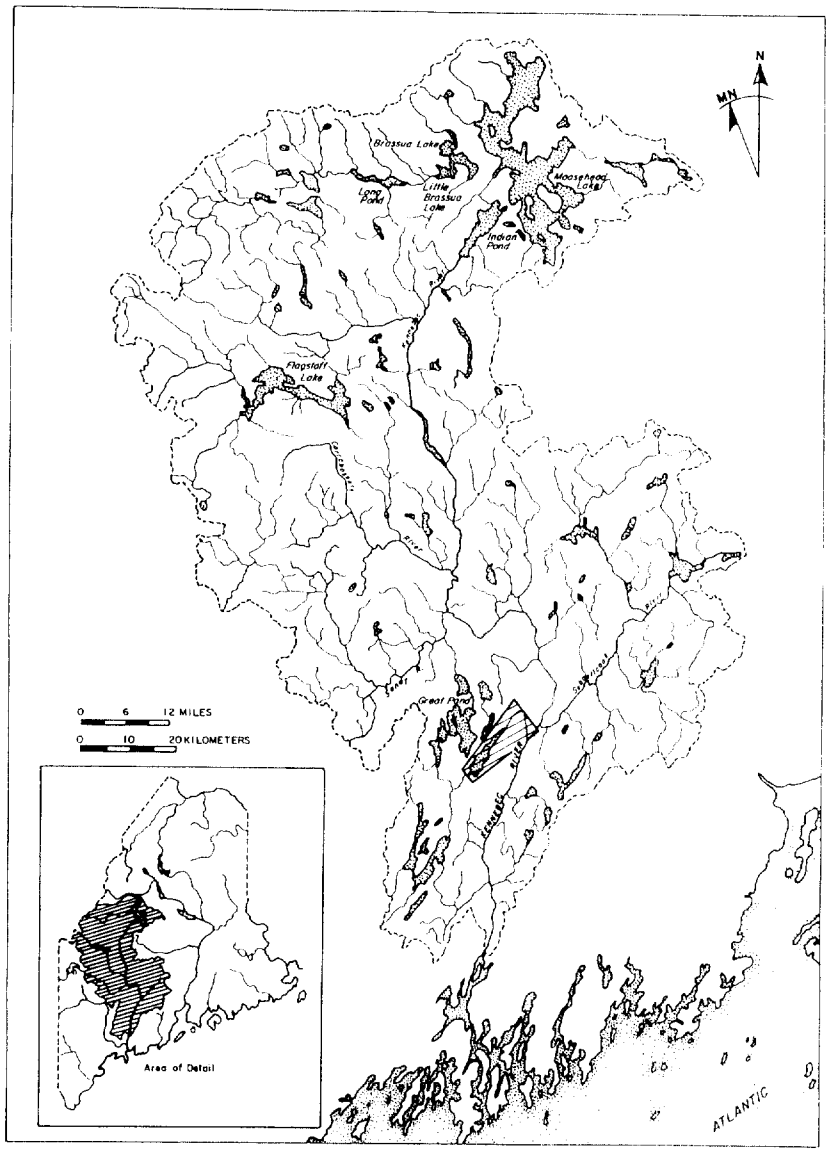
THE MAINE ARCHAEOLOGICAL SOCIETY INC. BULLETIN



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MAINE ARCHAEOLOGICAL SOCIETY BULLETIN

CONTENTS

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The Cates Farm: Archaic and Woodland Occupation at China Lake Outlet

Elizabeth Trautman and Arthur Spiess

INTRODUCTION

The results of archaeological survey and excavation by the Maine Historic Preservation Commission at the Cates Farm site (Maine Archaeological Survey #38.10) in East Vassalboro, Maine are presented in the following descriptive report. We also present a description of the artifacts from the Cates Farm site donated by the Cates family in 1968 to the Vassalboro Historical Society.

The Cates Farm site was originally reported to the University of Maine at Orono before 1974. The site was visited by Bruce Bourque of the Maine State Museum on May 31, 1976, who reported dark soil 50-70 cm deep in auger tests along China Lake outlet stream (Bourque, personal communication). The State Museum subsequently photographed the Cates collection held by the Vassalboro Historical Society.

Maine Historic Preservation Commission involvement at the site began in October 1989 when Mr. George Cates inquired what steps could be taken to protect the archaeological site from planned construction by the Kennebec Water District. After reviewing the existing records in the State Museum, on October 25, 1989 Earle G. Shettleworth, Jr., State Historic Preservation Officer, extended one year emergency protection against unauthorized ground disturbance under 27 MRSA 371-378 to the site. MHPC spent four days on the Cates farm, from June 12-15, 1990. Clear weather helped to expedite excavation. Field work proceeded under the supervision and direction of Arthur Spiess. Our field work at the Cates Farm site was designed to produce enough information to establish the National Register eligibility of site 38.10 and produce the necessary documents for listing the site.

During the course of MHPC's fieldwork at Cates Farm, the site area was surveyed by transit and stadia rod, and the resulting information was used to generate a detailed contour map. Surficial survey of the lower garden and the excavation of seven one-meter-square test units and three fifty-centimeter-square test pits produced a total of 51 artifacts, 217 pieces of lithic debitage, 220 calcined bones and bone fragments, 12 soil samples, and 92 pieces of historic debris. Surface survey of the lower garden area accounted for the recovery of 74 prehistoric and 4 historic items, representing respectively 15% and 4% of the prehistoric and historic totals. Some cultural materials were recovered on a rounded hillock approximately 300 meters to the east as well. Evidence for prehistoric habitation is dominated by Middle and Late Archaic artifacts. However, Early Archaic and some Ceramic (or Woodland) period artifacts are also present, albeit in a lower frequency.

The MHPC field crew consisted of Maxine Collins, John Cooper, Jacob Enslin, and Liz Trautman. Vickie Norris volunteered for three days during the course of the field work. Analysis of most of the data recovered through excavation was accomplished at the MHPC Archaeology Lab in Augusta by Liz

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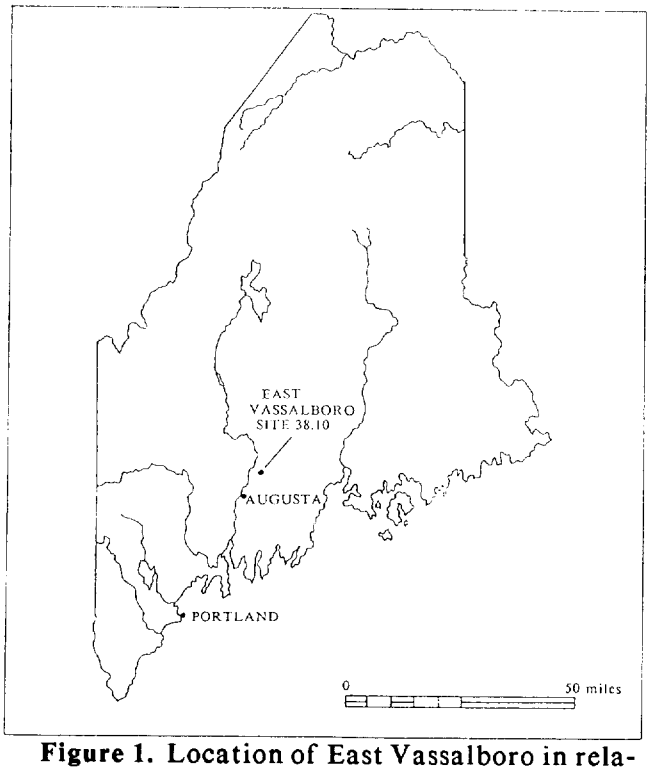

Figure 1. Location of East Vassalboro in relation to Portland and Augusta.

