1980. Among these were nine bifurcate points. In June 1998 the Department of Environmental Management (D.E.M.) purchased ten acres along the river as a future campground and canoe-landing site. This move protected the best part of this important site from housing development. In January 2001 the remainder of this field was acquired by the state.

Figure 2. Bifurcates from Middleboro sites; the fourteen to the left are from the two Fort Hill sites, the twelve to the right are from Taylor Farm (some minor restoration).

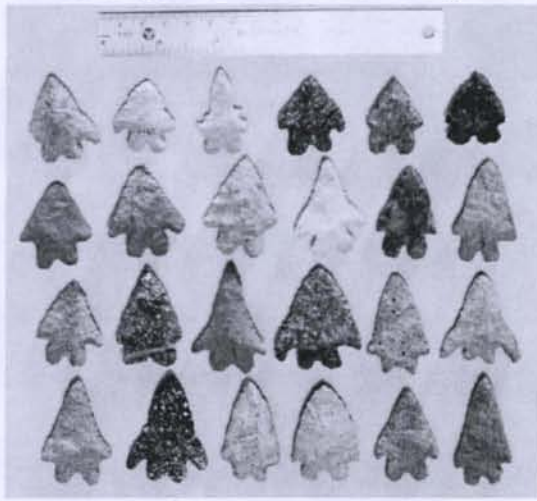
As we move downstream, the land slopes gradually down until it adjoins the Taylor Farm Pasture Site (A), the first of four components in the Taylor Farm site. This two and half acre parcel would have been an ideal spot for a camp. A spring fed brook is located along the southern end and flows north into the river. One bifurcate was found here when the field was first plowed. This site is located just above a stone fish weir, which is still visible at low water levels (Weston 1906). The Taunton River is ninety and one hundred feet wide here, at Pratt's Bridge, depending on the water level.

Continuing downstream through the rapids and under Pratt's Bridge, we reach the rest of the Taylor Farm site (Figure 1, #3) extending across eighty acres on the south side of the Taunton River. Here the second component of the Taylor Farm site is located. Known as the River site (B), this land is only six feet above the river and occasionally floods during high water. The exception is a small knoll some two feet above the field that usually stays above high water. Two bifurcates were found on the knoll. A wading place across the river is located here.

The third component at Taylor Farm is the Hillside site along Vernon Street (C). This covers seven acres and is located on a terrace uphill from the river. Here, while digging my house cellar in 1957, several burials were found. They were primarily from the Contact Period and were probably part of the 'Praying Indian' community in North Middleboro (Flower 1974; Taylor 1982). Five bifurcates were also found here when the field was first plowed.

The Orchard site (D) is located further west near the center of the property on a terrace that never floods. There were once hundreds of apple trees planted in this field. When the orchard was bulldozed in 1956, and again in 1980, many features appeared. Today the Orchard site is an open hay field of thirteen acres. In 1951 the Cohannet Chapter of the M.A.S. excavated several large storage pits,

Figure 3. Bifurcates from Bridgewater sites (some minor restoration).



some of which contained charred nuts and corn, as well as additional burials (Fowler 1974, 1982). Four bifurcate points have also been found on the Orchard site.

Taylor Farm has always been an excellent location for hunting and fishing. Enclosed within a loop of the Taunton River, there are many good spots for catching perch and bass. In the spring thousands of alewives (herring) come upstream and can be caught in the rapids. Shad, eels, salmon and sturgeon may have come upstream too, as well as the occasional seal following the annual fish runs. Deer have always preferred this property, as they can swim the river if hunted too closely.

Across the river to the north is the Seaver Farm site (Figure 1, #2). This thirty-two acre farm is bounded by Vernon and Beach Streets in Bridgewater and has approximately 1500 feet of river frontage. A swale about 275 feet deep borders the river before rising sixteen feet to a terrace overlooking the river. This swampy area contained two fresh water springs. Known locally as 'Arrowhead Farm', many early collectors searched these fields each spring and fall after plowing. This was one of the richest sites along the Taunton River and has produced evidence from every cultural period except Paleo-Indian (Dodge 1962). Between 1942 and 1972, my father and I found forty-six bifurcate-base points on these fields. At least ten more

Figure 4. Broken bifurcates from Bridgewater sites.

were recovered by Ralph Nickerson and other local collectors. It is likely that other old-time collectors from Attleboro and Plymouth found bifurcates as well, however, most of these collections have been sold and scattered. In 1969 and 1970 several new houses were built along Beach and Vernon Streets destroying a significant portion of this important site. At least twenty burials, mostly cremations, were destroyed during grading. Fortunately, salvage efforts preserved some information for future study (Taylor 1970; 1972). In 1999 the Town of Bridgewater purchased the remaining portion of Seaver Farm for town water supply thereby protecting it for the future (Figure 3, see previous page).

Downstream from the Seaver Farm is the Titicut site (Figure 1, #1). This property is located at a sharp bend in the river near an old shipyard. Here, the riverbank rises sharply to a terrace eighteen feet above the river where the land continues to slope gradually up to an esker on the western boundary. Between 1946 and 1951, the Warren King Moorehead chapter of the M.A.S. conducted extensive excavations on this site (Robbins 1967). As at Seaver Farm, nearly every cultural period, from Early Archaic to the Contact Period, is represented at Titicut. Thirteen bifurcate-based points have been found. In 1976 the Town of Bridgewater bought this property for conservation and recreational use (Figure 4).

Three additional site areas are located back away from the river. The Heinz Farm site was located on the corner of Vernon and Green Streets (Figure 1, #7). This property contained six acres and produced evidence of use throughout the Archaic period. Four bifurcate points were found here between 1942 and 1965. In 1972 the construction of four new houses destroyed this site. The Brooks Field site (Figure 1, #8) was located across Green Street from the Heinz Farm. This was a small Archaic site of two acres on the south side of Snows Brook, an important tributary of the Taunton River. A portion of this site was destroyed in 1972 when two new houses were built. The rest was lost in 2000 with construction of five more homes. One bifurcate point was found in Brooks field. The final site, Kravitz Field (Figure 1, #9), is just north of Seaver Farm on Vernon Street. It is located on the west side of Snows Brook as it flows south from the large swamp north of Forest Street in Bridgewater. Two bifurcate points have been found on this site.

Based on this survey along a one and a half mile stretch of the Taunton River, a total of 122 bifurcate-base points have been recorded (Table 1). This does not represent all the examples found, since many unrecorded specimens must have been present in older collections and are now lost. In addition, other bifurcates probably lie deeply buried in the ground below the plow zone. For example, no bifurcates were found on a portion of the Seaver Farm until several new houses were built. Ten bifurcates were recovered after the bulldozer removed fourteen inches of topsoil.

Comments on the Titicut Bifurcates from other Archaeologists

As Curtiss Hoffman once remarked, 'Titicut is bifurcate Heaven'. With such a concentration of these points, I have felt it was important to share this information with other archaeologists interested in the Early Archaic.

In 1975 I sent Jefferson Chapman photos of my bifurcate collection, while he was completing his Ph.D. dissertation on the Rose Island site at the

University of North Carolina, Chapel Hill. Based on his research, Dr. Chapman made four observations. First, he proposed that bifurcates represented an Early Archaic Horizon, preceded by the Dalton Horizon, Big Sandy Horizon and the Kirk Horizon. The Rose Island Site along the Little Tennessee River in eastern Tennessee and the St. Albans Site along the Kanawha River in West Virginia provided stratigraphic sequences demonstrating the development of phases of bifurcate points within this group (Broyles 1966, 1971; Chapman 1975). Within this Bifurcate Horizon, he proposed four phases with different styles of bifurcate-base points: MacCorkle Stemmed (7,000 B.C.), St. Albans Side Notched (6,700 B.C.), LeCroy Bifurcated Stem (6,300 B.C.) and Kanawaha Stemmed (6,000 B.C.). Although it is difficult to study points without actually having the artifact in hand, Dr. Chapman identified examples of all four styles from my collection.

Chapman's second observation was that important environmental changes accompanied these changes in point style. Adaptation to the deciduous forests of Eastern North America was especially important since many kinds of berries, nuts, roots, tubers, and other plants were available for gatherers in the forests and marshes. A third observation concerned site distribution and patterns. Although bifurcate-base points are widespread in the eastern United States, they seldom occur in large numbers on any one site. Seaver Farm has produced one of the largest assemblages of bifurcates in the Northeast. However, when one adds in the other eight sites located nearby, the Titicut area may have the largest concentration of bifurcates yet reported. Perhaps, as Chapman has suggested, these sites served as 'Base Camps' for seasonal hunting-gathering trips by smaller bands of people. Chapman's fourth observation focused on the possibility that bifurcates were used as special tools. Some of the broken examples show reworking for cutting and scraping tasks. I have also noticed that bifurcate-based drills are quite rare. I have seen only five or six examples in my study.

In 1982 Don W. Dragoo compiled and illustrated three charts of Paleo and other prehistoric projectile points found in eastern North America (Dragoo 1982). These illustrations were done for the Institute For Human History in Gloucester, Virginia, and were accompanied with a description of each

Table 1. Summary of bifurcate-base points from the Titicut area

Sites	MHC Number	felsite	hornfels	chert	quartz	quartzite	Saugus jasper	argillite	TOTALS
Middleboro									
Fort Hill Bluff	19-Pl-163	13			1			2	16
Fort Hill Bluff *	19-Pl-163	4	1						5
Fort Hill Field	19-Pl-164	6					1		7
Fort Hill Field *	19-Pl-164	2							2
Taylor Farm	19-Pl-165	8		2		2			12
Bridgewater									
Seaver Farm	19-Pl-162	40	3	3					46
Seaver Farm **	19-Pl-162	10							10
Titicut	19-Pl-161	13							13
Kravitz Field		2							2
Brooks Field		1							1
Heinz Farm		4							4
Cushman-Thompson Farm		4							4
TOTALS		107	4	5	1	2	1	2	122

* William Vigneault collection; ** Ralph Nickerson collection

point type. In the Early Archaic section Dragoo illustrated one of my bifurcates calling it a 'Titicut point' and describing it as a variation of the LeCroy type found in Tennessee. In my experience, bifurcates from the Titicut area differ from LeCroys in that they are generally wider, longer and have more pronounced shoulder barbs. In 1991 Curtiss Hoffman revised the *Classification of Projectile Points* developed by William S. Fowler (1963) and called them 'Taunton River Bifurcates' (Hoffman 1991, after Hallaren 1988). This seems a more appropriate name as these points are found throughout the Taunton River Basin.

In 1993 Eric S. Johnson published a report on distribution of bifurcate-base points in eastern and central Massachusetts. His study shows that bifurcates occur in most major drainage basins in higher than expected densities (Johnson 1993). Important major waterways include the Merrimack and Taunton River systems as well as large bodies of water such as Assawompsett Pond. Johnson also identified confluence points, or where tributaries join a larger river, as important locations for bifurcates. This certainly appears to be the case in southeastern Massachusetts. Hallaren reports finding between twenty-seven and thirty bifurcates at the Plymouth Street site only eleven miles upriver from Titicut. Several of these points appear to have been associated were ^{14}C dates ranging from 7,850±70 B.P. to 7,980±200 B.P. (Hallaren 1988). Other confluence points that have each yielded a few bifurcates include: the Town River in West Bridgewater, Nunkatusset Island in Bridgewater, the Michaelson Farm on the Hockomock River in West Bridgewater and the Leland Farm in East Bridgewater on the Matfield River. Several similar sites have been reported along the Nemasket River such as the Middleboro Little League and the Lakeville Corporate Park (Riverside 2 and Riverside 3). These have also produced small numbers of bifurcate points. Undoubtedly there are more sites to be discovered.

In 1995 William Begley and Duncan Ritchie of the Public Archaeology Laboratory, Inc. (P.A.L.) spent an afternoon photographing and measuring my bifurcate collection (88 examples) as part of their background research for a report on the Lakeville Corporate Park (Begley and Davin 1996). They shared many of their observations with me and I want to report some of them here. In terms of lithic preferences, the vast majority (87%) of my bifurcates were made from volcanic rock of regional origin. Based on visual similarities, the most common material was felsite from the Lynn Complex (40%), followed by Blue Hills felsite (17%), Attleboro red felsite (14%) and Saugus 'jasper' (1.4%). Another 8.6% were other unidentified felsites and the remaining 6% were unidentified volcanics. Of the 13% made from non-local material, 6% were identified as Hudson Valley chert, 2.8% as quartzite and 2.8% of hornfels. The one remaining specimen could not be matched with any known source.

Although these bifurcate-base points all have the same basic shape, several interesting attributes were noted. These included serration of the blade (on 26%), elongated drooping shoulder barbs (on 27%) and side notches or protrusions, possibly as extra hafting features (on 6%). In addition, the majority of points (54.5%) had basal notches at least .5 cm deep. In overall terms, the Titicut bifurcates were wider than other reported examples and longer than all but the MacCorkle bifurcates. Begley and Ritchie also informed me that two Early Archaic dates - 8,480±140 B.P. and 8,430±170 B.P. - had been returned from charcoal samples at the nearby Bassett Knoll Site in Raynham. This site is a mile south of the Titicut area. Unfortunately, no bifurcates were associated with this deep pit feature.

Why Were They Here?

The answer to this question lies in the concentration of natural resources that are found along the Taunton River from its headwaters and tributaries to Mount Hope Bay. One important part of this system is Hockomock Swamp. Also known as the 'Place Where Spirits Dwell', Hockomock Swamp is the largest freshwater vegetated wetland system in

Massachusetts. It has an area of 16,950 acres and is located in six towns: Bridgewater, West Bridgewater, Easton, Norton, Raynham and Taunton. The swamp acts like a giant sponge, absorbing water during rainy periods and then gradually releasing it during drier times. Thousands of migratory birds use this area, especially Nippenicket Lake, during the spring and fall season. Hockomock Swamp is also well known to hunters and trappers.

The Taunton River basin covers 562 square miles and is the second largest drainage area in Massachusetts. It is located in all or part of thirty-eight cities and towns, and is the largest watershed in southeastern Massachusetts. The river itself is nearly forty miles long and flows in a southwesterly direction. It is a rather flat river, falling only twenty-one feet throughout its course. Salt water influence extends roughly sixteen miles upriver while tidal influence can be felt to at least twenty-one miles. The Taunton River has six major tributaries. Starting upstream these include: the Winnetuxet (which originates in the Great Cedar Swamp located in Plympton and Halifax), the Nemasket (which flows from Assawompsett Pond), the Mill River (which starts in Taunton's Lake Sabbatia), the Three Mile River (which begins in Norton), the Segreganset (which flows through Dighton) and the Assonet (which starts in the Great Cedar Swamp in Lakeville). The Taunton River estuary is also an extremely rich and diverse environmental area, one with all the expected resources of fresh water, salt water and salt marsh (Curley et al. 1974).

Since 1997 several studies have been conducted on the Taunton River, some as part of the planning for a new desalinization plant proposed in North Dighton. These studies have identified many of the natural resources found along the river including some not previously noticed. In its report, Bluestone Energy Services, Inc. identified many of these (Bluestone Energy 2000). A similar study was conducted for the City of Brockton (Camp, Dresser and McKee 1997). A third study by Brian Reid compiled an in-depth inventory of plants and animals throughout the Taunton River Corridor (Reid 1998).

While the results of these studies can only be summarized here, they indicate how rich and diverse the natural resources of the Taunton drainage are. In terms of fish, at least twenty-nine freshwater and anadramous species were reported (Reid 1998). This number is much greater when the pelagic species found in the Taunton estuary are added (Curley et al. 1974). Seven species of freshwater mussel are found in the Taunton (Reid 1998). Although there is little archaeological evidence from the Titicut area that Indian people ate mussels, middens of these shells have been found elsewhere in Massachusetts (Blancke 1995). Marine shells are also rare on Titicut area sites. Although quahog, oyster, whelk and sea clamshells have been found occasionally, no shell middens are known. Nearly thirty species of amphibians and reptiles have been reported (Reid 1998). Of these, nine are turtles. The largest are snapping turtles that often crawl some distance to lay their eggs in the spring. Reid also noted 154 species of birds (114 of which are known to nest in the area), more than two dozen mammals and 360 plant species from the Taunton Basin (Reid 1998). Many of the latter were important for food, medicine or equipment. While it cannot be proven that the resources currently found along the Taunton River were present 9000 years ago, these studies do suggest that the Taunton Basin has had a rich and diverse environmental history, one that certainly would have attracted Indian people.