Trautman and Jeremy Pincoske. Maxine Collins and Mark Hedden examined and analyzed the ceramic sherds. John Cooper and Liz Trautman produced the maps and graphics presented here. Steven Pollock, a geologist from the University of Southern Maine, helped to identify the lithic materials from the site. Steven Cox and Bruce Bourque, of the Maine State Museum, were most generous in providing us with the details of ongoing research on the Vergennes Phase, and in comparing the Cates Farm collection with collections they had excavated. Special thanks are extended here to Betty Taylor of the Vassalboro Historical Society. Miss Taylor generously loaned 61 ground and flaked stone artifacts, collected from the Cates' garden area, to MHPC for documentation and analysis.

ENVIRONMENTAL SETTING

The Cates' Farm site is located in East Vassalboro, about 15 miles northeast of Augusta (Figure 1), at the outlet of China Lake. China Lake empties into the Sebasticook River via Outlet Stream, while the Sebasticook River empties, above tide, into the east bank of the Kennebec River at Winslow. This portion of the Kennebec River valley is located in the Coastal Lowlands zone (Denny 1982). The site lies between 190 and 200 feet above mean sea level.

Below surficial deposits, bedrock in the site area is identified as the Vassalboro Formation which stretches, with intrusions, southwest to northeast approximately from Waterboro Township to Sysladobsis and Pocumcus Lakes. The Vassalboro is a Silurian - Ordovician aged formation of metamorphosed calcareous sandstone and interbedded sandstone and limestone (Osberg *et al.* 1985). For prehistoric populations producing ground stone tools, this formation could provide adequate materials for their production. Glacially transported cobbles of Kineo Rhyolite and veins of quartz present in the bedrock would have provided more acceptable "flaking" materials.

Both glacial till deposits and Presumpscot Formation "clay" overlie the bedrock at Cates' Farm. The subsoil of the relatively flat, lower elevation portion of site 38.10 is Presumpscot "clay", but the rocky plow zone attests to the presence of some till there as well. Atop the knoll, along the eastern edge of the site, the subsoil at about 35 centimeters is composed of unsorted till and the entire soil profile consists largely of till clasts. Despite its proximity to China Lake, there are no discernible flooding episodes visible below the plow zone in the lower garden area soil profiles. Presently, the water level of the lake is held by the outlet dam adjacent to the site to a level of 196 feet above mean sea level (Figure 2). The absence of any flood deposited strata seems to indicate that water level was probably lower during aboriginal occupation of the site, and that there was little flooding by silt-laden waters.

Forest cover in the East Vassalboro area is second growth, typical of Westveld's (1956) "Zone 3, Transition Hardwoods--White Pine--Hemlock". Prominent tree growth consists of oak, maple, pine, hemlock and some hawthorne. However, much of the area and all of the Cates' Farm site is currently cleared and cultivated land.

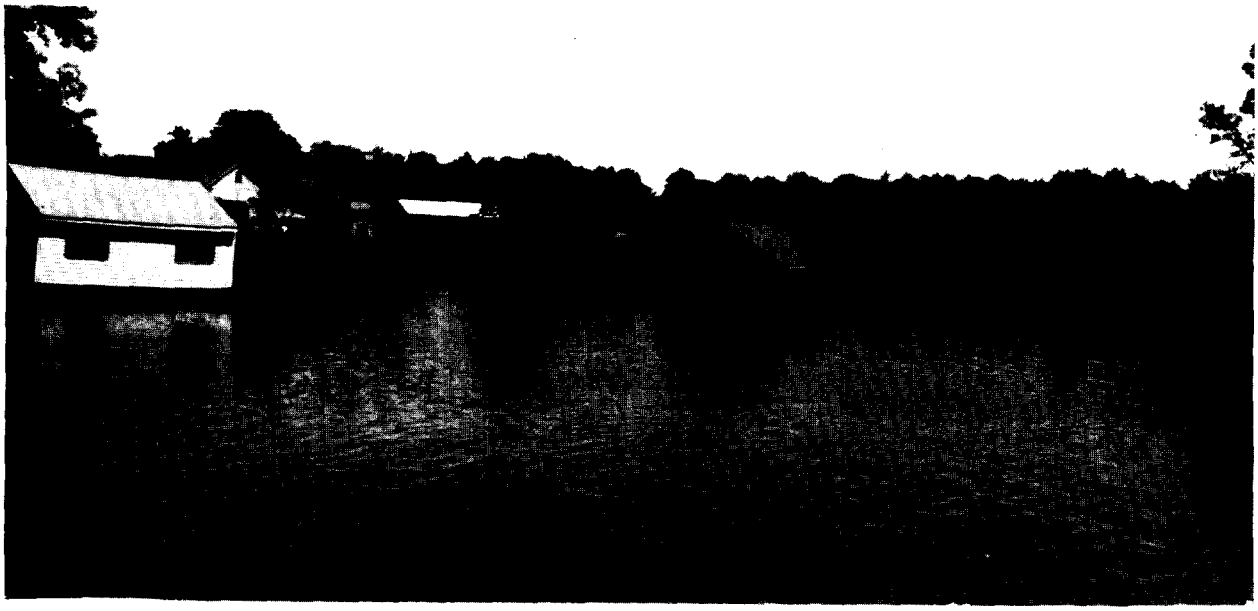

Figure 2. View of the site looking northeast from Route 132. Boathouse is near the center of the photo, the lake's outlet is just to the left of the boathouse and the Cates' farm buildings are in the left background.

East Vassalboro weather is characteristic of the "Central and Southwestern Interior Climatic Area" (Fobes 1946) with relatively high average temperatures. Weather is milder here than in some other parts of Maine, with higher temperatures during the growing season, less cloudiness in both summer and winter and evenly distributed precipitation. Snowfall in the region is moderate. Winter winds, as in the rest of Maine, are from the north and northwest, while summer experiences mostly westerly winds (Fobes 1946).

PREHISTORIC CULTURAL SETTING

The Cates Farm site preserves evidence of human habitation spanning much of the prehistoric occupation sequence identified in Maine. The analysis of both ground and flaked stone artifacts along with a small number of ceramic sherds from site 38.10 indicates site habitation during the Early, Middle and Late Archaic Periods as well as the Early and Late Ceramic (Woodland) Periods. The Vassalboro Historical Society's artifact collection, originating from the Cates' garden area, is dominated by Archaic remains.

Paleoindian (ca. 11,500-10,000 B.P.) remains have not been recovered at Cates Farm, although Maine Paleoindian sites have been excavated in the region in Auburn (Spiess and Wilson 1987) and Wayne (Wilson and Spiess n.d.). Paleoindian remains have also been identified in the northeastern portion of the Kennebec River drainage at and near Brassua Lake (Ferreira and Petersen 1990), and elsewhere in central Maine (Spiess and Wilson 1987: Appendix 3). It is thought that Paleoindians lived in small groups in a late Pleistocene environment of mosaic forest and tundra. They appear to have moved often and over long distances, perhaps to intercept herds of caribou and other large mammal species. The Paleoindians are probably best known for their fluted points. Their lithic artifacts are noted for the high quality of both material types and stone working (Spiess and Wilson 1987, Spiess *et al.* 1990).

A Late Paleoindian period (ca. 10,000-9000 B.P.) follows the Paleoindian period in Maine. The few "Plano-like" Late Paleoindian points

attributable to this period that have been recovered in Maine, including one from site 53.38 in Waterville, have not been firmly dated however. A change from the spotty "mosaic" forestation of the Paleoindian period to a thick coniferous forest probably caused an equally drastic change in lifestyle for the state's prehistoric inhabitants (Spiess and Wilson 1987, Spiess *et al.* 1990).

The Early and Middle Archaic period, spanning the years from about 10,000 B.P. to 6,000 B.P. overlap and follow the Late Paleoindian period. The earliest component at the Cates Farm dates to the Early or Middle Archaic. Five sites with either Early or Middle Archaic components are located about ten miles west of East Vassalboro within the Messalonskee Stream project area (Crock *et al* 1991). Other Early and Middle Archaic period sites in the Kennebec River drainage are known at Merrymeeting Bay, Cobboseecontee Lake, and Moosehead Lake. The Early and Middle Archaic period is rather poorly understood in Maine, but changing ideas about site recognition may increase our knowledge of these periods in the future. Early and Middle Archaic period sites tend, like Cates Farm, to be located around the inlets and outlets of large and medium sized lakes (Spiess et al 1983). Although Early and Middle Archaic use of the coastal zone seems negligible because of little evidence, this probably results from destruction of the archaeological record by coastal subsidence. Other Early and Middle Archaic remains are present in deeply stratified context along major rivers (Crock *et al.* 1991; Hamilton *et al.* 1991; Spiess 1991).

The emergence and continued use of a ground stone tool technology during the Early and Middle Archaic periods could coincide with a corresponding reduction in reliance upon flaked lithic items in some parts of northern New England. Ground stone woodworking tools also indicate a significant use of shaped wooden or bone objects which rarely survive archaeologically. Ground stone assemblages featuring axes, adzes, and gouges among others, additionally imply the production of large wooden objects such as the dugout canoe. Heavy dugout canoes may have limited inland water-based mobility to large rivers and ponds or lakes. This in turn may have increased the importance of anadromous fish in Early and Middle Archaic foodways. Anadromous fish along with deer, beaver, snake, turtle and a variety of birds and other mammals have been identified from sites from these periods (Spiess 1991, Spiess and Cranmer 1989, Spiess *et al.* 1983). The site's location on China Lake where it empties into Outlet Stream and identifiable calcined alewife bones support some models for settlement and subsistence patterns postulated for the Early and Middle Archaic periods (Dincauze 1976; Funk 1988; Robinson 1991; Ritchie 1980; Spiess 1991).

While Early and Middle Archaic period occupations, in Maine, had in the past been considered by many archaeologists to be rare or absent, this scenario featuring an "occupational hiatus" is incorrect. Until recently, recognition of Early or Middle Archaic period occupations has relied upon the recovery of flaked stone points with known southern analogues (Funk 1988; Robinson 1991; Spiess 1991). Robinson (1991) has presented an alternative interpretation, including definition of the Gulf of Maine Archaic Tradition which spans the time from the end of the Paleoindian Period through the beginning of the Late Archaic traditions (beginning ca. 6000 B.P.). Robinson's hypothesis recognizes Early and Middle Archaic period sites in northern New England based upon a different set of lithic criteria than the conventionally applied "diagnostic" points. The Gulf of Maine Archaic can be recognized by the majority presence of ground stone implements including full-channel gouges and stone rods, along with a simple flaked stone technology featuring unifaces, cores and utilized flakes. Sites of the Gulf of Maine Archaic Tradition contain correspondingly low percentages of bifacially flaked tools and projectile points (Robinson 1991; Spiess 1991). Presumably, projectile points were made from other materials, probably bone.

Robinson's hypothesis also incorporates the concept of a boundary between the Gulf of Maine Tradition (eastward) and more readi-

ly recognized Middle Archaic cultures marked by diagnostic Neville and Stark points (westward). The boundary shifts eastward in a time-transgressive pattern, with Neville points replacing the earlier non-stone point technology in the Merrimack River valley by 7200 B.P. Neville and Stark points were never common east of the Kennebec River.

Located in central Maine, the Cates Farm site may have been in transitional territory between the Gulf of Maine Archaic Tradition and the more readily recognized Neville and Stark point-making Middle Archaic Tradition circa 7000 B.P. Indeed, there are bifacially flaked points present in the historic society's collection which are analogous to Early and Middle Archaic point types of southern New England, New York and areas further south. The collection also contains ground stone tools typical of those used to define Robinsons's Gulf of Maine Archaic.

Maine archaeologists, and the public as well, are better acquainted with the Late Archaic period, ca. 6000 to 3000 BP. The Late Archaic period includes several subdivisions represented by many local manifestations of widespread regional traditions. Definitions regarding New England's Late Archaic phases and traditions are not fully developed.

The Vergennes Phase (ca. 6000 - 5000 B.P.) of the Laurentian Tradition as defined by Funk (1988: p.33, Table 1) is represented at Cates Farm. Other sites with Vergennes components have been excavated in northeastern Maine in Indian Township and at the Hirundo site in Bangor, Maine (Cox 1990, Sanger *et al* 1977). As suggested for the Early and Middle Archaic periods, the Cates Farm artifact assemblage may have represented a cultural transition zone in the Kennebec River valley during the Late Archaic as well (Cox personal communication 1991). The well known Moorehead Phase of the Late Archaic Tradition (circa 4200 to 3800 B.P.) is also present at 38.10. Several Moorehead cemeteries are known in this part of the Kennebec River drainage near the Messalonskee Stream and Fort Halifax project areas (Ferreira and Petersen, Funk 1988, Spiess *et al.* 1990).

The last of the Late Archaic Period subdivisions, the Susquehanna Tradition, ca. 4000 to 3000 BP, is represented at the Cates Farm site and nearby in the Waterville - Winslow area (Spiess *et al* 1990). Susquehanna lithic styles are quite distinctive. Broad, thin well formed points made almost exclusively from local materials are typical of the earlier Atlantic Phase. Faunal remains analyzed from Susquehanna sites indicate dietary reliance on terrestrial, anadromous, and marine resources, notably sturgeon along the major lower rivers and coast (Spiess and Cranmer 1989; Wilson *et al.* 1990).