Seals – A Part of the Story?

Seals were once a common sight in the Taunton River. However with increased industrial pollution during the 1930s and 1940s, they rarely ventured upriver. As environmental protection laws took effect during the 1970s, many people hoped the seals would return and, by the early 1980s, seals were reported as far up the river as Church Street in Raynham.

In September 1982, the Mystic Aquarium released two harbor seals and a large gray seal in the Elizabeth Islands off Cape Cod. One large male seal named 'Clouseau' was seven years old;

he was nine feet long, weighed 600 pounds. He soon made the journey up the Taunton River as far as the Nemasket and even a short distance beyond, some thirty-two miles upriver from Mt. Hope Bay. Perhaps Clouseau entered the river because of the fish. In the fall small herring, sometimes called 'buckies', return downstream to the ocean from Assawompsett pond and lake Nippenucket. A seal the size of Clouseau can consume thirty pounds of fish per day. In addition to the herring, carp, eels, perch and bass are also readily available in the river (Bliss 1982). There certainly was enough food for Clouseau; he stayed in the upper Taunton, between Alden Bridge on Titicut Street and the Nemasket River, for several weeks before returning to the ocean.

On April 27, 2000 a young hooded seal made his way up the Taunton River to the Satucket River in East Bridgewater, nearly fifty miles from Mt. Hope Bay. There he entertained crowds of people while sunning himself (Julius 2000). Quickly named 'EB', the seal spent about two weeks upstream from Titicut. I kept watching the river in the hope of spotting him and was finally rewarded.

Early Friday morning on May 12th, I noticed him crawling up a small knoll just below the rapids from Pratts bridge on Vernon Street. It took him about five minutes to leave the Taunton River and crawl the twenty feet to the top of the knoll. Here he stretched out on his back and enjoyed the early morning sun for two hours. I returned home and brought my family back to witness this rare event. We walked quietly to within thirty-five feet of his resting place and took several pictures while he slept. He was roughly five feet long and probably weighted 150 pounds. Thinking like an Early Archaic hunter, I imagined walking slowly up to my prey. Even if he awoke before I reached him, 'EB' would have to crawl twenty feet back to the river. A few quick strides and I could have speared him. I believe that 8,000 years ago this situation was played out quite often.

To bring this story up to date, two seals have been reported in the upper Taunton River this spring. A harp seal was caught and tagged in Middleboro and a harbor seal was seen along the Satucket River in East Bridgewater. Both were pups of about thirty to thirty-five pounds. As efforts to clean up the Taunton River continue, more seals appear to come upriver following the herring run. During Early Archaic times, this might have been a common occurrence.

Acknowledgements

I would like to thank Duncan Ritchie and the PAL Inc. for allowing me to cite their research on my bifurcate collection. This is a good example of the amateur and the professional archaeologists sharing information for the benefit of all. I also thank Curtiss Hoffman for reading my article and offering helpful suggestions.

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The Whortleberry Hill Site: An Early Holocene Camp in Dracut, MA

Martin G. Dudek

Introduction

The Whortleberry Hill Site (19-MD-846) is located on a lower south-facing slope and adjacent terrace in Dracut, MA (Figure 1). It was inhabited during the Early Holocene, with sparse and localized use in the Transitional Archaic. The site was discovered during a routine archaeological intensive survey and further investigated through a site exam and data recovery (Dudek, Dalton and Chartier 2001; Dudek nd). During the excavation of a 6 m wide pipeline corridor, two artifact-bearing loci were found. Each revealed a large Early Holocene pit feature. Both pit features were about 3 m in width, 1 m deep and contained a biotite-rich fill with dark lens or pockets at their base. These large pit features are interpreted as pit-houses constructed as semi-subterranean dwellings with an earthen covering. The dark lens contained charred nutshell and charcoal. These were radiocarbon dated and calibrated to 8,596 cal yr B.P. for Feature 2 at Locus 1 and 9,025 cal yr B.P. for Feature 3 at Locus 2. Locus 1 also contained two ground stone adzes and a whetstone within the margins of the large pit feature along with quartz tools and debitage. A bifacial drill and a bifurcate-base point were recovered outside the feature. Locus 2 contained several small charcoal-rich pockets at the base of Feature 3 with charred nutshells, small quantities of calcined bone and quartz lithics. Over 3,000 lithic fragments were recovered around or downslope of the features. Ninety-nine percent of these resulted from a quartz core and flake technology geared towards edge tool production, not bifacial tool making.

In addition to these Early Holocene features, some evidence of later use of this area was found. A Middle Archaic Neville point was recovered in the A horizon upslope from the Locus 1 pit feature. Upslope from Locus 2, a small pit (Feature SE-1) filled with calcined deer bone was found. Charcoal from this feature was AMS dated to 2,866 cal yr B.P.

Figure 1. The Whortleberry Hill site, looking north.

The Material Assemblage

Over 3,000 stone artifacts were recovered from the Whortleberry Hill site. Ninety-nine percent were quartz, mostly debitage. Locus 1 contained all of the diagnostic and ground stone tools as well as most of the edge tools. Locus 2 was located 20 m east of Locus 1 at the same topographic elevation. No diagnostic tool forms were recovered from Locus 2.

Locus 1. A large assemblage of material culture was recovered from Locus 1. In addition to the diagnostic

Figure 2. Bifaces from Locus 1.

bifacial and ground stone tools described below, a substantial inventory of informal, possibly expedient tools and related debitage were found. These included 12 bifacial edge tools or fragments (quartz); 30 unifacial edge tools (28 quartz, 1 hornfels, 1 quartzite); 12 wedges (quartz); 21 utilized flakes (19 quartz, 1 rhyolite, 1 quartzite); 30 cores (quartz); 1 hammer stone/ core (rhyolite) and 7 hammer stones (4 quartz, 2 granite, 1 rhyolite). Large quantities of quartz flakes and shatter were also found.

Two diagnostic rhyolite points and a stemmed quartzite drill were recovered from Locus 1 (Figure 2). The Neville point base and midsection was recovered from the A horizon above a more deeply buried quartz component from the B horizon. This point is made of a dark gray to black rhyolite with white phenocrysts. There is evidence of hafting wear on the base and hard scraping wear on the blade. Neville points are temporally diagnostic of the Middle Archaic Period (8,000 to 7,000 B.P.). The bifurcate-base point was recovered from the A horizon in square N6 E7, where quartz was present in both the A and B horizons. This point is made from a large, thin secondary flake of light gray rhyolite finished through unifacial pressure flaking of the edges. Although not really a biface, it fits the accepted morphological description for a bifurcate (Johnson and Mahlstedt 1984:66). Given the thinness of this piece, it is unlikely that it functioned as a projectile point and may have been used as a knife. Bifurcate-base points are temporally diagnostic of the Early Archaic Period (9,000 to 8,000 B.P.). The stemmed drill, made of gray quartzite, was recovered from the B horizon at N2 E12 and associated with quartz tools and debitage. It has a basal form that suggests a Stark point, temporally diagnostic of the Middle Archaic Period (7,500 to 6,500 B.P.). It is similar to examples from the Neville Site (Dincauze 1976:30, Plate 4a, e).

Three ground stone tools were recovered on or near the floor of Feature 2. These include a large igneous adze, a smaller siltstone adze and a sandstone whetstone (Figure 3). The large adze is made from a fine-grained, mafic rock. It is 18.5 cm in length and has a plano-convex bit 4.9 cm wide. The smaller adze is made from a banded gray siltstone. It is 10.8 cm in length and approximately 4 cm wide at the bit. Although the bit has been damaged, it appears to have had the same plano-convex shape as the larger adze. The whetstone is made from a medium-grained, grayish tan sandstone and is rectanguloid in cross-section. The ventral surface is flat, the dorsal surface convex. One lateral surface has

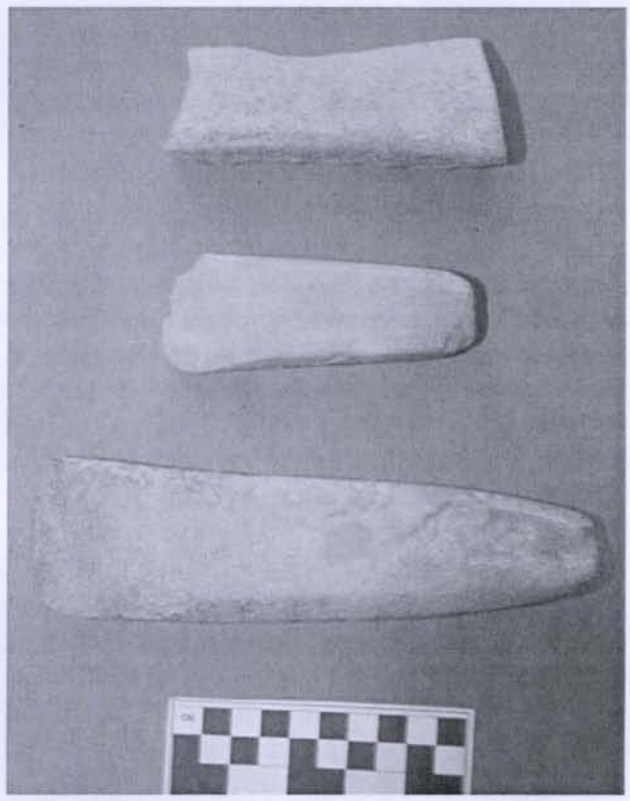


Figure 2. Whetstone and adzes from Feature 2, Locus 1.

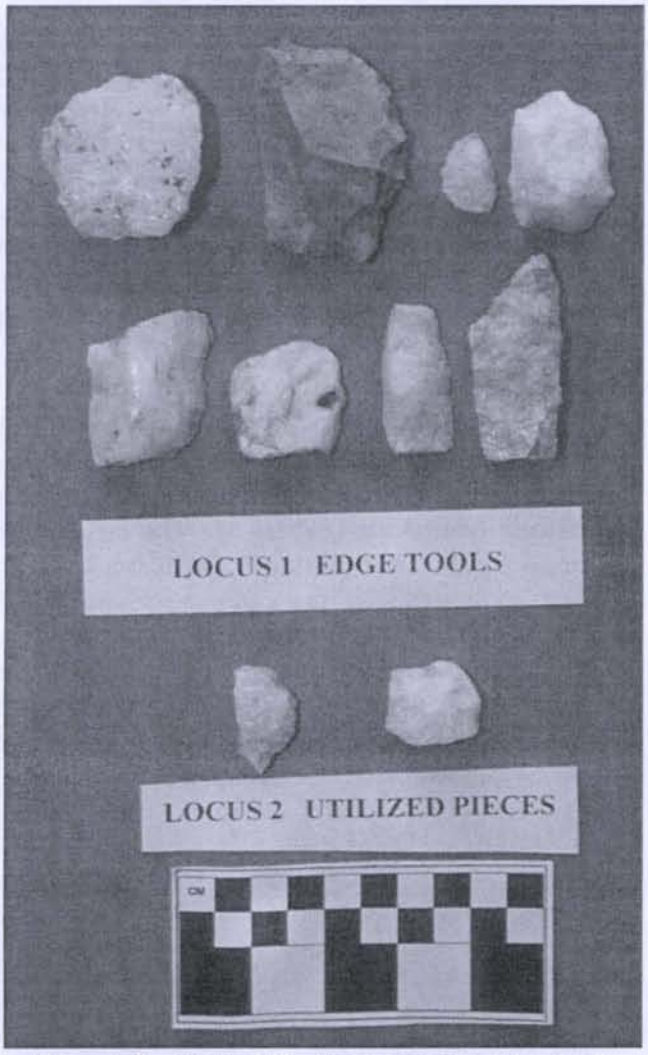


Figure 4. Unifacial edge tools from Locus 1 and utilized pieces from Locus 2.

the concave edge while the other is situated at a right angle to the flat ventral surface. The surfaces are ground smooth, except at the two ends and the lateral side opposite the concave edge, all three of which are bumpy but ground. The concave edge has a curvature consistent with the bit of the large adze. This specialized tool shows deliberate shaping and significant wear on the concave edge, ventral and dorsal sides.

Locus 2. The assemblage from Locus 2 was smaller and contained no diagnostic artifact forms although the inventory of informal tools was very similar. These included 4 bifacial edge tools or fragments (quartz); 6 unifacial edge tools (5 quartz, 1 meta-sediment); 10 wedges (quartz); 6 utilized flakes (5 quartz, 1 quartzite); 20 cores (19 quartz, 1 rhyolite) and 1 hammer stone (granite). Quantities of quartz flakes and shatter were found here as well.

Tool Production and Use-Wear. Lithic tool manufacture at Whortleberry Hill consisted primarily of quartz cobble reduction geared toward unifacial edge tools, not the production of bifaces. Some rhyolite, quartzite, hornfels and meta-sedimentary rock were present but they account for less than one percentage of the assemblage. Edge modification of quartz did occasionally result in a bifacial edge, however, most tools were wedge-shaped pieces of debitage with a unifacial edge (Figure 4). Cores were reduced through direct hard percussion, both with and without prepared striking platforms (Figure 5). Hammer stones were of quartz, granite and rhyolite. Eight hammer stones (four of quartz, three granite and one rhyolite) were recovered from Locus 1 and one granite hammer stone from Locus 2. All of the quartz and two of the igneous hammer stones show additional wear on their surfaces suggesting that these may have doubled as choppers or mashing tools.

Tool use was determined through microscopic examination of edge wear based on previous use-wear studies from New England (Roberts 2001, Roberts 2002) and the west coast (Roberts 1975). Edge wear was examined at low power and described in three categories: fractures, rounding and gloss. Fractures are flakes of various type and size removed from the dorsal or ventral side of the worked edge, depending on use. Rounding describes the dulling of an edge to a rounded form. Gloss is the polish visible under magnification. Soft material will produce only rounding or polish, while hard material will have every combination of flake pattern as well as polish, regardless of edge angle (Roberts 2001:4-7).

Of seventy-five artifacts chosen for use-wear analysis, sixty-two exhibited wear. Of the sixty-three quartz artifacts examined, thirteen (20.6%) showed no evidence of wear. These included four flakes, two wedge flakes, two unifaces,

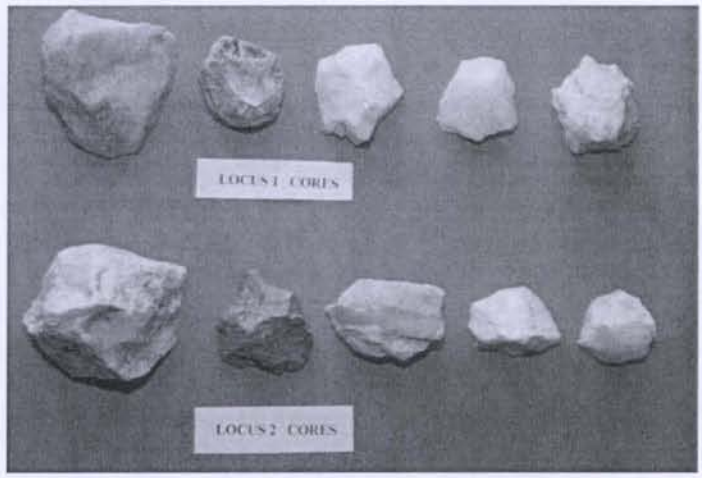
three biface fragments, one rough core and one core. While some of these may have been discarded debitage, the lack of use-wear on the unifaces and biface fragments could indicate several things. Obviously one explanation is that they were not used or used minimally. Equally possible is that the hardness of quartz is less conducive for showing use-wear. As a result, use may not be apparent on some quartz tools. By contrast, all the non-quartz tools examined did show evidence of use.