Three broad temporal periods referred to as Early, Middle and Late Ceramic (or Woodland) follow the late Archaic periods in Maine. Early Ceramic (circa 3000 to 2200 B.P.) ceramics are known as "Vinette-I". "Vinette-I" pottery is fabric-impressed on both the interior and exterior walls. Middle Ceramic (circa 2400 to 1000 B.P.) ceramics can be subdivided into two assemblages: early Middle Ceramic ceramics are well fired grit-tempered pottery, decorated with toothed tools producing "rocker dentate stamped" and "pseudo-scallop shell" patterning. Later ceramics from the Middle Ceramic tend to be more coarse, dentate stamped and often incised or decorated with punctations. The Late Ceramic period is also subdivided on the basis of two mainly sequential ceramic types. The early Late Ceramic is represented by "cord-wrapped stick" or "cord-wrapped paddle" ceramics tempered with either shell or grit, and the final portion of the Late Ceramic is represented by Iroquois-like pottery. Some Early and Early Middle Ceramic occupation of site 38.10 is indicated. Late Ceramic occupation is also a possibility (Petersen and Sanger draft 1989).

The adoption or invention of birch bark canoes by Late Archaic or Ceramic (Woodland) peoples was probably more significant in terms of actual lifestyle change from the Early and Middle Archaic than was the use of pottery, though the pottery with its excellent preservation characteristics receives much archaeological attention. Travel by birch bark canoe can proceed up shallow tributaries as well as along major riverine and coastal waterways (Cook 1985), enabling easier resource

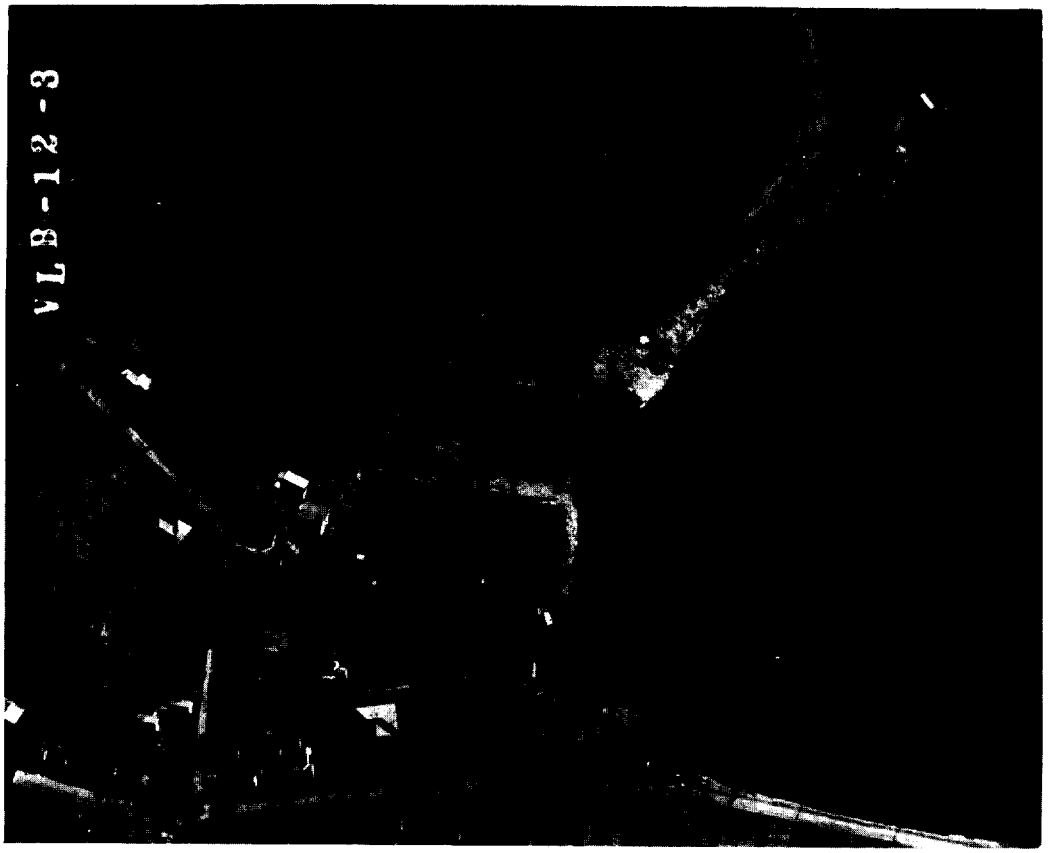

Figure 3. Aerial photograph of China Lake outlet, taken April 30, 1955. North to the left. Route 32 and China Lake outlet at bottom center, with the Cates Farm lower field just above the outlet. A number of small buildings which were located in the field at the time of the photograph are no longer there.

procurement, and enhancing visiting, exchange and trade mobility. The lithic materials found in Ceramic contexts generally show a relative increase in exotic materials compared with earlier periods.

The Kennebec River drainage supported continued aboriginal habitations throughout the Contact and Colonial periods (Spiess 1991; Cranmer 1990).

CATES FARM 1990 EXCAVATIONS

Methods

On May 17, 1990 Spiess and Trautman accompanied George Cates on a walk-over of the Cates Farm property in order to determine the areas most likely to yield data pertinent to the prehistoric habitation of site 38.10. Examination of the ground surface, especially exposed garden areas and roads, indicated that the most intensively occupied portion of the prehistoric site was located on the flat piece of land which forms the eastern border of the China Lake outlet (Figures 3 and 4). This area is currently a garden area, and has been plowed for at least six generations. This "lower" garden area is the site which produced the Vassalboro Historical Society's collection of Indian artifacts from the Cates Farm. During the May walk-over our examination indicated that cultural materials (fire-cracked rock and a large axe or adze preform) were still plentiful in the area. In contrast, our examination