Of the remaining sixty-two tools, several kinds of use were observed. Two had hard cutting wear while nine had soft cutting wear. Fifteen showed hard scraping wear, while eighteen others had soft scraping wear. Two had hafting wear. One had crushing/hafting wear. One had sharpening wear and one showed drilling polish. Five artifacts had also been used as hammers, three as choppers, and one as both a hammer/chopper. Only three artifacts showed more than one type of wear. One of these, the Neville point base, showed both hafting and scraping use. Based on this analysis, it appears that quartz tools, typically thick or wedge-shaped flakes struck off a core, were for cutting or scraping. Occasionally these tools show additional unifacial or bifacial modification. The variability in size and thickness of these utilized flakes suggest a strong tradition of expedient tool use.

Lithic Sourcing. Ten samples of volcanic and meta-sedimentary debitage were analyzed by Barbara Calogero through thin section analysis (2003). Of the ten specimens, eight were from Locus 1 and two from Locus 2. This skewed sample reflects the fact that most of the non-quartz lithics came from Locus 1. Locus 2 had only six rhyolite artifacts, all probably from a single cobble.

The samples from Locus 1 included three flakes recovered from the A horizon. Two appeared to be the same material as the Neville point while a third, though different, was from the same horizon and area. All three were rhyolites with phenocrysts and flow characteristics consistent with the Lynn and Newbury volcanics. Two

Figure 5. Cores from Locus 1 and Locus 2.



other samples were selected from Feature 2, the large pit feature interpreted as a pit house. Both flakes were a tan to gray rhyolite visually similar to the bifurcate-base point found three meters west of the feature. These samples also appear to be consistent with the Lynn and Newbury series. The last three flakes from Locus 1, selected from other areas within the locus, showed the same results. The exception was specimen 7, a flake recovered from the Feature 2 fill and identified as hornfels similar to samples from New Hampshire.

The two samples submitted from Locus 2 came from within Feature 3. Both were purple-gray rhyolite consistent with the Lynn and Newbury volcanics. Only five rhyolite flakes and one artifact, a core, were found at Locus 2. Although the core was recovered several meters down slope from Feature 3, one of the flakes found in the base of the feature cross mended with it.

Soil Micromorphology

Micromorphology is an analytical technique borrowed from the soil sciences in which thin-sectioned soil and sediment samples are examined under a variety of magnifications and light conditions. The technique permits the identification of mineral, and occasionally organic, components present in the sample. Trina Arpin of Boston University conducted the analysis of soil samples from the Whortleberry

Hill site (Arpin 2002).

Analysis focused on samples from Features 2 and 3. Both were large in size, deep and noticeably more reddish (strong brown) than the usual color of the subsoil. At a depth of 70 cm, Feature 2 measured about 3 m east-west by 3 m north-south. At a depth of 80 cm., the portion of Feature 3 within the data recovery corridor also measured approximately 3 m east to west and 1.5 m north to south (but continued north outside of the recovery area). Once excavated, these features had a broad, dish-shaped cross-section cut into the lower subsoil and glacial till. A dark lens, or series of dark pockets, at the lowest basal surface contained charred botanical remains, some chipping waste, and, at Feature 3, several pieces of calcined bone. Columns of soil from both Features 2 and 3 were subjected to soil micromorphological study, along with a control column.

The sediments found in Features 2 and 3 were distinctively different from those in the control column. They originated from different sources and have distinct lithologies. At the base of each feature was Unit 2, a dark organically rich lens or series of pockets. Unit 2 contained more charcoal than in any other unit. Much of the charcoal was highly fragmented. On a microscopic level, this appeared most consistent with the fragmentation and distribution of charcoal caused by trampling across an occupation surface. This interpretation of Unit 2 as a living surface is supported by the recovery of artifacts, chipping debris and carbonized nutshells from this level of Feature 2. In Feature 3, the Unit 2 dark layer appeared more as pockets of dark soil filling depressions in the base of the feature. These pockets contained abundant charcoal, charred nutshells, chipping debris and some calcined animal bone.

Both features also contained a distinctive fill (identified as Units 3 and 4). These are massive layers that lack internal structure and contain an abundance of biotite in the fine fraction that occurs as sand-sized and, more commonly, silt-sized grains. The presence of biotite within the fine fraction gives the sediment a more reddish cast than seen outside or below the feature. The percentage of biotite present and its distribution throughout the layer are clear evidence that this was not a later addition to the deposit but was an original constituent of the sediment. It is distinctly different in composition from the glacial till sediments seen in the control sample.

The most plausible explanation is that the soil was transported and used in some way that benefited the occupants of Features 2 and 3. The large quantity suggests that this biotite-rich soil was used as a construction material. Earth covered pit-houses, utilizing alluvial soils from nearby streams, would be consistent with the evidence. Features 2 and 3 were excavated into a south-facing hillside with a slope of fifteen to twenty-five percent. Similar Early Holocene pit features, also interpreted as pit-houses, have been found on a south-facing slope at the Sandy Hill site in southern Connecticut although no evidence for human transport of earthen fill has been reported (Jones and Forrest 2003; Forrest 2000, 1999). However, results of the soil analysis from the Whortleberry Hill pit features suggest that earth could deliberately have been brought up from nearby stream deposits and used as a covering or insulation. Botanical remains from both Whortleberry Hill and Sandy Hill support a winter season, if not a multi-seasonal, occupation of these features (Jones and Forrest 2003:81).

Radiocarbon Dating

Four radiocarbon determinations were made on charcoal from the three features; two were associated with Feature SE-1 and one each from the basal layers of Features 2 and 3.

Feature SE-1. A charcoal sample associated with Feature SE-1 was sent for conventional radiocarbon dating. This sample came from below the bowl-shaped feature at a depth of 40 cm, a disturbed area that contained calcined bone, several small fragments and a large piece of charcoal that was submitted for dating. Very little charcoal was present in the feature itself,

while below the feature charcoal was more abundant, suggesting that the small bowl-shaped feature was actually part of a larger and more amorphous shallow pit into which the bowl-shaped depression was dug. The radiocarbon determination obtained on this charcoal was 2,970±110 B.P. (^{13}C corrected; GX-27862). This calibrates to 3,141 years ago. A second sample of charcoal was sent for AMS radiocarbon dating. This sample was recovered from within the calcined bone concentration in Feature SE-1. Prior to dating, the charcoal was examined by Tonya Largy. She selected a fragment of oak bark charcoal for AMS dating, one associated with the densest concentration of calcined bone within the feature. The resulting AMS date was 2,780±40 B.P. (^{13}C corrected; GX-29011-AMS). This calibrates to 2,866 years ago.

Feature 2. The charcoal selected for dating came from the bottom dark lens, believed to represent an occupation level. Charcoal from two flotation samples, spanning 90 to 95 cm and 95 to 100 cm deep in square N5 E12 was chosen. The sample contained fragments of acorn and hazelnut nutshell (n=18) as well as oak (*Quercus*) charcoal and charcoal with resin canals (*Coniferales*) recovered from both levels. *Coniferales* includes genera *Pinus* (pine), *Picea* (spruce), and *Larix* (larch/tamarack). A radiocarbon date of 7,830±130 B.P. (^{13}C corrected) was obtained (GX-29010). This calibrates to 8,596 years ago.

Feature 3. Charcoal from this large pit feature was also selected from the bottom dark lens. A combined sample from three flotation units, all 95 to 100 cm deep in square N6 E39, was sent. The sample contained fragments of hazelnut and possibly acorn (n=29) as well as oak and *Coniferales* charcoal. A radiocarbon date of 8,110±90 B.P. (^{13}C corrected) was obtained (GX-29094). This calibrates to 9,025 years ago.

Botanical Analysis

In addition to analysis of the charcoal from features prior to radiocarbon dating (Largy 2002), flotation samples as well as specimens recovered from fine-screening samples were examined (Largy 2003). In all, thirty-six flotation samples were processed from thirty-three contexts, eighteen from Locus 1 and fifteen from Locus 2. Twenty charred poppy seeds were added to each sample as a control. Of greatest interest were the charred seeds, nutshells and other charred non-wood botanical remains recovered from the base of Features 2 and 3.

Charred Seed. Several seed/achene taxa were recognized, all from Feature 3. These included complete seeds of *Chenopodium* sp. (goosefoot) and *Labiatae* (mint family) as well as seed coat fragments of *Rubus* sp. (blackberry/raspberry) and *Phytolacca* sp. (pokeweed). *Chenopodium, Rubus,* and *Phytolacca* have often been found in mid-Holocene contexts; *Labiatae* has been encountered less often.

Chenopodium is of particular interest to archaeologists since some varieties were domesticated by Native people in the Midwest (George and Dewar 1999). However, the Whortleberry Hill specimens seem to be the wild variety and lack the characteristics of the domesticated ones. One of the oldest *Chenopodium* samples reported from the Northeast, found at the Bliss-Howard site in Old Lyme, CT. is dated 4,775±120 B.P. (George and Dewar 1999:122). An earlier date has been reported from the Heath Brook site in Tewksbury, MA where several achenes of *Chenopodium* were recovered from both Feature 8, interpreted as a Middle Archaic living surface, and Feature 14, dated to 5,130±70 B.P. (Glover and Doucette 1992:102-103). A cautionary note must be added before it is assumed that the Whortleberry Hill specimens are now the oldest reported specimens. Since this seed is naturally black in color, it is often difficult to tell whether or not it has been carbonized. The Whortleberry Hill specimens appear charred based on the presence of burned endosperm adhering to the inside surface of the seed coat. Looking at the outer surfaces of these achenes, it is less clear that they were charred (Largy 2003).

Charred Nutshell. Charred nutshell dominates

the archaeo-botanical assemblage from Whortleberry Hill. A total of 412 nutshell fragments, weighing 6.62 g was recovered from the flotation samples. Two taxa are present, *Corylus* sp. (hazelnut) and *Quercus* sp. (acorn), although hazelnut is, by far, the most common (n=314, weight 5.96 g). Acorns, being more fragile, are less well represented (n=20, weight .45 g). All twenty examples that were definitely acorn came from Feature 3. Several additional fragments (n=47) were identified as likely acorn. Of these, thirty-eight were recovered from Feature 2 and nine from Feature 3.

Other Plant Remains. Although no other plant remains were identified, one additional type of plant material may be significant. Both Features 2 and 3 contained numerous fragments of a charred plant material in the 2 to 4 mm size range, possibly some type of parenchymatous tissue. This tissue, generally soft and thin-walled, occurs in plant storage organs such as roots or tubers. These fragments may also be charred nutmeats or even pieces of resinous pine family wood, which sometimes results in a vesicular appearance when charred. Specific identification of this type of plant material is difficult and generally requires scanning electron magnification for identification.

Conclusion. Plant remains from Whortleberry Hill include charred seeds and specimens from two nutshell taxa. The seed taxa, all identified from Feature 3, are *Chenopodium* sp. (goosefoot), *Labiatae* (mint), *Phytolacca* sp. (pokeweed), and *Rubus* sp. (blackberry/raspberry). The *Chenopodium* is a wild rather than a domesticated variety. Acorn and hazelnut nutshell fragments were recovered from both Features 2 and 3. Plant remains can also indicate the season of availability. Blackberries and raspberries are first available in early to midsummer. Goosefoot is available in summer while hazelnuts are available in late summer to autumn. Acorns are available in the autumn. A winter occupation is also suggested by the recovery of hazelnut and acorn (foodstuffs well suited to storage). Based on the botanical evidence, the occupation at Whortleberry Hill may have extended from the summer through the winter. Finally, since most charred seed remains known from sites in New England date from the Late Archaic through the Late Woodland Periods, the Whortleberry Hill specimens may be some of the earliest examples recovered. The only way to verify their antiquity is to submit one or more for direct AMS dating. If these seeds can be proven to date from the eighth millennium, they would be truly significant (Largy 2003).

Faunal Analysis

Faunal identification and analysis was conducted by Craig Chartier and Tonya Largy. Only three calcined bone fragments were recovered from Locus 1. These included two cross-mending pieces of turtle carapace/plastron and one fragment of unidentified mammal bone. A much larger sample of calcined bone (1,307 fragments) was recovered from Locus 2. Of these, only fourteen were recovered from Feature 3. These included one turtle carapace/plastron fragment and thirteen other fragments of unidentified mammal.

The largest number of bone fragments was found in association with the small feature (SE-1) that dated from the Transitional Archaic. All of these bones had been calcined and, based on dentition, appear to come from at least two white-tailed deer (*Odocoileus virginianus*). Though highly fragmented, a full range of skeletal elements was represented.

Paleo-Environmental Analysis

An analysis of paleo-environmental conditions at Whortleberry Hill based on pollen cores was conducted by Paige Newby of Brown University (Newby et al. 2002). Spruce Swamp abuts the southwest side Whortleberry Hill and extends into the Lowell Dracut State Forest. Althea Lake is a small kettle basin on the southwest side of Whortleberry Hill, roughly 2.4 km west of the archaeological site. A wetland area, the northwestern-most portion of Spruce Swamp, extends between the hill and the kettle for

approximately 35 m. This swamp between 'lake and hill' was cored to gain insight into the post-glacial changes of the area. The most penetrable and deepest location produced a 2.87 m long core (Core A).

The lowermost 10 cm (287-277 cm) of Core A correspond to the earliest interval of occupation at Whortleberry Hill. Estimates of age are based on correlations with other radiocarbon dated pollen stratigraphies from the region. The presence of diatoms indicates open water existed at the coring location when these sediments were deposited. Fine-to-coarse grained sand within these sediments also indicates a possible ancient (and higher) shoreline for Althea Lake. Regional vegetation included white pine, oak, hemlock, elm, beech and birch, with low abundances of local-growing myrica and buttonbush near the basin. At 271 cm, analysis indicates a change in local conditions around the lake. While regional vegetation remains the same, aquatic plants such as cattail and water lilies, as well as other herbs became more abundant. This indicates a change towards more eutrophic conditions in the basin, one richer in dissolved nutrients and with shallower water levels. Between 271 and 25 cm., the abundance of hemlock pollen varies but additional study would be needed to discern the regional hemlock decline ca. 4,600 B.P. At 25 cm., the rise in ragweed pollen indicates the European settlement horizon.

The period from 15,000 to 8,000 cal yr B.P. witnessed the northward spread of oak (*Quercus* sp.) and hazelnut (*Corylus* sp.) into the northeast. Oak and hazelnut pollen at Althea Lake are not evident at 10,000 years ago. However, by 9,000 cal yr B.P. oak constituted thirty-one percent of the overall pollen count, while hazelnut contributed only a half a percent. By 8,000 cal yr B.P. the percent of oak increased to thirty-nine percent of the overall pollen abundance, and hazelnut increased to one point three percent. By comparison, modern pollen counts lack hazelnut and oak accounts for only nineteen percent of the overall pollen abundance.

Discussion

Although the lack of typologically diagnostic artifacts complicates the interpretation of this site, Whortleberry Hill has parallels in New England. One is the Gulf of Maine Archaic Tradition as defined by Brian Robinson (1992). This tradition has been dated from 9,500 to 6,000 B.P. and is characterized by a flaked stone industry dominated by core and uniface technology, with quartz the predominate lithic, as well as a diverse assemblage of ground stone tools including full-channeled gouges, adzes, and ground stone rods. Bifacial technology is characteristic of some assemblages, but stemmed bifaces or projectile points occur, if at all, as a minor constituent in occupation and mortuary assemblages (Robinson 1992:64). The assemblage from Whortleberry Hill fits well into this definition.