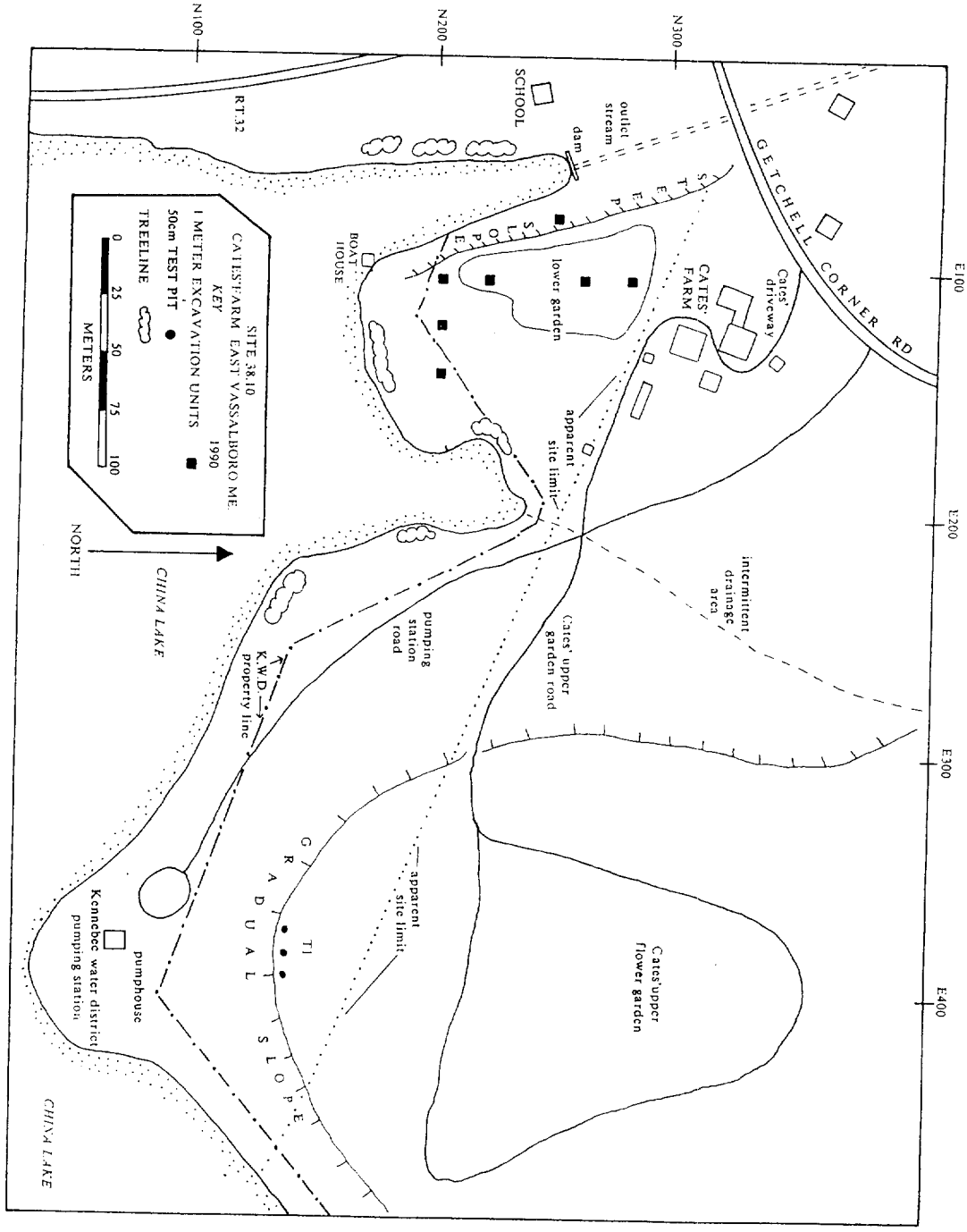

Figure 4. Overview of the Cates' farm with the apparent limit of site 38.10 delineated. Also depicted are the approximate boundary of the Kennebec Water District property, and the location of all MHPC 1990 excavation units.

Figure 5. A view overlooking the lower garden area from the north. Excavation has begun in N260 E100 in the right of the photo, China Lake is visible below the trees in the background.

of the topography and exposed ground surfaces of the rest of the farm indicated that the "upper" garden area (on a hill to the east) had probably not been the location of a prehistoric encampment or work area. No humanly worked materials or fire cracked rock was discovered through our scrutiny of the many exposed rocks in the upper garden and the road leading there.

One other area, besides the lower garden area, was considered likely to contain prehistoric cultural materials. This area, along the lakeside edge of the hill which borders the upper garden area, was tested with one transect of testpits on the gently sloping knoll's edge (Figure 4). Based upon the lack of known cultural materials, distance from the lake, and probable poor prehistoric living conditions resulting from swampy or steep topography, the rest of the farm was considered unlikely to produce prehistoric cultural materials.

During the course of our work at site 38.10, seven one meter units were excavated in the lower garden area (Figure 5). (These units represent the southwest quadrant of larger squares, measuring 2 x 2 meters, that are the basis of our grid system.) Each one meter unit in the lower garden area was numbered according to its southwest coordinates on the established grid. The transect atop the knoll in the eastern portion of the site was established with a transit and metric tape measure along the N132 line. There, three 50 centimeter units along "T1" were located ten meters apart. Throughout the course of excavation, all material was screened through 1/4" mesh hardware cloth. Material larger than 1/4", remaining in the screen, was carefully examined. Any culturally related materials were recovered, bagged and returned to the MHPC archaeology lab for analysis. Feature fill was collected without screening and returned to the laboratory for processing by flotation on 1 mm mesh screen.

Each of the feature fill samples underwent flotation in the lab where charcoal was removed from the "light fraction" and the "heavy fraction" was scrutinized for the presence of any cultural materials, i.e., debitage, pottery, and calcined bone. Charcoal from flotation was subsequently analyzed by Nancy Asch Sidell in order to determine the species

of wood present in the sample and to look for charred seeds and nut fragments.

Calcined bone fragments were collected as they were perceived during excavation of feature fill. Small calcined bone fragments from Features 2 and 5 were later recovered from the heavy flotation fraction in the lab.

Unlike the good bone preservation conditions which exist in coastal shell middens (thanks to their high calcium carbonate content) most prehistoric sites of interior Maine offer poor conditions for the preservation of organic materials. Calcined (burned) bone is uniquely able to survive Maine's acidic soils at interior sites. Only hot fires (presumably fire-hearths) will produce temperatures over 600°C needed to induce the chemical and mineralogical changes that produce calcined bone: white, chalky, and usually small fragments. Presumably after butchering or consuming various animals, their bones were discarded or swept into fire hearths. Hearth fill may later have been redeposited into refuse pits. Identification of particular species' bones in these usually highly fragmented samples may provide us with clues concerning many important facets of prehistoric life such as diet and nutrition, site selection, seasonal movement or site occupation, and environmental conditions.

Our analysis of fire-cracked rock from the site follows methods outlined in Yoon (1986). Through the identification and distribution of certain types of heating and cooling induced fractures, it is possible to determine the past use of a piece of fire-cracked rock. For example, a particular feature may contain a majority of the fracture type indicative of the fast cooling of very hot rocks. The fire-cracked rocks might then be interpreted as "boiling stones" and the feature as a cooking hearth.

Site Description

The presence of prehistoric cultural remains in the excavated units indicates the site is as large as 300 by 150 meters. The eastern most known limit of the site was determined to be the edge of the eastern knoll, toward the edge of the lake from the upper garden. We recovered a battered Kineo Rhyolite core and five pieces of fire cracked rock in the first test pit excavated along the N132 meter grid line (T1). The third test pit excavated along T1 also yielded seven pieces of fire cracked rock. The only unit we excavated at site 38.10 which did not yield culturally related data was the second (middle) test pit along T1 (Figure 5). The distribution of cultural materials recovered from each excavation unit is presented in Table 1.

The seven one meter units excavated in the lower garden area contained a variety of prehistoric cultural material in addition to lesser amounts of historic remains. A total of 1058 prehistoric (including calcined bone and fire cracked rock) and 87 historic cultural materials were recovered. Figure 6 illustrates the distribution of lithic debitage and prehistoric artifacts retrieved from the lower garden surface in relation to the excavated units.