The Sandy Hill site in southern Connecticut provides another close parallel to Whortleberry Hill. This site was also characterized by deep pit features, located on a south-facing slope, with evidence of recurrent use over a 500 year period between ca. 9,000 to 8,500 B.P. (Jones and Forrest 2003:81-83; Forrest 2000, 1999). One of the Sandy Hill features measured roughly 4 by 5 m, with the long axis oriented north-south. This is similar to, though larger, than the 3 m wide Feature 2 at Whortleberry Hill. Five concentrations of these features, interpreted as pit-houses, were found along with an abundance of quartz cores, scrapers, quartz chipping debris, charred hazelnut shells and a wide range of carbonized plant remains. The excavators interpret Sandy Hill as a winter season occupation although plant remains also suggest summer and fall activity. These included cattail, bur-reed, water plantain, arrowhead, yellow nut-sedge, bulrush, wild calla, Indian cucumber, solomon's seal, blue flag, and water lily (Jones and Forrest 2003:79). While the Sandy Hill site is also notable for its lack of bifaces, it did produce several artifacts not found at Whortleberry Hill. These include pieces of ground hematite and graphite, fragments of other ground stone tools and

numerous tabular 'choppers' that may have been used in plant food processing and digging (Jones and Forrest 2003:79).

Based on this preference for local resources and the informality of the lithic tool kit, Jones and Forrest have suggested that Sandy Hill reflects an increased degree of sedentism (Jones and Forrest 2003:85). This change does not seem attributable to population pressure, but is best understood in the context of Nicholas' 'glacial lake basin mosaic' model for the early Holocene (1988). Since these wetland habitats provided the most productive and stable environments, they became the focal places for Early Archaic subsistence, settlement and social activities. In archaeological terms, the result was an increase in short-term logistical camps and long-term, intensively utilized base camps (Jones and Forrest 2003:86). Although Whortleberry Hill is not located on the shore of a large wetland system, it is virtually surrounded by small wetlands, streams and bodies of water, a location that appears to fit Nicholas' model.

Another key to understanding the Whortleberry Hill site is its proximity to the Merrimack River. A series of sites along the river - from its headwaters at Wiers Beach, to the Table Land and Neville sites in Manchester, to Morrill Point at the mouth – have produced Gulf of Maine Archaic Tradition assemblages comparable to that from Whortleberry Hill (Robinson 1992). The development of a specialized ground stone tool kit for woodworking, specifically the making of watercraft such as dugout canoes, is an important aspect of this shared assemblage. As Robinson has argued, an emphasis on water transport may indicate more than an increased interest in fishing. It may be evidence of stronger social interactions all along the river (Robinson 1992:106).

The Whortleberry Hill site fits well into an emerging model of Early Holocene settlement in eastern New England, one in which small, perhaps family-size, groups moved seasonally between the interior wetlands and major river valleys. With its south-facing pit houses and evidence of nut collection, Whortleberry Hill appears to represent the kind of cold season base camp that may have anchored an emerging pattern of regional settlement. Other components may have included spring and fall fishing (Pawtucket Falls in Lowell is less than 4 km from the site) and more complex social interactions, perhaps represented by the mortuary activities from sites such as the Table Land and Morrill Point. What is clear is that small sites, such as Whortleberry Hill played an essential, if not very visible, role in the changing patterns of Early Holocene subsistence and settlement.

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Reflections of the Middle Archaic: A View from Annasnappet Pond

Dianna L. Doucette

Introduction

The Annasnappet Pond site, located within the Taunton River drainage basin in Carver, has yielded the largest collection of Middle Archaic (ca. 8,500 to 6,000 B.P.) cultural material in association with radiocarbon-dated features in the Northeast. At this site, a burial was identified consisting of cremated human bone, red ocher, ground stone atlatl weights and Neville projectile points in a deep pit feature (Doucette and Cross 1997). The identification of this feature as a burial brought to light the fact that many of the red pit features identified on Archaic sites (ca. 9,000 to 3,000 B.P.), even those that do not contain human bone, could be remnants of human burials. These features provide evidence to support a culturally dynamic landscape during the Middle Archaic in southeastern Massachusetts. This article briefly outlines some of the important aspects for recognizing the peoples of the Middle Archaic Period in the archaeological record of southeastern Massachusetts using data from the Annasnappet Pond site.

History of the Research

The Taunton River drainage has long been a focal point of interest to both avocational and professional archaeologists. Avocational archaeologists focused their efforts on fertile areas along river floodplains and ponds where artifacts are often exposed as a result of plowing, cultivation, sand removal for cranberry bogs and lowered water tables. The study of pre-Contact occupations in the Plymouth County area has been greatly assisted by contributions from the MAS, formed in 1939. Information collected from excavations and artifact collections comprises a substantial portion of the existing regional database (Hoffman 1991; Mahlstedt 1986; Mahlstedt and Johnson 1982). In addition, several cultural resource management (CRM) surveys

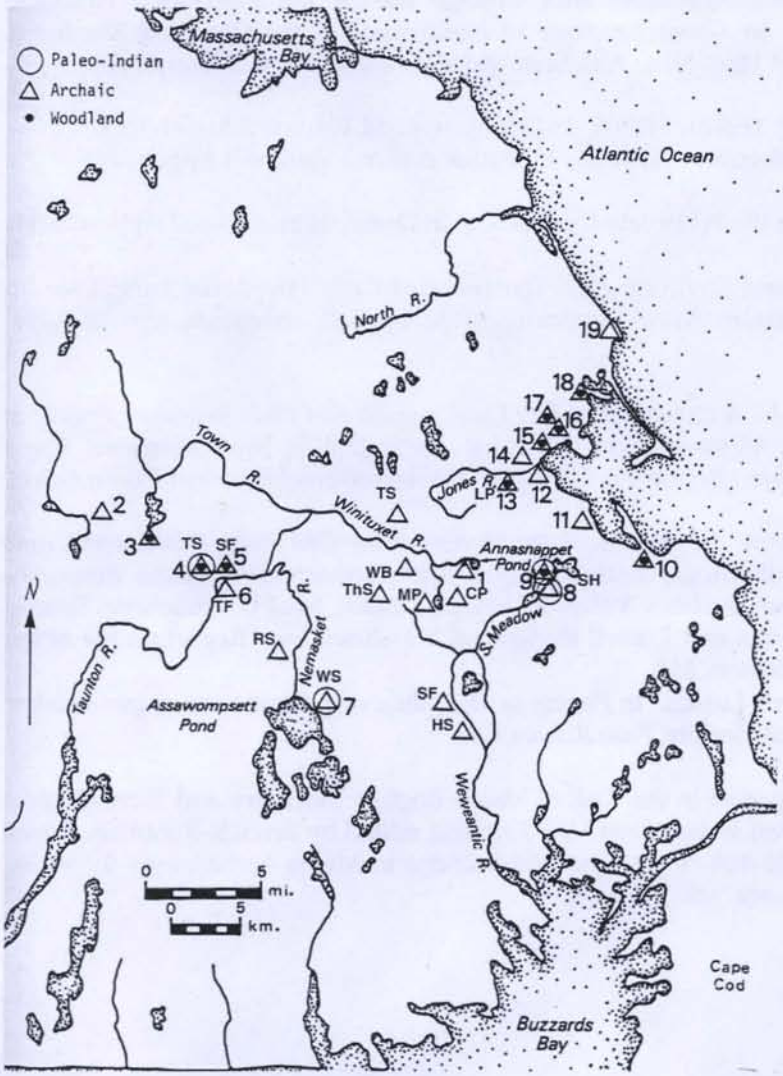


Figure 1. Early and Middle Archaic sites within the Taunton River drainage basin. 1 - Annasnappet Pond, TS - Turkey Swamp, WB - Whetstone Brook, SH - Swan Hold, CP - Cooper's Pond, MP - Muddy Pond, ThS - Thomas Site, TS - Titicut Site, SV - Sever Farm, TF - Taylor Farm, RS - Riverside Site, SF - Shurtleff Farm, HS - Harju Site, LP (13) - Lucas Pond, WS (7) – Wampanucket (for sources see Doucette 2003).

have been conducted in the area by professional archaeologists.

Over ninety pre-Contact sites are recorded at the Massachusetts Historical Commission (MHC) within a 16 km (10 mile) radius of the Annasnappet Pond Site. Of these, at least half (forty-five) are recorded as having Early to Middle Archaic components (Figure 1). The large number of recorded sites in proximity to the Annasnappet Pond area reflects the favorable environmental - and, perhaps social - conditions that existed in the Taunton River drainage throughout the pre-Contact period. The Taunton River and its major tributaries provided a primary avenue of transportation from the coastal lowland to Narragansett Bay.

Archaeological characterizations of the Middle Archaic Period in New England have slowly emerged over more than a quarter of a century since Dena Dincauze published the results from the Neville Site in Manchester, New Hampshire (Dincauze 1976). In this report she described Neville, Stark, and Merrimack projectile points as the main diagnostics of the time period. The Neville and Stark point types are basically equivalent to the Stanly and Morrow Mountain II points of the Carolina Piedmont as described by Joffre Coe (1964) in the Doerschuck site report. Dincauze suggested that the similarities in point styles show cultural connections and continuity along the Atlantic coastal plain, from Florida to central Maine, or at least from South Carolina to Southern New Hampshire, east of the Appalachian Mountains (Dincauze 1976:140, 1974:45; Dincauze and Mulholland 1977).

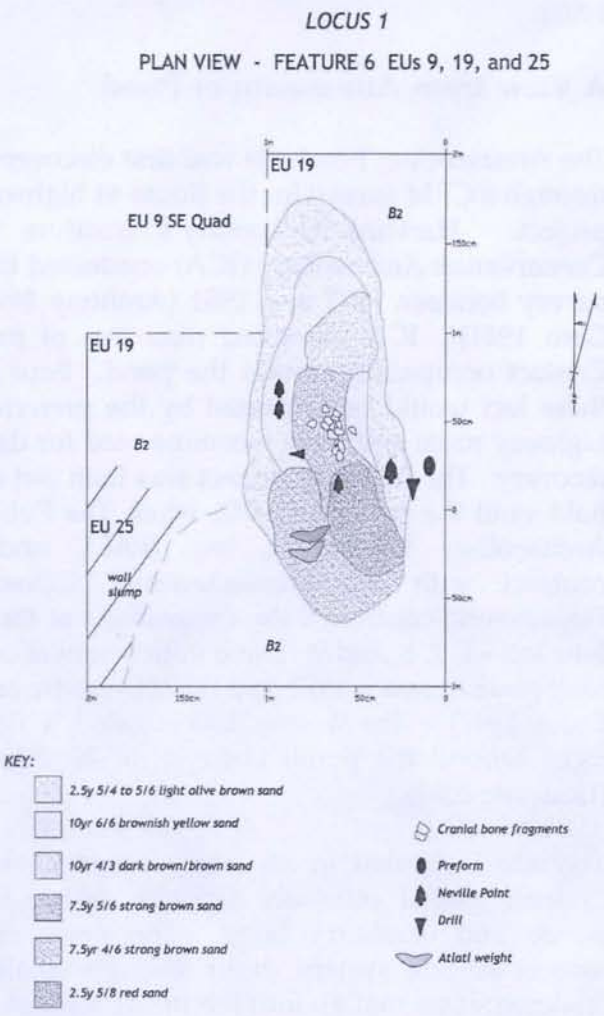
More recently, Robinson (1992, 1996a, 1996b) and others (Thomas 1991) have suggested that the projectile point chronologies of the Middle Archaic as described by Dincauze do not apply particularly well to northeastern New England. Robinson has identified the Moorehead Burial Tradition in the central Gulf of Maine, which consists of aspects of the Maritime Late Archaic "Red Paint" culture, originally described by Moorehead (Moorehead 1913). The mortuary sites of this tradition include cremated human bone, ground stone rods, full-channeled gouges and a chipped stone assemblage that includes cores and unifaces, but few bifaces (Robinson 1992).

A View from Annasnappet Pond

The Annasnappet Pond site was first discovered through a CRM survey for the Route 44 highway project. Harvard University's Institute of Conservation Archaeology (ICA) conducted this survey between 1977 and 1981 (Anthony 1979; Gero 1981). ICA identified nine loci of pre-Contact occupation around the pond. Four of these loci would be impacted by the preferred highway route and were recommended for data recovery. The highway project was then put on hold until the spring of 1992, when The Public Archaeology Laboratory, Inc. (PAL), under contract with the Massachusetts Highway Department, continued the excavations at these four loci - 1, 2, 8, and 9. These initial excavations took place between 1992 and 1997 (Doucette and Cross 1997). The author investigated a fifth locus around the pond, Locus 4, in 2001-2002 (Doucette 2003).

The site is located in an area of sandy, well-drained glacial outwash deposits, spring-fed ponds and cranberry bogs. The pond and associated bog system drain through smaller feeder streams that go into the upper regions of the Taunton River. Quite appropriately, Annasnappet is a Wampanoag term for 'at the head or source of the stream' (Huden 1962). The site, like many others in the region, is in a prime location for exploiting several types of resources. Its location also allowed for communication lines and travel routes between coastal and the inland areas, probably the most important factor leading to the original settlement of the area almost 10,000 years ago. A natural spring, Snappit Springs, sits at the northeastern end of the pond. It feeds into Annasnappet Pond, the headwaters for Annasnappet Brook, which flows into the Winnetuxet River. The Winnetuxet flows northwest into the Taunton River, which eventually empties into Narragansett Bay and out to the Atlantic Ocean.

Figure 2. Plan view of the Feature 6 burial from Annasnappet Pond Locus 1.



Pollen cores taken at a nearby swamp (Makepeace Cedar Swamp) indicate that during the Middle Archaic, there was a period of standing water that would have supported a variety of seasonal aquatic grasses. From about 9,400 to 7,500 B.P. there was also an abundance of shield fern along the moist wetland edges, increasing amounts of white pine, oak and birch in the regional forests with elm, maple and hickory also present (Newby et al. 1994, 2000).

The archaeology at Annasnappet Pond yielded evidence of occupation ranging from the late PaleoIndian to the Middle Woodland Periods (ca. 11,000 to 1,000 B.P.). However, the most intense activity at the site occurred during the Middle Archaic, which is very well represented by twelve radiocarbon dates ranging from 9,000 and 6,000 B.P. (Table 1). Over 200 Stanly/Neville points and drills, forty-five Morrow Mt II/Stark points, Merrimack, Otter Creek points, Snappit points, a series of rhyolite bifacial preforms (U-Shaped bifaces), winged atlatl weights, cylindrical atlatl weights, ground stone rods, a chipped slate ulu preform, a small sample of unifaces, and more than 100 cultural features correspond to the radiocarbon dates making up the Middle Archaic component. In addition to being a large base camp from late summer to early winter, Annasnappet was also a sacred site where members of a community were laid to rest. The burial pit (Feature 6) at the Locus 1 site measured approximately 2.5 m long and 1.5 m wide, and extended to a depth of 1.5 m below the surface. It contained red ochre, two large Neville type points, cremated human cranial fragments, and two polished winged atlatl weights (Figure 2). Charcoal from the burial yielded an uncalibrated radiocarbon date of approximately 7,600 B.P. When calibrated at two sigma the date falls between 8,580 and 8,005 years ago, making it one of the earliest burials in the Northeast and the first Neville/Stanly-related mortuary feature documented for eastern North America (Doucette and Cross 1997).

Feature 6 provided unprecedented new information on several Middle Archaic traditions including atlatl use, the issue of cremated bone and burial patterning as well as lithic manufacturing/reduction techniques. First, the grave goods in this burial established the association of Neville points with winged atlatl weights in a sealed, dated Middle Archaic context. The position of the objects within the burial shaft suggests that the two Neville points were aligned with the two atlatl weights in a manner that indicates that two complete spears, with atlatls, were placed in the grave in a hafted position (see Figure 2). The lengths of the spear shafts are estimated to be approximately 125 cm, given the position of points relative to the atlatl weights and to the overall length of the pit (Doucette and Cross 1997; Doucette 2000). This contrasts strongly with the images of 180 to 250

cm-long throwing spears that are often depicted in the archaeological literature.