The three units in the northern end of the lower garden area, N250 E72, N260 E100 and N280 E100, accounted for the majority of both prehistoric and historic materials recovered through excavation. Of the prehistoric materials, 87% were recovered from these three units as were 84% of the historic remains. N260 E100 contained the most concentrated prehistoric assemblage. Of the 708 cultural remains recovered from N260 E100, 98% are prehistoric representing 67% of all the prehistoric remains excavated from the lower garden area. The heaviest concentration of historic remains was recovered from N250 E72. Here, along the lake's edge, the total of 39 historic remains represents 44% of the total historic remains excavated from the lower garden area. Historic remains constituted 27% of the cultural remains excavated from N250 E72.

All of the excavation units at site 38.10 were located in plowed soil. The plow zone ("Ap") in the area of the lower garden averaged 24 centimeters in depth and consists of a medium brown rocky and pebbly clayey silt. Consistent with its definition as a plow zone, the bottom of the "Ap" horizon ends abruptly in a horizontal line except where disturbed by earthworm and rodent activity. Below the plow zone a light orange brown rocky and pebbly clayey soil constitutes the "B" horizon.

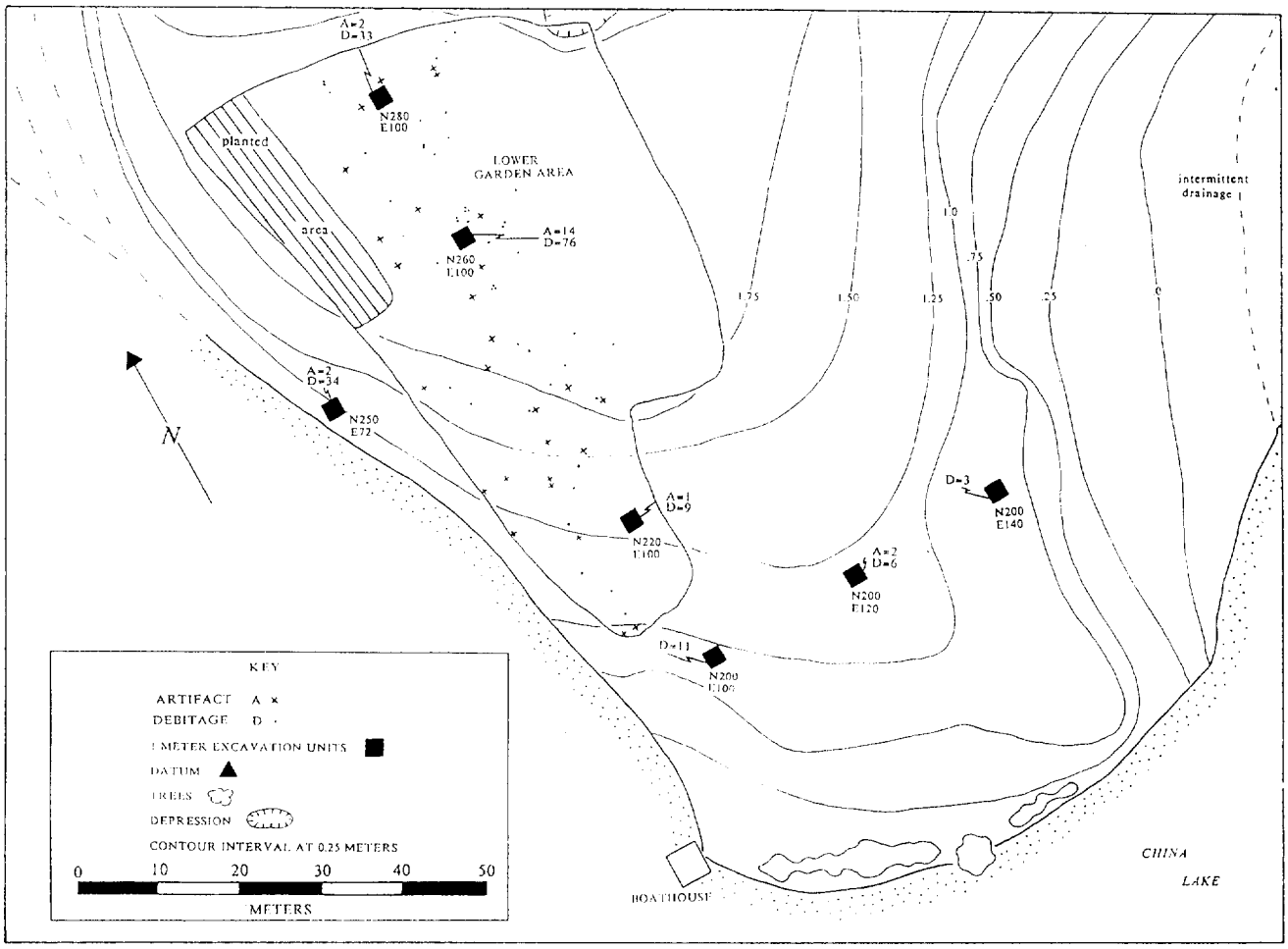

Figure 6. Map showing the distribution of debitage and prehistoric artifacts recovered from the lower garden surface. Also shown are the location of one meter test units in the lower garden area and the numbers of debitage and artifacts recovered from each unit.

It is marbled with "Ap" soil introduced by earthworms and rodents. At an average depth of 34 centimeters below the surface the "B" horizon intersects the "C" horizon of light gray rocky and pebbly silty clay.

Along T1, atop the knoll, the plow zone averages 22 centimeters in depth and consists of a medium brown rocky and pebbly silty very fine sand. The "B" horizon is composed of a light to medium brown rocky and pebbly silty till. In the first two test pits the "B" horizon was an average of 33 centimeters deep while in the third test pit (slightly downhill) the "B" horizon was much thicker, going to a depth of 65 centimeters. The "C" horizon along T1 is comprised of an olive gray rocky till.

Cultural Features

Two prehistoric features, F-2 and F-5, were encountered during excavations in the lower garden area. F-2 was located in square N260 E100, while F-5 was located in N280 E100. Two other features designated as such in the field, F-1 and F-3, were determined not to be cultural in origin. As F-1 and F-3 were excavated, their twisting and turning shape indicated that these were probably tree root burns. Field designated F-4 was eventually determined to be part of F-5, it became appar

ent that these were actually one feature, with the upper portion interrupted by a rodent disturbance.

Both prehistoric features (F-2 and F-5) were intact features, covered, for the most part, by a layer of redeposited rocky, clayey soil (almost sterile). Each of the two, however, has been disturbed by rodent activity, accounting for the one small piece of historic glass which was recovered from each of these features.

Table 1. Distribution of cultural materials recovered by MHPC at Site 38.10.

Location	Artifacts	Debitage	Calcined Bone	Historics	Total
N260 E100 (Ap)	12	73	1	13	99
Feature 2	2	3	171	1	177
N280 E100 (Ap)	2	33	0	19	54
Feature 5	0	0	40	1	41
N250 E72 (Ap)	2	34	7	39	82
N220 E100 (Ap)	1	9	0	5	15
N200 E100 (Ap)	0	11	0	1	12
N200 E120 (Ap)	2	6	1	4	13
N200 E140 (Ap)	0	3	0	4	7
TP1 (Ap)	1	0	0	1	2
Garden Surface	29	45	0	4	78
Total	51	217	220	92	580

Feature 2

Feature 2 is assumed to be one large pit feature, interrupted extensively by rodent burrowing. F-2 extends outside each of N260 E100 southwest quadrant's four walls. It is, therefor, greater than one square meter in area. Wall profile inspection led us to consider that there might actually be portions of three separate pits (though very similar and inseparable in their contiguous "center") in N260 E100. Only the excavation of adjacent units would allow for a more accurate understanding of F-2. Because we were unable to separate this feature into distinct parts, it is treated and defined here as one feature.