Several other red pit features were situated adjacent to this burial. One of these (Feature 6B) was most likely a burial. Even though it was void of cultural material and bone, it had the same size, shape and color as the burial pit. Ochre, however, was present and charcoal from this feature dated to the approximate age of Feature 6 (see Table 1). The author employed several geo-archaeological techniques to study the sediments of these 'empty' red pit features at Annasnappet Pond. These techniques, which included soil micromorphology, x-ray diffraction, microprobe and geochemical analysis, were used to test for the presence of red ochre. Analysis indicated that, in fact, many of the features did contain red hematite, suggesting at the very least a ceremonial presence (Doucette 2003).

Based on the examination of more than 200 projectile points in all stages of manufacture and reworking, it is clear that a great deal of lithic recycling as well as reduction took place at Annasnappet (Figure 3). One significant finding is that Neville variant points were the result of an efficient and time-saving technology - reworking new bases on to broken Neville tips and midsections (Figure 4). Dincauze originally thought, based on the

Figure 3. Lithic reduction sequence of the Neville point. All material recovered from one excavation unit (Doucette and Cross 1997).

Figure 4. Neville point recycling; left - re-tipped base, right - tip modified into a Neville variant (Doucette and Cross 1997).

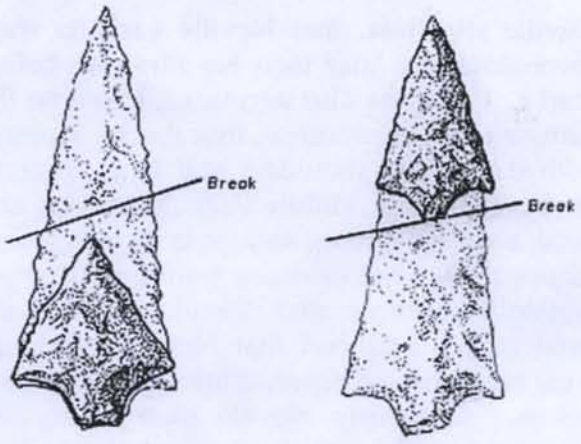


Table 1. Middle Archaic radiocarbon dates from excavations at Annasnappet Pond (Doucette and Cross 1997; Doucette 2003)

Beta Analytic Number	Feature/ Locus	Uncalibrated Radiocarbon Age*	$\delta^{13}C\%$	Calibrated Date Range (BC)	Calendar years ago (BP)
58115	F.6/1	7570±150	-25	6630-6055	8580-8005
63079	F.6B/1	7660±110	-25	6640-6220	8590-8170
58111	F.15/1	7840±260	-25	7435-6150	9385-8100
63078	F.21/1	7880±240	-25	7435-6195	9385-8145
63080	F.22/1	7290±120	-25	6380-5935	8330-7885
63081	F.36/1	7430±80	-25	6415-6055	8365-8005
57029	F.6/2	6470±80	-25	6630-6055	7470-7205
58112	F.15/2	7310±110	-25	5520-5255	8120-7675
58114	F.21/2	6440±120	-25	6170-5725	7530-7155
155935	F.5/4	5100±40	-26.3	5580-5205	5920-5740
170785	F.7/4	5810±40	-24.5	3980-3790	6690-6500
161261	F.21/4	7210±70	-25	4740-4550	8170-7930

* $\delta^{13}C$-corrected; ** two-sigma date ranges. Calibration datasets from Stuiver et al. (1998).

Figure 5. Representative Snappit points from the Locus 4 site.

Neville site data, that Neville variants were chronologically later than Nevilles, but before Starks. Cross has also suggested, based on the Annasnappet excavations, that the Stark points with their weak shoulders and tapered stems were part of the Middle Archaic tool kit and used, as jabbing tools, alongside Neville points (Cross 1999). The evidence from Annasnappet certainly confirms that Neville points were used with atlatls and that Neville point tips were regularly resharpened into Neville-variant points. Over fifty Neville bases were also recovered at the site, further suggesting that people brought their spears back to camp, dismantled the broken points, discarded the bases and re-hafted a new point (Doucette and Cross 1997).

Many other insights into stone tool technology were gained from Annasnappet's large Middle Archaic stone tool assemblage. Comparison of size and shape among the Neville points from Annasnappet Locus 1, the Neville site and the Doerschuk site show a pattern. Almost twenty percent of the Annasnappet Pond Neville points have serrated edges, an attribute in common with Stanly points. In contrast, only one specimen exhibited serrated edges at the Neville Site (Dincauze 1976). Coe suggests that serration was an original attribute of the Stanly point - "large flakes were struck off in the initial shaping but the final edge, together with the serration, was made by pressure flaking" (Coe 1964:35). Several unidentified projectile point tips and midsections from Annasnappet were also serrated. These are most likely Neville point fragments, based on the serration and flaking patterns. The serrated midsections were large enough to have come from points as large as the unmodified Neville points at Annasnappet Pond.

In terms of size and shape, the overall dimensions of the Annasnappet Pond Neville points fall between the Neville site Nevilles and the Doerschuk site Stanly points. The difference that Dincauze recognized (that Neville points are smaller in size than Stanly points) can be explained based on the availability of lithic raw material. Raw material was not as available at the Annasnappet Pond Site as it was at Doerschuk, but more available than it was at the Neville site. With serrated edges, lengths exceeding 5 cm, relatively straight blade edges, and shoulder angles of 90°, the Neville points from Annasnappet Pond are more similar to the Stanly points described by Coe than they are to the Neville points described by Dincauze.

A new projectile point type also has been identified by the author based on excavations at Locus 8 in 1994 and Locus 4 in 2001. This point type is characterized by a triangular shape, a concave ground base and slightly serrated edges (Figure 5). I have called these Snappit points, given their proximity to Snappit Springs. Twenty-three out of thirty-seven triangular shaped projectile points at the Locus 4 site (62.2%) had these characteristics. These twenty-three projectiles are unlike the typical Late Archaic Squibnocket Triangles described by Ritchie (1969); they are not as short and equilateral. Nor are they like the Late Woodland Levanna points, not as wide and straight-sided. They are more akin to Early Archaic un-fluted triangular points (Doyle et al. 1985; Keenlyside 1985), or possibly Middle Archaic Beekman Triangle points (Ritchie 1971). Similar point types have been found throughout the Taunton River drainage basin in similar contexts as at Annasnappet Pond. Taylor

profiled these points in a recent article and noted that they often have basal thinning as well as serration or notching along the edges (Taylor 2001:6). However, three of the features at the Locus 4 site (Features 5, 7, and 21) produced these points in direct association with late Middle Archaic radiocarbon dates (see Table 1). Therefore Snappit points appear to be earlier than the Squibnocket Triangle, yet later than the Dalton-like points. Several other points from the Locus 2 site also appear to fall into this category, but further analysis is required for confirmation (see Doucette 2003 for specific dimension data and comparisons).

Middle Archaic Changes and Continuities

Robinson (1996b) has described a number of features in the Northeast that contain red ochre, cremated bone fragments and/or artifacts that have been radiocarbon–dated between 8,500 and 6,500 B.P., although few have been associated with Stanly/Neville components. In addition to Annasnappet Pond, radiocarbon–dated mortuary contexts that pre-date the Late Archaic in southern New England include the Morrill Point Mound in Salisbury, MA, and the Wapanucket Locus 8 site in Middleboro (Robbins 1980; Robinson 1996b). Morrill Point Mound was originally dated to 7,245±460, 7,085±260 and 6,325±235 B.P. by James Whittall, but recently re-dated by Robinson through AMS to 8,500±80 and 8,150±80 B.P. (Robinson 1996b). Likewise, Feature 206 at Wapanucket Locus 8, originally radiocarbon dated by Robbins (1980) and thought to be Late Archaic, was recently re-dated by AMS to 8,670±85 B.P. (Robinson 1996b). Wapanucket provides a good example of how red ochre features have been misinterpreted chronologically. Although Feature 206 contained a Stark projectile point in its assemblage, it was originally interpreted as Late Archaic based on the date and presence of other tool types.

Given these new data, artifact assemblages for the Middle Archaic have become increasingly clear. Ground stone tools, such as atlatl weights and full-grooved axes are associated with Middle Archaic components in southern New England (Dincauze 1971, 1976; Dincauze and Mulholland 1977), although they are not restricted to the Middle Archaic. In northern New England, Middle Archaic assemblages include various forms of ground stone tools such as full–channel gouges and cylindrical rods (Robinson 1992; Sanger et al. 1993; Cole–Will and Will 1996). At the Neville site, Dincauze reported a full-grooved axe, steep-edged quartz scrapers, and (possibly) winged atlatl weights in association with the Middle Archaic deposits (Dincauze 1976). Recently, Early to Middle Archaic pit houses, containing reddened soils have been identified in Dracut, MA (Martin Dudeck, personal communication 2002), and southeastern Connecticut (Forrest 1999, Jones 1999). These sites have also yielded copious amounts of quartz scrapers, debitage, cores, unifaces and ground stone tools, adding to the speculation of an early quartz industry. Thus, there is a growing body of evidence that Middle Archaic chipped stone assemblages included flake tools, frequently made from quartz (Bradley and Carty 1994; Cross and Doucette 1994; Dunford and Cross 1994).

The proximity of Early and Middle Archaic sites to wetland locations suggests that plant resources were important, though hunting was likely still the major subsistence strategy. The exploitation of local lithic materials is evident in the high percentage of tools and debitage of quartz, argillite, and rhyolite, a pattern that emerged during the late PaleoIndian Period. The use of Boston Basin lithics (Blue Hills rhyolite, Sally Rock felsite, as well as Lynn and Mattapan felsites) on sites in the Taunton River drainage was common in the Early and Middle Archaic Periods (Hermes and Ritchie 1997). The sources of these materials were not necessarily the quarry locations in the Boston Basin, but cobbles brought down by glacial action from areas just to the north, and deposited in the Monk's Hill Moraine and areas of the Carver Pitted Plain.

Almost every category of tool that has been identified with the Gulf of Maine tradition has also been recovered from Annasnappet Pond,

except for maritime-related implements (slate harpoons, bone and stone fish hooks, net weights, whale effigies). Similar artifacts from Annasnappet Pond include ground stone rods, whetstones, quartz scrapers, pestles, axes, gouges, hematite and graphite paint stones, and, of course, red ochre pit features. There is a natural source of powdered hematite at the site, which may have served as a major red ochre source for the inhabitants of the Taunton River drainage basin. The inhabitants were definitely quarrying the hematite as evidenced by chipped stone tools and chipping debris in association with this source.

Dincauze (1976) has defined the 'southern New England' cultural region to the Merrimack River drainage, where the Neville site is located. There are strong similarities between the Archaic artifact assemblages from the Neville site in southern New Hampshire and those from Annasnappet Pond as well as other sites within the Taunton River drainage basin. These include similar projectile point assemblages, U-shaped bifaces and similar types of ground stone tools including atlatl weights, ground stone rods, grooved axes, gouges and adzes.

The Annasnappet Pond Complex

> 'We have not begun to wonder enough, or examine closely enough, to ask the right questions. It is time to go looking for the centers of pre-Contact northeastern societies, the cores of their existence.' (Dincauze 1993:37).

Based on the findings from the Annasnappet Pond site and a comparison with other sites within the Taunton River drainage basin, discrete feature and artifact assemblages can now be considered diagnostic Middle Archaic components. These traits include: (1) a high degree of 'empty' pit features with red ochre, other red staining and/or calcined bone; (2) quartz chipped stone tools; (3) ground stone tools; and (4) projectile points diagnostic of the Middle Archaic Period including, Neville, Stark, and Snappit types (Figure 6). Such site recognition forces a re-evaluation of Middle Archaic population size and expected burial frequency. In essence, the Late Archaic 'florescence' can now be pushed back to the Middle Archaic, and possibly the Early Archaic, within the Taunton River drainage basin.

Many sites in southeastern Massachusetts have heretofore been considered to date no earlier than the Late Archaic. This has left the Middle Archaic Period difficult to differentiate from later periods on typological grounds. But much of what were once considered to be Late Archaic cultural traits can now be attributed to the Middle and possibly the Early Archaic Periods. These traits include an increased number of habitation sites and a centrally based settlement pattern in which people exploited a broad range of seasonally rich resources in various eco-zones. These sites range from small, inland hunting and fishing camps on small streams or wetlands, to large recurrently occupied base camps on major bodies of water near good fishing grounds. Within the Taunton River drainage basin, there are both logistical camps and base camps, indicating that seasonal foraging was likely taking place (Figure 7, see page 30). For example, Annasnappet Pond, Wapanucket, Taylor Farm and Swan Hold were all apparently base camps (Doucette and Cross 1997; Robbins 1980; Taylor 1972). It appears (although the excavation records are scant) that Whetstone Brook, Turkey Swamp and Shurtleff Farm may have been logistical camps (Bradley and Carty 1994; Doucette 2003).

Now that Middle Archaic burials have been identified in the Taunton River drainage basin, mortuary practices constitute another definitive characteristic of the time period. As human burials and cemeteries become more recognizable in the archaeological record, archaeologists will better understand the sense of territoriality and decreased mobility that existed during this time period, since burial places represent a group's sense of belonging to a specific area (Watkins 2000).

Technologically, a greater diversity of artifacts is seen in the Middle Archaic (including

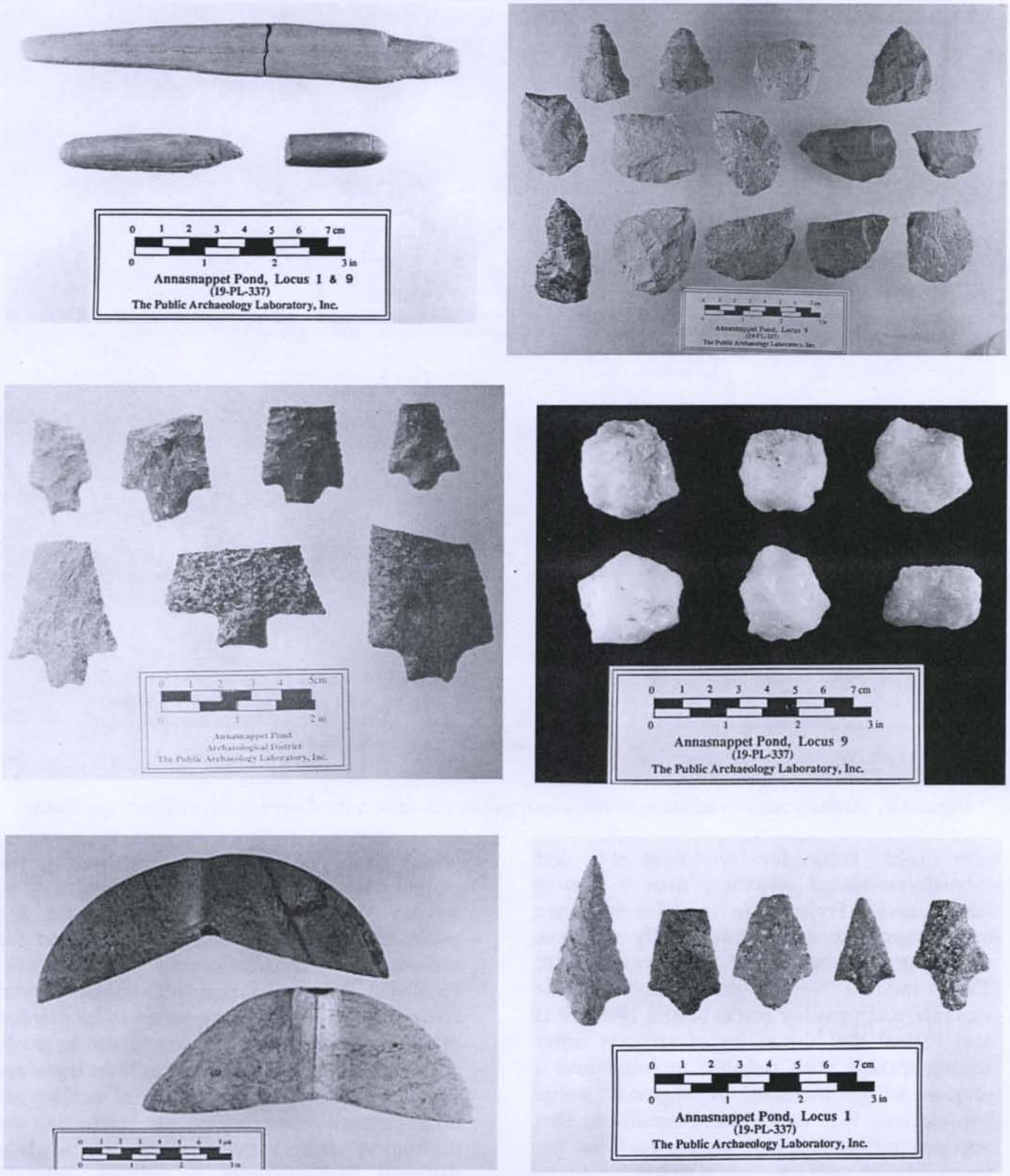


Figure 6. Representative artifacts from the Annasnappet Pond Complex. Ground stone rods, quartz scrapers, serrated Neville points, and U-Shaped bifaces, atlatl weights, and Neville variant points.