F-2 was filled with black silty sand underneath a lighter grey layer of redepos- ited "till" (Figure 7). Within the black silty fill, charcoal, calcined bone, fire cracked rock and other cultural materials were present. Feature fill extended to approximately 50-55 centimeters below datum (datum is the ground surface at N260 E100) over most of the one meter unit. The thickness of the culturally rich feature fill ranged from about 25 centimeters in the center, to an average of 13 centimeters along the walls, and to a minimum of nine centimeters in the northwest corner of the quadrant. The thickness of the "till" layer covering most of the feature averaged ten centimeters. The base of the black cultural fill was often in contact with small piles of burned rock slabs (mostly meta-sedimentary rock). There were no charcoal concentrations associated with the rock piles. There was visual evidence in variations of color in the feature fill for multiple filling layers or episodes. The evidence for multiple dumping or filling episodes, lack of charcoal associated with the burned rock in the base of the feature and a sterile layer of rocky clayey silt on top led us to define F-2 as a probable garbage pit that had been capped with nearby sterile soil after it had been used.

Much cultural material was contained within the excavated portion of Feature 2. These materials were identified and analyzed in the MHPC archaeology lab and are described in the paragraphs that follow. Two artifacts, 38.10.115 and .121 (see Table 1), were recovered from Feature 2. Artifact 38.10.115

Figure 7. Profile of the north wall of N260 E100 southwest quadrant, following the excavation of Feature 2. Feature 2 is visible along the entire wall just below the lighter band of relatively sterile soil halfway down the profile.

is a granite hammerstone. Artifact 38.10.121 is a sandstone hammerstone and whetstone. These two artifacts are further described below in the section which presents descriptions of all the artifacts from the Cates Farm site. Only three pieces of debitage were recovered from Feature 2. These three flakes are presented later in this report along with the rest of the debitage from the site (see Table 5).

Including the bone recovered from the heavy flotation fraction, the calcined bone assemblage recovered from F-2 totals 171 fragments yet weighs only 2.3 grams. The majority of the small bone fragments are unidentifiable, but there are mammal, bird and fish bones present in the sample. More precise identification was possible for three small bones indicating the presence of muskrat (two caudal vertebrae) and alewife or shad (one precaudal vertebra). Table 2 presents the distribution of calcined bone from F-2.

Through flotation a 6.17 gram charcoal sample was obtained from Feature 2 soil samples. Found within the sample were several hardwood species: sugar maple, ash, birch, beech, and red oak. Beech, ash, and red oak dominate the sample (40%, 30% and 20% respectively) suggestive of a much higher percentage of hardwood in the local forest cover than characterizes central Maine today.

A charcoal sample from Feature 2 was also sent to Beta Analytic where a radiocarbon date was obtained: 5000±70 B.P. (Beta-44175). As determined by the botanical analysis, the

charcoal sample was composed of hardwood. The clean sample (2.1 grams) was given quadruple-normal counting time.

A total of 343 rocks weighing 23.583 kg were excavated from Feature 2. The distribution of fracture type and rock material type among the rock excavated from Feature 2 at site 38.10 is

Table 2. Taxonomic distribution of calcined bone from Feature 2, site 38.10.

Taxon	Common Name	# of Fragments	Weight (grams)
Ondatra zibethicus	Muskrat	2	.20
Alosa sp.	Alewife/Shad	1	.05
Small Fish		8	.15
Mammal/Bird		1	.10
Mammal		1	.10
Unidentifiable		158	1.55
Total		171	2.35

Fracture Type	Rock Type						Total	
	Metamorphic		Igneous		Unidentified (some sedimentary)			
	number	weight	number	weight	number	weight	number	weight
Non-FCR	35	2100	80	6849	24	513	139	9462
FCR indeterminate	64	5151	44	2865	12	225	120	8241
Potlid (lid)	6	183	32	1052	2	4	40	1239
Fire reddened	4	1253	4	261	7	235	15	1749
Crenellated Potlid	0	0	11	771	0	0	11	771
Potlid (body)	5	1009	4	398	0	0	9	1407
Crenellated FCR (indet.)	3	229	3	388	1	42	7	659
Crumbling	1	49	0	0	1	6	2	55
Total	118	9974	178	12584	47	1025	343	23583

Table 3. Distribution of fracture and material types within the FCR assemblage from Feature 2, site 38.10. Weights are in grams.

presented in Table 3. The majority (66%) of these rocks have been associated with fire and show fracture or reddening typical of that association. The remaining 34% of the rocks do not show any alteration by fire. Ten of these unaltered feature fill rocks were well rounded small cobbles of fairly uniform size (15-25 grams). Although they did not show any evidence of utilization, the excavators were struck by their uniform size and smoothness. These may represent rocks collected for use as boiling stones (Ritchie 1980: Plate 42) or pecking stones. The distribution of fire cracked rock and other rocks in F-2, supports the view that this feature represents a refuse pit. The large percentage of non-FCR and the fracture category "indeterminate" indicates that these rocks probably originated within and around open air campfires. Practically any type of thermoshock will produce the chunky rocks of the "indeterminate" category with their flat, sharp edged sides caused by fractures along natural planes (Yoon 1986).

Feature 5

Feature 5 was the second cultural feature encountered during MHPC's excavations at site 38.10. Feature 5 was located in the southwest quadrant of N280 E100. Initially, this feature was treated as two separate features, F-4 and F-5, but through excavation and cross-sectioning it was determined to be one interrupted feature. The portion of F-5 initially labelled F-4 was visible along the north wall, at the bottom of the plow zone. When excavated, this portion of F-5 turned out to be quite thin (7 cm at its thickest). This northern-most section was separated on the floorplan surface from the larger portion of Feature 5 (visible along the east wall and into the center of the unit) by a thin layer of sterile subsoil. At least part of F-5 was covered over with a thin, almost sterile layer of clayey, silty, rocky "till" in much the same manner as F-2.

Feature 5 appears to be another pit type feature but differs from F-2 most notably by a relative lack of FCR. F-5 was very dark grayish brown to black in color and contained charcoal, calcined bone and some FCR. It measured approximately 100 x 100 centimeters in area and was 25 to 30 centimeters thick in its deepest portions.

Table 4. Calcined bone identifications from Feature 5, site 38.10.