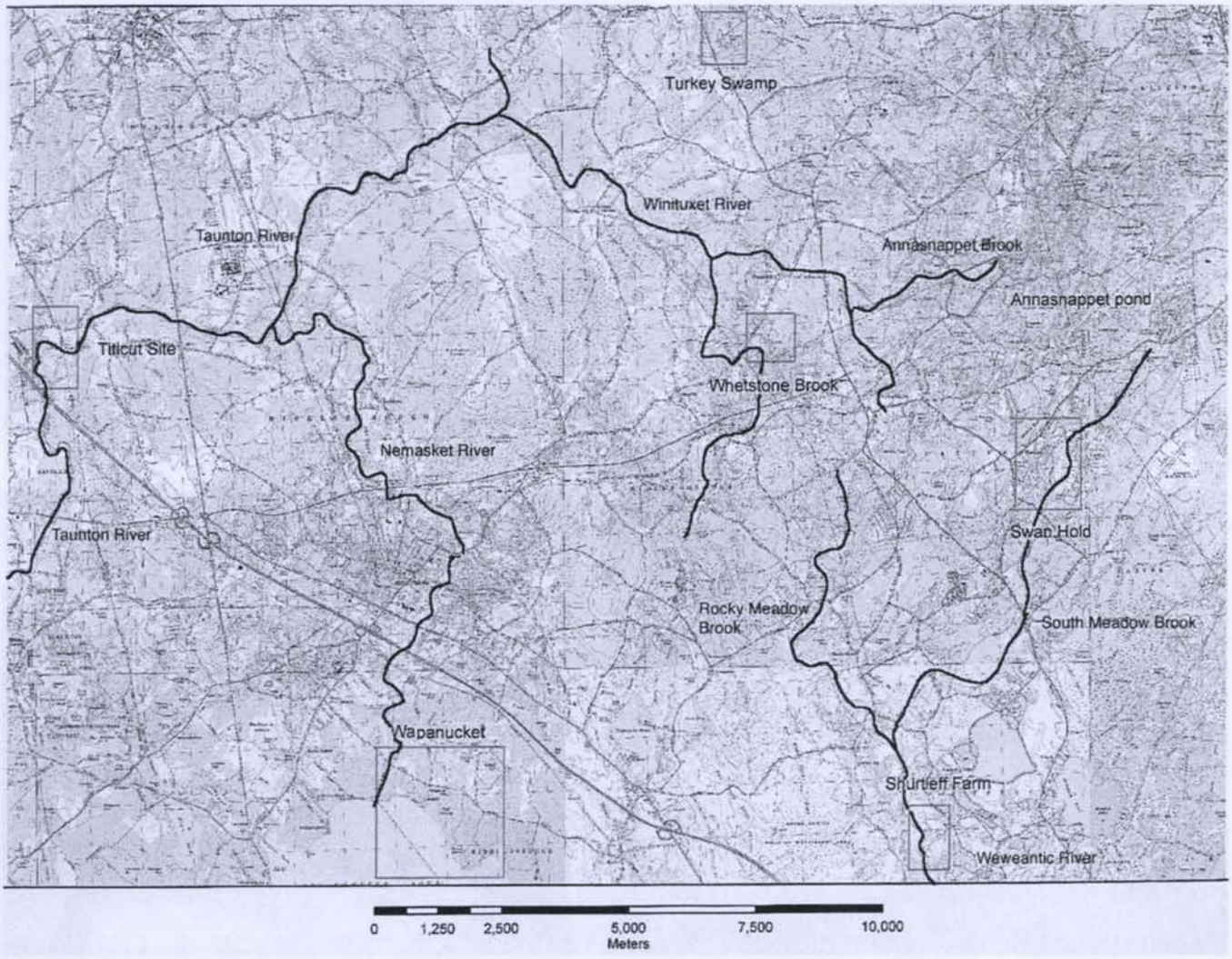


Figure 7. Archaic sites in relation to Annasnappet Pond within the Taunton River Drainage Basin.

specialized tools for woodworking and subsistence-related activities), than is seen in later periods. Projectile point styles that were once thought to be chronologically separate, now appear to be part of the same tool kit. These include Neville points and Neville variants, and possibly Starks (Cross 1999). It is also logical that the styles of artifacts differ among groups with reduced mobility and a corresponding increase in regional social boundaries. It is under these conditions that regional projectile point styles, such as the Snappit point, may have taken shape.

The first step in identifying the Middle (and even Early) Archaic cultures within the Taunton River drainage basin involves examining the attributes of the landscapes on which these sites are found, including the physical as well as the cultural aspects. The second step involves looking beyond the established projectile point typologies and the attitude that features cannot be diagnostic. Finally, in order to even consider issues of social complexity, a clear picture needs to be painted of one region, so that comparisons can be made with other regions. Regional comparisons are important for recognizing cultural similarities and cultural continuities, as well as the differences among people living in slightly different environments or within different cultural groups. These can provide a way to track the movement of peoples and traditions across landscapes, as opposed to assigning general cultural traits to broad regions.

Acknowledgements

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The Rubin Farm Site, Norton, MA

Jeff Boudreau

Overview

The Rubin Farm site has been well known to collectors for many years. The writer regularly surface collected the site for about a decade beginning in the mid 1970s, long after other collectors had lost interest. In fact, at the outset there was little expectation of finding much of interest. This was incorrect. Rubin Farm held two discrete loci. The one to the north produced a Laurentian assemblage; to the south was a suite of Middle Archaic points plus several artifacts of Woodland origin. It is impossible to say how much earlier collector activities biased the recoveries of this writer. Unfortunately, no other material from this site has been located. If any reader has knowledge of collections from this site, please convey that information to the writer so it can be recorded and photographed. Lacking that information, it is prudent to suspect that our understanding of Rubin Farm is, at best, incomplete.

Site Setting

Located on the extreme western fringe of the Taunton River drainage, the Rubin Farm site was bounded by ephemeral, tertiary brooks - one to the north, one to the south. These brooks merge less than one half mile east of the site. From there, the flow is easterly to the Three Mile River. The Three Mile River becomes part of the Taunton River drainage in North Dighton, Massachusetts. Both the Segreganset River and the Palmer River originate in the wetland system immediately south and west of the site. Within eight miles west of Rubin Farm, outcrops of Attleboro Red Felsite are located (Strauss and Murray 1988). This area of southeastern Massachusetts is low, flat and swampy land interrupted by bedrock outcrops and differently sized glacial deposits. The Rubin Farm Site, at the 90 foot contour, was situated on a low terrace, perhaps outwash from the 100 foot contour to its west, and associated with what appears to be the remnant of a small esker running west by east. The two brooks merge at its terminus (Figure 1). The Rubin Farm field, centrally located on the terrace, was approximately 200 by 100 m with the long axis running northwest by southeast. The center of the field was significantly lower than either end. The owner informed the writer that, at one time, there had been a narrow reedy swamp bisecting the field. Years of mechanized cultivation had filled the swamp to the extent that crops grew uninterrupted from end to end. No artifacts were found in this area. This natural barrier resulted in north and south areas of occupation. The north end of the field was weakly domed with a fairly steep slope down to the brook on the north. This area of occupation seems to have been encompassed by cultivation, as there was a perceptible perimeter beyond which no artifacts were found. The south end of the field was quite flat, although it had a slight tilt, being lower on the east side. This area of occupation probably extended southwards beyond the limit of cultivation. A narrow strip of brush and a dirt access road separated the cultivated area from the brook on the south side. Since no excavation took place, the composition of subsurface deposits is unknown. However, some observations can be made on the geology of the site. Where exposed, the bank down to the north brook was composed of loose gravel.

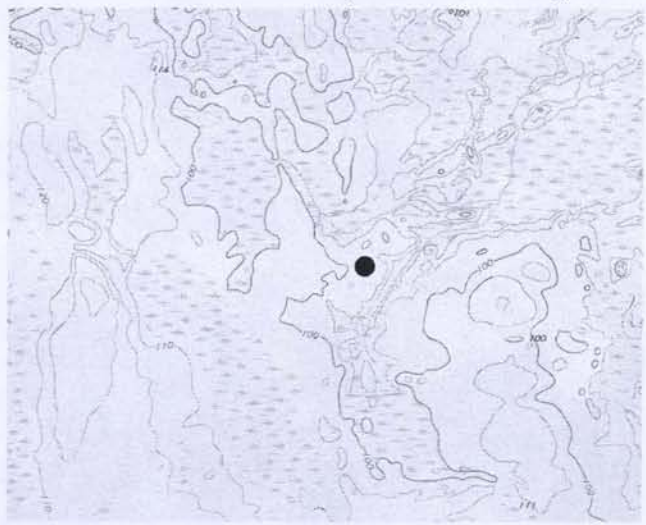


Figure 1. The Rubin Farm site.

The adjacent northeast quadrant of the field contained the rockiest soil on the site. Clearly, within this area the plow brought gravel to the surface. This was not the case elsewhere in the field. It appears that an uneven layer of sand had been deposited across the terrace with the thinnest deposits over the northeast corner of the field. As artifact recoveries demonstrated,

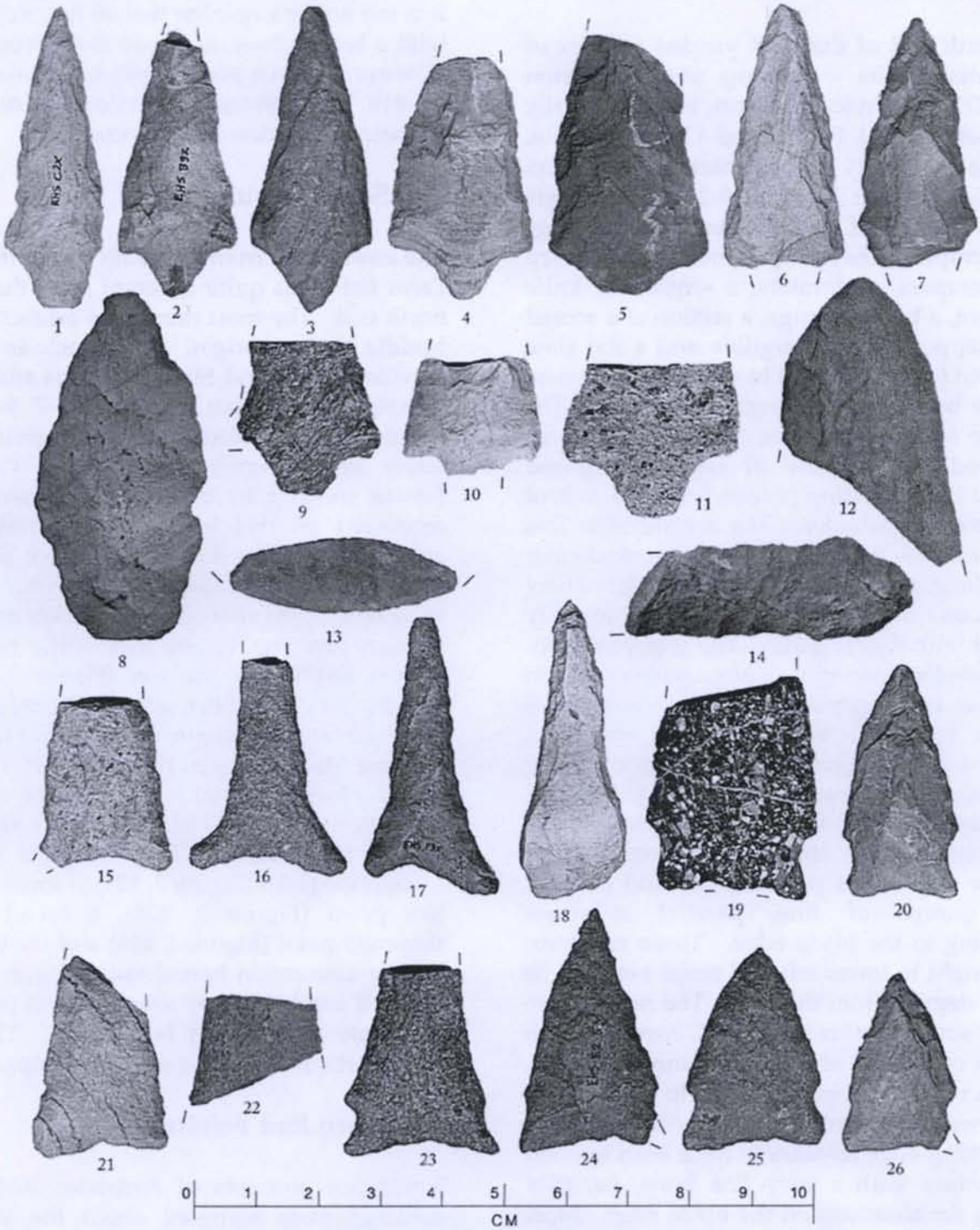


Figure 2. Rubin Farm. 1-4, 6-7, 9-11 Neville, Neville Variant and Stark points; 5 Stark preform; 8 possible Lagoon preform; 12 broken preform; 13 semilunar knife fragment; 14 perforator/reamer ?; 15 Brewerton Eared Triangle point with bevel resharpening; 16-17 eared drills; 18 expanded base drill; 19-20, 22-26 Vosburg points; 21 Brewerton Eared Triangle preform. Materials: 1, 3-7, 18, 20, 26 Argillite; 2 Saugus Jasper; 8-9 Mattapan Felsite; 10 unknown felsite; 11, 15 Wakefield Felsite; 12 Braintree Hornfels, 13 slate; 14, 16-17, 21-25 Attleboro Red Felsite; 19 Marblehead Felsite.

this effectively truncated the east side of the north locus.

The North Locus

The north end of the field yielded a series of Laurentian traits - Vosburg and Brewerton Eared Triangle projectile points, made primarily of Attleboro Red Felsite and Green Argillite, with a minority representation of Lynn volcanics (Figure 2, #15, 19-26 on previous page). This end of the field also produced large oval scrapers, choppers, stemmed and steep edge scrapers, perforators, a semi-lunar knife fragment, a broken gouge, a section of a scored and snapped piece of argillite and a flat slate fragment (clearly ground to shape) that appears to have been part of a larger implement. The obverse face of this piece (Figure 3, #25) was engraved with a row of regularly spaced straight lines standing perpendicular to each of the three longer sides. The reverse side was engraved with two straight lines perpendicular to the long axis. Both faces of this piece show numerous sub-parallel striations roughly aligned with the long axis. The engraved lines obliterate these striations. Noticeable polish on the wide end suggests that, after the original artifact broke, it was engraved and then recycled into a scraper. Examination of the semi-lunar knife fragment (Figure 2, #13) with a 10x glass suggests that three different hones were used in the sharpening process. The obverse face seems perfectly flat and covered with groups of fine, parallel striations extending to the blade edge. These run from upper right to lower left and range between 30 and 70 degrees from the edge. The reverse face seems somewhat convex and covered with groups of coarser striations at similar angles, though running from upper left to lower right. There was one stroke parallel with the edge. The cutting edge appears to have been applied to this face with a very fine hone, partially erasing the striations on the blade edge. Most of the above material was found scattered around the highest ground, nearer the slope down to the brook than the center of the field. The oval scrapers and choppers were all found in a smaller area approximately twenty to thirty meters southwest, suggesting a specific work area. In addition to one ambiguous stemmed point, two of the argillite artifacts (Figure 2, #6 and #18) discovered on this locus are of interest. It is the writer's opinion that #6 is a Stark point, with a broken base, and may have been a stray. However, given a possible pre-Laurentian origin for #18, these pieces may indicate some Middle Archaic occupation on this locus.

The South Locus

The assemblage from the south end of the Rubin Farm field was quite different from that of the north end. The most numerous artifacts have a Middle Archaic origin. These include Neville, Neville-Variant and Stark preforms and points, complete and broken (Figure 2, #1-7, 9-11). All intact Stark haft elements exhibit grinding. A finely made implement blade of Wakefield Felsite, missing its base (not illustrated), was recovered on this locus. Several Woodland artifacts were also recovered. These include a Meadowood perforator made of what appears to be Onondaga chert (Figure 3, #36); a possible Lagoon preform (Figure 2, #8); the base of a broken Fox Creek preform (Figure 3, #38); a possible Jack's Reef Pentagonal (Figure 3, #37); a large Levanna triangle (Figure 3, #1) and a possible Madison point (Figure 3, #35, nicks are recent plow damage). Four of six quartzite artifacts recovered all came from the same area within this locus. They include a small Laurentian point (Figure 3, #29), a small Neville-like point (Figure 3, #28), a broad lobate-stemmed point (Figure 3, #34) and the base of a broken Laurentian hafted knife (Figure 3, #33). What, if anything, they share beyond proximity and material, can only be guessed. The other two quartzite recoveries were point tips.

Attleboro Red Felsite

Significant amounts of Attleboro Red Felsite debitage were scattered about the two loci. There was no noticeable concentration that would indicate a workshop per se, although plowing may explain this. Recoveries included everything from a raw quarry block to more than forty broken bifaces in various stages of

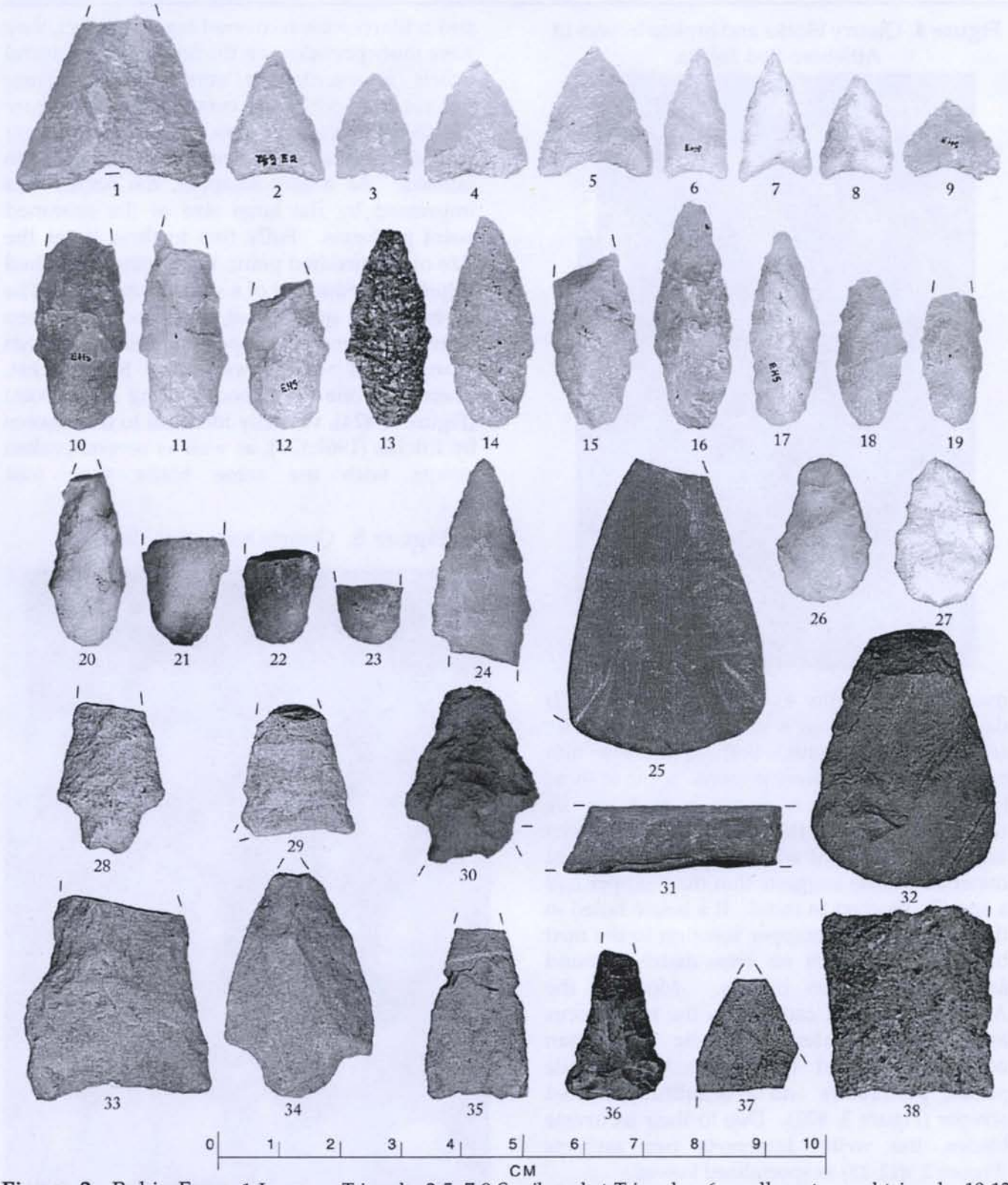


Figure 3. Rubin Farm. 1 Levanna Triangle; 2-5, 7-9 Squibnocket Triangles; 6 small pentagonal triangle; 10-12, 14-17, 20-23 lobate stemmed points with stem grinding; 13 lobate stemmed point; 18-19 Squibnocket Stemmed points; 24 Wading River point; 25 engraved scraper; 26-27, 32 scrapers; 28 Neville or Wading River point; 29 Vosburg point; 30 possible bifurcate-base point from Meadow Brook; 31 cut argillite fragment; 33 knife base; 34 lobate stemmed point; 35 Madison point; 36 Meadowood perforator; 37 possible Jack's Reef pentagonal point; 38 unfinished Fox Creek base. Materials: 1-12, 14-24, 26-27 Quartz; 13, 38 Marblehead Felsite; 25 slate; 28-29, 33-34 quartzite, 30 Attleboro Red Felsite; 31 Argillite; 35 Saugus jasper; 36 chert; 37 Braintree Hornfels.

Figure 4. Quarry blocks and broken bifaces of Attleboro Red Felsite.

manufacture (Figure 4). The exact number is dependent upon one's interpretation of early stage biface fragments. Both square base and convex base forms were present. Some of these broken bifaces were large enough to be reworked. The fact that they were abandoned instead is consistent with a plentiful supply of material. It also suggests that the knapper had a specific product in mind. If a biface failed in that purpose, the knapper went on to the next blank. There were no cross-matches found among the broken bifaces. Most of the Attleboro material came from the north locus and was associated with the Laurentian occupation. Tool types include projectile points, perforators and a beautifully crafted scraper (Figure 3, #32). Due to their incurvate blades, the writer interprets two artifacts (Figure 2, #22-23) as specialized knives.

The Quartz Industry

The quartz industry at Rubin farm was extensive. Here again, while quartz debitage and artifacts were recovered from both loci, they were more prevalent on the north. The plentiful debris represents the entire manufacturing process from cobbles to completed tools (Figure 5). A significant portion of the total quartz debitage resulted from stemmed point reduction failures. As a flint knapper, the writer was impressed by the large size of the stemmed point preforms. Fully two to three times the size of the finished point, these bifaces required significant reduction of a difficult material. The inventory of quartz tool types included steep edge and stemmed scrapers as well as eighteen triangles, of which twelve are Squibnocket. There was one very good Wading River point (Figure 3, #24), virtually identical to that shown by Ritchie (1969:177), as well as several broken points with the same blade type (not

Figure 5. Quartz reduction debitage.

illustrated). They are relatively thin, have a width to thickness ratio of nearly 4 to 1 and are quite well made. There were also two possible Wading River preforms. Of fifty-one artifacts that could be classified as Small Stemmed points, the writer considers only twenty-six of them to have been functional. Three of these fit the description of Squibnocket Stemmed points, two of which are shown on Figure 3, #18-19.

Another distinctive group of Small Stemmed points were the most common artifact type from this site and accounted for twenty of the twenty-six functional stemmed points. With a width to thickness ratio of 2.3 to 1, they have the general appearance of Wading River points - a narrow triangular blade and weakly defined shoulders, although at 4-5 cm in length they cluster toward the upper end of the size range for the type (Figure 3, #10-17, 20-23). On some of these points one ear is more prominent than the other, a few have one ear only, basal edges tend to be more straight than excurvate and range from nearly parallel to tapered. These points differ from the Wading River type in that they all have convex bases, some neatly rounded, with noticeable grinding of the haft element. From the perspective of a flint knapper, the writer found the stemmed quartz points from Rubin Farm to be fascinating. As a whole, the workmanship is noteworthy. All the more so since the majority of points was made from typical vein quartz. Many of the reduction failures are planar joint separations. In other words, these failures were not the result of human error. Four point fragments were made from a better quality, transparent quartz with opaque banding. Visually similar quartz can be found between Diamond Hill and Lime Rock, Rhode Island. It is also likely to occur in the drift south of that area as well.

Other Lithics

While Green Argillite was represented on both loci, the bulk was associated with the Laurentian occupation. There were nineteen argillite recoveries from the north locus. Of these, nine are obvious tools. These included six Laurentian points, one perforator, one Stark point and one point tip. The other ten pieces can be described as former tools whose purpose is no longer discernable. Other lithics recovered from the site include one tool of Onondaga chert, one flake of yellow Jasper, one midsection of a heavily weathered black Argillite, Saugus Jasper, Wakefield Felsite (Salt and Pepper), several varieties of Lynn (Marblehead) volcanics, Red Banded Mattapan Felsite, Sally Rock Felsite, Braintree Hornfels and quartzite. Blue Hill River Felsite accounted for 14 broken bifaces, one Small Stemmed point and a point tip. After quartz, Attleboro Red Felsite and Green Argillite, Blue Hill River Felsite was the most common lithic material on the site.

Discussion

The remote location of Rubin Farm is quite different from other known river or lakeside sites in the town of Norton. Rubin Farm is two miles south and three miles upstream from any major tributary of the Taunton River. This type of site location has been termed 'bogside' (Dincauze 1974:45). In some ways Rubin Farm is similar to the Annasnappet Pond site in Carver, which is located on the extreme eastern fringe of the Taunton River drainage. The Annasnappet Pond site is unique. It has produced the 'largest collection of Middle Archaic cultural material in association with radiocarbon dated features' and the 'only Neville complex burial to be identified in the Northeast' (Doucette 2003). Where the two sites are similar is in their Middle Archaic components and their settings adjacent to interior wetlands. By the Middle Archaic, interior wetlands were part of a pattern of seasonal rounds that included estuarine and coastal resources. In that regard, Rubin Farm would seem to have been ideally suited to serve as an interior Middle Archaic campsite.

How people reached this site is an interesting question. Given the diminutive size of the brooks in the Rubin Farm environs, one must question whether the site could have been approached by canoe. It is also interesting to note that the site lies on the old coach road to Taunton. This suggests that there may have

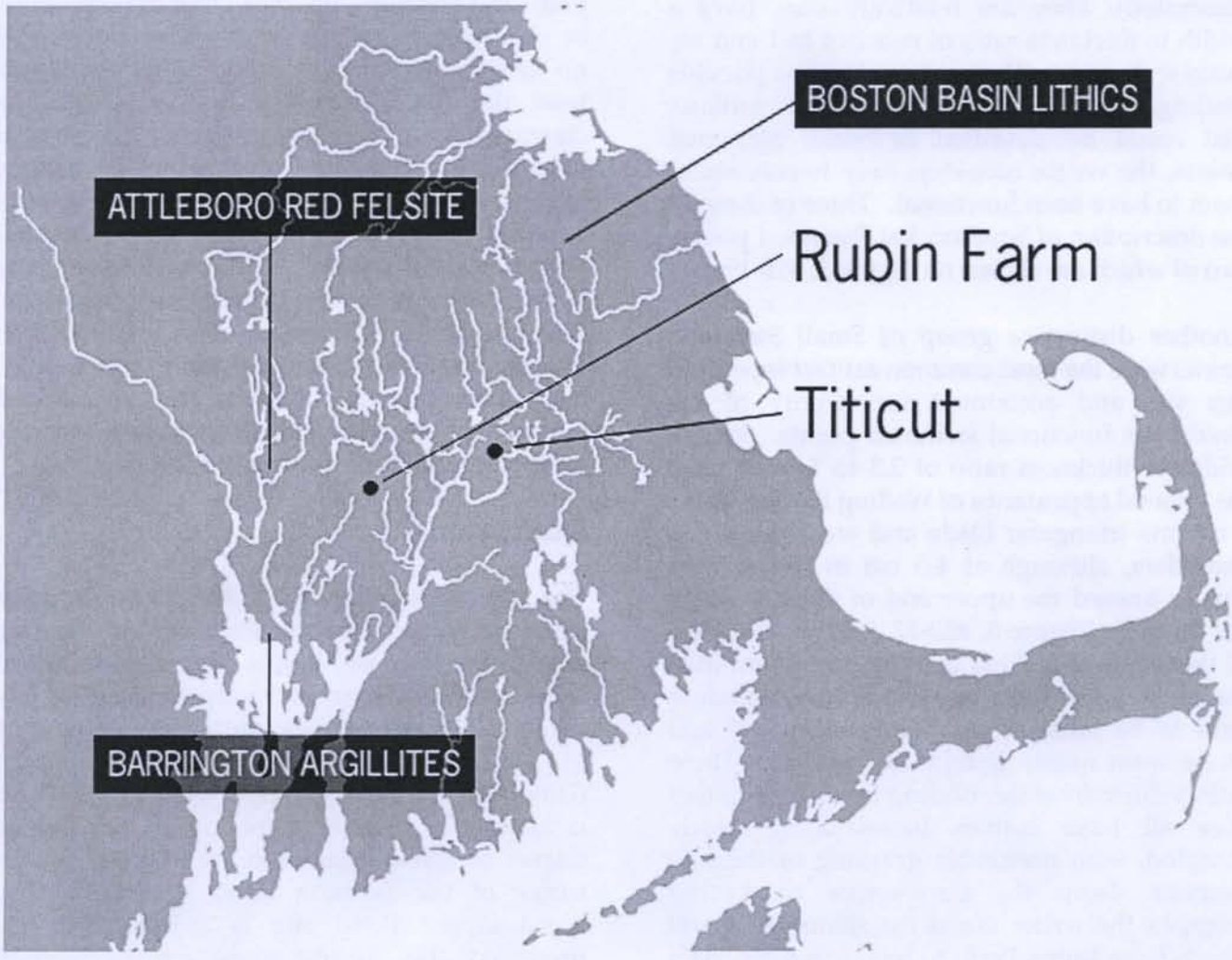


Figure 6. Location of Lithic Sources Areas in relationship to the Rubin Farm and Titicut sites.

been an ancient dry shod route across this area that led past Rubin Farm. If that were the case, then Rubin Farm would have been sited on the most direct overland corridor between the Attleboro Red Felsite quarries and the Taunton River (Figure 6). The presence of Attleboro Red Felsite tools at the Neponset PaleoIndian site in Canton documents its use by the earliest people in southeastern Massachusetts (James Bradley, personal communication). The importation of Attleboro Red Felsite into the Taunton River drainage was certainly well established by the Early Archaic. Of forty Titicut area bifurcate-base points studied by the writer, nearly eighteen percent were made of Attleboro Red Felsite. One possible piece of evidence that Early Archaic people used this corridor is shown on Figure 3, #30. Made of Attleboro Red Felsite, this exhausted point was found by the writer at a small site two miles downstream from Rubin Farm. This is still a mile from the nearest major Taunton River tributary. Significant basal and shoulder damage make it impossible to identify the type with certainty, however, all of the remaining metrics suggest that it is a bifurcate.

The lithic composition of the Rubin Farm assemblage displays a reliance on Attleboro Red Felsite, Green Argillite and quartz. This is true of both loci. While no tools of Attleboro Red Felsite were found on the south locus, U-base biface fragments were present. This may indicate that a similar pattern of seasonal rounds extended from the Middle Archaic into the Late Archaic. If the ratio of debitage to tools is

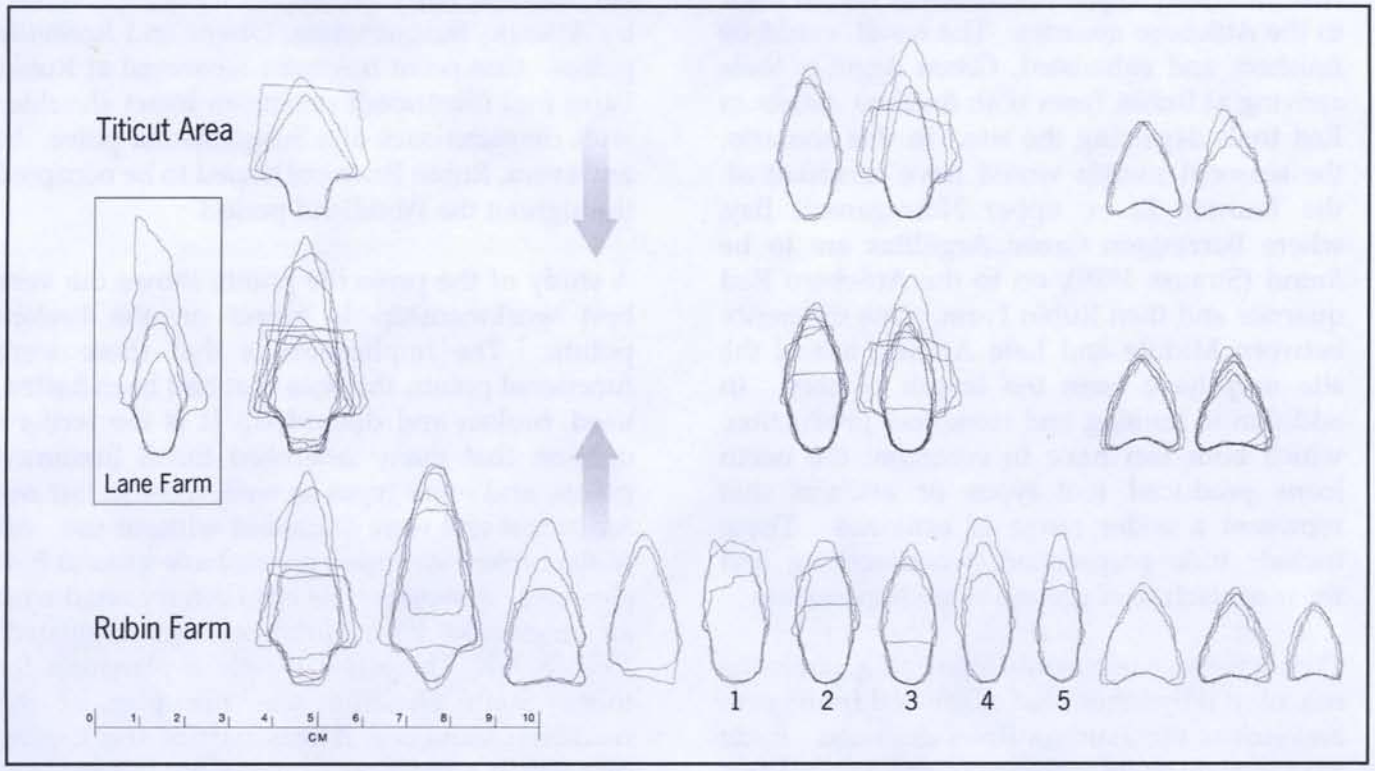
accurately represented by quartz utilization at this site, then Green Argillite tools seem over-represented while tools of Attleboro Red are under-represented. If this is true, it suggests that the Green Argillite source was visited prior to the Attleboro quarries. The result would be finished, and exhausted, Green Argillite tools arriving at Rubin Farm with finished Attleboro Red tools departing the site. In this scenario, the seasonal rounds would have consisted of: the Taunton River, upper Narragansett Bay, where Barrington Green Argillites are to be found (Strauss 1989), on to the Attleboro Red quarries and then Rubin Farm. One difference between Middle and Late Archaic use of the site may have been the length of stay. In addition to hunting and stone tool production, which both loci have in common, the north locus produced tool types or artifacts that represent a wider range of activities. These include hide preparation, woodworking and the manufacture of ground stone implements.

The above scenario, while interesting, omits the role played by lithics that originated from north and east of the Taunton River drainage. Trade may explain their presence in the Rubin Farm assemblage but does not tell us how they got there. It is not difficult to imagine that certain tools types were curated throughout an entire period of seasonal movement. A specialized type of implement or a thrusting spear point reserved to deliver a coup de grâce might be examples. Certain point types may have been manufactured well in advance, anticipating the specific prey found at an interior wetland site. The broken bifaces of Blue Hill River Felsite are more difficult to explain. It is hard to imagine these blanks were curated from the Taunton River to Rubin Farm with the knowledge that the Attleboro quarries could be visited beforehand. One explanation may reside in the stone itself. As a general rule, Blue Hill River Felsite is superior to Attleboro Red Felsite in both workability and keenness of edge. It could be that any complete tool kit required the inclusion of a superior lithic reserved for the production of blade tools with an attribute impossible to produce with an inferior lithic.
The absence of Terminal Archaic traits at Rubin Farm is, perhaps, an aberration resulting from earlier collector activities. Artifacts from the Lane Farm site two miles north (Sprague collection, site M-39-9/10) exhibit Terminal Archaic and Early Woodland traits represented by Atlantic, Susquehanna, Orient and Rossville points. One point fragment recovered at Rubin Farm (not illustrated) retains an intact shoulder with characteristics of a Susquehanna point. In any event, Rubin Farm continued to be occupied throughout the Woodland period.

A study of the projectile points shows the very best workmanship is found on the broken points. The implication is that these were functional points, the ones that had been hafted, used, broken and discarded. It is the writer's opinion that many unbroken Small Stemmed points, and other types as well, were in fact not functional and were discarded without use. All of the broken stemmed points have ground haft elements. A similar style has been reported with an unground base (Johnson and Mahlstedt 1984:88-95). There is a simple explanation for this. Stem grinding was not part of the reduction sequence; it was part of the hafting process. If a functional point were lost prior to hafting, it would have an unground base. The purpose of grinding was to allow the point to be fitted into a socket with a smaller diameter than would be possible without grinding. The result was a more compact missile with better penetration. Of course, none of this can be known for certain, but it does explain what was found at Rubin Farm.

Composite outlines of the points from Rubin Farm help to define the stemmed quartz points further. The two groups on the left (Figure 7, #1-2, see next page) are clearly distinct from the others. These Small Stemmed points had haft elements more robust than Neville complex stemmed points. They certainly appear designed for maximum penetration. Their workmanship also belies the notion that Small Stemmed points were either casual or throw-away tools. That notion probably arose because of significant numbers of non-functional Small Stemmed points commonly found on so many sites. The third and forth groups (Figure 7, #3-4)

Figure 7. Comparison of point outlines from Rubin Farm and the Titicut area. The bottom row shows groups of points from Rubin Farm. The top row shows similar groups from the Titicut area. The center row shows composites of the Titicut and Rubin Farm groups. The inset shows a Neville Variant and several Small Stemmed points from Lane Farm, Norton, MA.



are essentially the same and may represent the culmination of the Stanly/Neville through Merrimack trend towards narrower points, a trend that may reflect the development of the atlatl. Oddly enough, these points have a haft element that is the same as some Neville Variants from the Titicut Area. This similarity of haft elements between Neville Variants and Small Stemmed points is repeated at Lane Farm. No explanation is offered here. The last group (Figure 7, #5) is interpreted as Squibnocket.

In terms of their outlines, the uniformity of the quartz stemmed point haft elements is striking. The writer believes they are evidence for the precision required in prehistoric weapon systems. Another indicator of the craftsmanship required of functional points is demonstrated by surviving midsections. Traditionally, these have been overlooked and considered to have little archaeological value. However, midsections are not only common, they always exhibit superior workmanship. Perhaps the recognition of this precision has been impaired by the inclusion of non-functional points in our typologies. As a comparison, let's consider Eskimo weaponry, many examples of which are available for examination. How can one not be impressed by their complexity, workmanship and the precision with which related parts go together? When one considers any of the seemingly 'simple' stemmed point groups from Rubin Farm, one must also consider the other components of that system we can no longer see - the foreshaft, dart, atlatl and, quite probably, finely crafted weight. To me, it is inconceivable that the prehistoric weapon systems used in southeastern Massachusetts were any less complex, well crafted or precise.

This is not just the case at Rubin Farm. Every assemblage studied, and outlined, by the writer has produced the same results. Invariably, there are groups of points that appear to have been

mated to the same haft. It is possible that prehistoric knappers could produce virtually identical points without a reference. But the fact is, every functional point had to be fitted to a haft, with the haft acting as a template. This is especially true of stemmed points. If the foreshaft or haft were more labor intensive to produce than its stone tip, then the haft would not be modified to accept a point; the point would be modified to fit the haft. And it is probable that, in any given assemblage, some of the points were made by the same person and fitted to the same haft. Is this what we see at Rubin Farm? If so, then this raises the question - can the same haft be identified at other sites? While not impossible, the chances of doing so seem incalculably remote. According to associated dates, some of these point styles were manufactured for 3,000 years or more. That is 150 generations, or more. More likely, the site to site congruities in points and hafts reflect some unrecognized agency of standardization. A full discussion of this subject is beyond the scope of this report. But, before moving on, the writer would like to posit this idea - intact haft elements on broken points are the most reliable keys to understanding typology.

A few final thoughts. The point outlines from Rubin Farm also demonstrate that the Nevilles found on the site had been heavily used, and reused. As a group, they are very much like some Nevilles from the Titicut Area, especially those of the smaller, tapered stem variety. Do these Rubin Farm Nevilles indicate an exhausted tool kit? If so, then one might expect to find newly manufactured Nevilles made of Attleboro Red Felsite. None were found. Were these newly minted points taken downstream, or is this yet another aberration due to surface collection? We don't know. The three forms of Squibnocket triangle shown in Figure 7 also recur at other sites in the area though not necessarily together. There are also other regional forms that were not represented at Rubin Farm.

One purpose of this article has been to explore what can be learned from an incomplete, surface collected assemblage. While we certainly would understand more about Rubin Farm if it had been professionally excavated, the reality is that most sites in southeast Massachusetts are known primarily from surface collection. Even so, a great deal of information can survive, even in an assemblage as fragmentary as that from Rubin Farm.

Acknowledgements

It is appropriate that the writer extend belated thanks to Mr. Louis Rubin, now deceased. I remember as a youth asking "Where can I find an arrowhead?" Eventually the answer led me to Mr. Rubin. He was an attorney in the town of Norton and had grown up on the farm. All he could remember finding were 'big white arrowheads'. Mr. Rubin was avid in his interest and offered to do whatever could be done to facilitate the writer's efforts. He even volunteered to have the site bulldozed. The writer demurred.

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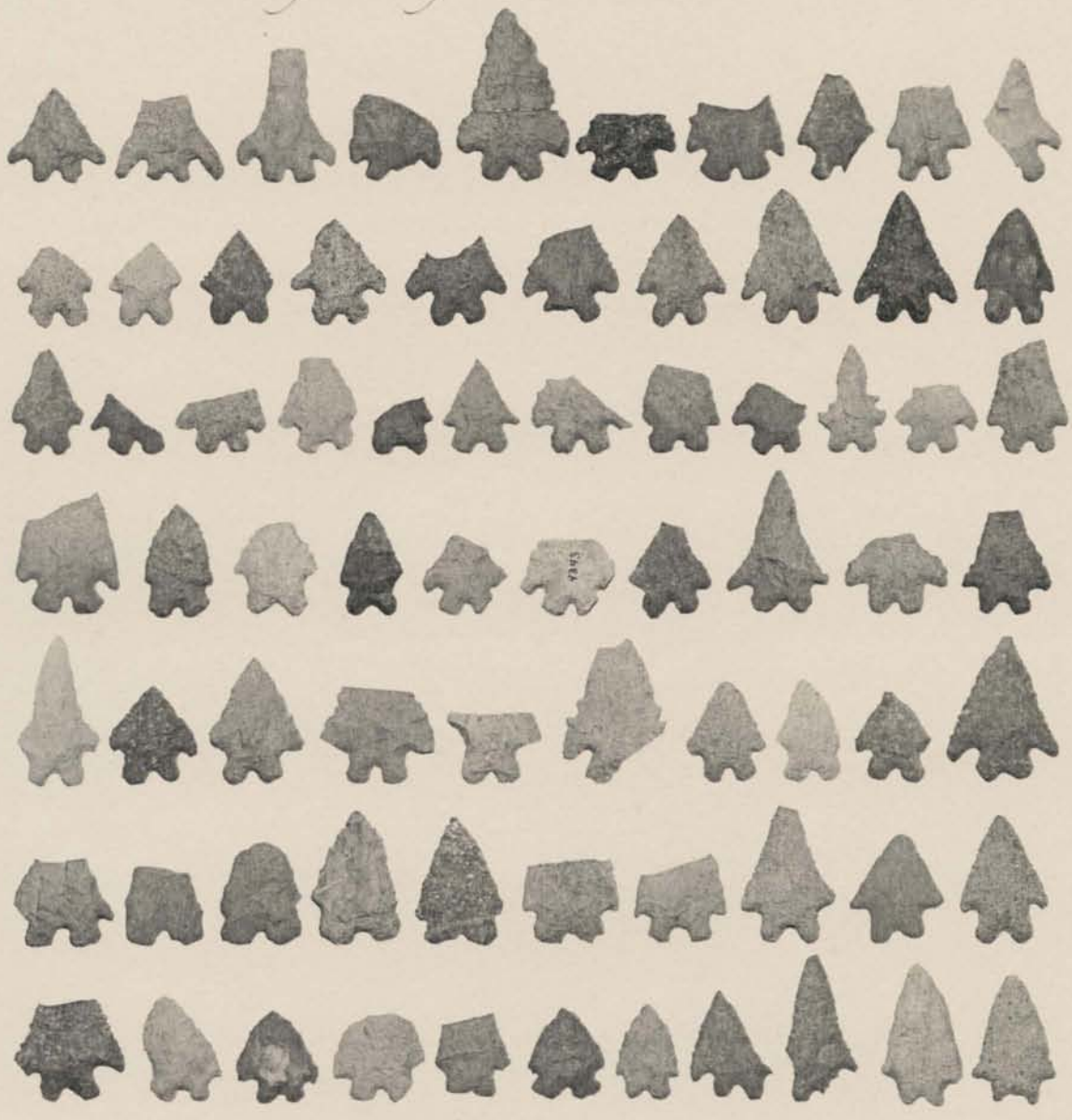
Taunton River

Bifurcates of Eastern Massachusetts



5cm

The majority of these points are from the collection of William B. Taylor — many [illegible] notched portions have been restored. It is interesting to note that the preform (top row, 5th from left) [illegible] of the importance placed on the haft element, within the manufacturing sequence. The preserved [illegible] to their respective hafts, is demonstrated by the outline drawings.

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