Taxon	Common Name	# of Fragments	Weight (grams)
Testudinata	Turtle	2	.2
Large mammal		1	.3
Small fish		1	.05
Unidentified		36	.4
Total		40	.95

The calcined bone sample from Feature 5 is smaller (n=40) than that recovered from F-2, but provides additional insight into the lifestyle of the site's prehistoric inhabitants. Ten percent of the assemblage was identifiable (n=4), indicating that turtle, small fish and large mammals were exploited. The identification of turtle carapace at site 38.10 adds reptiles to the general list of animal resources exploited by prehistoric people at the Cates' Farm site. The calcined faunal assemblage from Feature 5 is presented in Table 4.

The rocks excavated from F-5 and analyzed at the MHPC lab total only nineteen (weight, 605 grams). Little can be said about this small sample, except that it was dominated by non-altered rock (57.9%). Of the nineteen rocks which underwent FCR analysis, eleven were typed as non-altered, five as "indeterminate", one as "crenallated", another as "crenallated indeterminate" and the last is typed as a "pot-lid" fracture.

As was the case for Feature 2, the soil samples excavated from F-5 were floated in

Table 5. Flake and material type within the debitage assemblage from site 38.10.

Material type	Number of flakes per type					
	flake fragments	shatter	biface thinning	core reduction	retouch flake	total
Quartz	49*	13	1	0	0	63
Kineo rhyolite	115**	0	21	7	1	144
Rhyolite	5	0	0	0	0	5
Felsite	1	0	0	0	0	1
Munsungun chert	1	0	0	0	0	1
Hornfels	1	0	0	0	0	1
Metasedimentary	1	0	1	0	0	2
Total	173	13	23	7	1	217

*One flake from Feature 2.
**Two flakes from Feature 2.

the MHPC lab and a charcoal sample was analyzed for its botanical content by Nancy Asch Sidell. The list of plant species identified from F-5 differs slightly from the F-2 list. In the Feature 5 sample pine was identified as well as sugar maple, birch, beech and red oak. The plant sample was dominated by birch and pine (35% each), possibly indicating that Feature 5 was created during a time with a cooler climate than Feature 2, or that simply the selection of convenient wood pieces for the fire was different.

Non-Feature Material Distribution

In addition to the cultural materials derived from the intact cultural features discussed above, artifacts, debitage, some aboriginal ceramics, fire cracked rock and some additional calcined bone was recovered by MHPC work at the Cates Farm. Since debitage, ceramics, calcined bone, and fire-cracked rock were not saved as part of the Cates collection, the only source of information for these categories of artifacts comes from the MHPC collection. We defer the detailed description of stone tools to a later section which includes primarily the Cates/Vassalboro Historical Society collection, but discuss the other "less diagnostic" categories of prehistoric material from the site here.

Debitage was collected from the lower garden surface and plow zone. The distribution of flake and material types within the assemblage are presented in Table 5. Flakes were assigned to a category (core reduction, flake fragment, biface thinning, retouch and shatter) following analysis of attributes including: presence of cortex, flake thickness, striking platform angle and presence of step fractures.

The majority (66%) of the debitage assemblage (Table 1) was recovered from excavation of three of the one meter test units: N260 E100, N280 E100, and N250 E72. Forty-five flakes were recovered from the garden surface. Lesser amounts of debitage were retrieved from the remaining one meter units. Kineo rhyolite and quartz account for the majority (66% and 29% respectively) of the rock materials present in the debitage assemblage. Flake fragments comprise 79% of the flake types.

Some calcined bone was recovered from the plow zone on 1/4" mesh screening. It should be noted that this calcined bone sample may not be exclusively the result of prehistor-

Table 6. Measurements of ground stone implements in the axe or adze category. Measurements are in centimeters, weight in grams.

catalog#/ category	Greatest Length	Proximal Width	Distal Width	Greatest Thickness	Weight (grams)
VHS.15, adze	17.6	3.6	5.2	3.2	444
VHS.19, adze	16.7	2.0	4.0	3.7	492
VHS.21, adze	11.4	4.2	5.0	3.9	472
VHS.27, adze	11.1	3.3	3.7	2.9	209
VHS.20, adze	17.4	3.9	4.9	3.2	519
VHS.24, adze	14.3	2.7	4.5	3.0	314
VHS.14, axe*	13.5	5.6	3.9	2.9	348
VHS.23, axe/adze	16.5	3.8	7.4	3.0	629
VHS.16, axe/adze	17.8	3.9	4.9	3.2	519
VHS.28, sm.adze/gouge	12.4	2.7	4.0	2.5	202
VHS.22, sm.adze/gouge	13.2	4.0	4.7	2.8	190
MHPC.357, preform	24.5	3.9	8.7	5.2	1700
*Axe is grooved for hafting. Additonal measurements: groove width, 5.0 groove thickness, 2.8					

ic human activity but might also include historic period refuse. In addition to the calcined bone recovered from Feature 2 in N260 E100, one more mammal bone fragment (.1 grams) was recovered from the plow zone in this square. One other one meter unit, N200 E120, also produced one small mammal bone fragment (again, .1 grams). The plow zone in N250 E72 was the source of seven calcined bone fragments. One of these bone fragments is identifiable as part of a beaver scapula (.7 grams) and another can be identified as "large rodent", which includes both beaver and porcupine (vertebra, .3 grams). Of the remaining fragments from the square, four (.7 grams) are indeterminate mammal remains while the last fragment (.5 grams) can be attributed to a "medium-sized mammal" category.

We also recovered six aboriginal ceramic (pottery) sherds from the plow zone of three of the one meter units. Based upon attributes of decoration and manufacture, these six sherds were assigned to three vessel lots. Each vessel can be assigned to a particular "Ceramic Period" following the sequence defined by Petersen and Sanger (1989).

Only one potsherd, 38.10.05, defines Vessel Lot 1. This sherd was recovered from the plow zone in N260 E100. It is clearly "fabric impressed" on the exterior surface, and probably on the interior surface as well, though only a small area of the interior surface remains. The fabric impressions, combined with the sherd's thickness (10.5 millimeters) and relatively coarse grit temper allow its identification as a "Vinette-I" vessel made some time during Ceramic Period 1, circa 3000 to 2050 B.P. The vessel was constructed using the coil method. The fabric which left its impressions consisted of a two ply, four millimeter thick cord, with an "S" twist. Vessel Lot 1 is tempered with mica, feldspar and quartz grit, of

medium density. An average temper grain size is 1.5 to 2 millimeters. The exterior, interior and paste color are all orange. Four potsherds, catalogued as 38.10.01 (two pieces, one of which was two small to number individually), .02 and .03, also from the plow zone in N260 E100 were assigned to Vessel Lot 2. The four sherds are small bodysherds, with a total weight of 3.4 grams. The sherds are undecorated but three are slightly burnished on the exterior surface. (The one sherd which lacks this exterior burnishing may represent a separate vessel lot, however it is like the other three sherds in every other respect.) The sherds are densely tempered with white quartz. The quartz temper is mostly medium in size with some fine and coarse grains present: average grain size 3.8 millimeters. Vessel 2 was constructed via the coil method and its surface was smoothed when wet. The greatest wall thickness of Vessel Lot 2 is 8.4 millimeters. The color of the paste is dark gray, the interior is brown and the exterior is an orange brown. A combination of attributes determine the assignment of Vessel Lot 2 to Ceramic Period 2, early Middle Ceramic circa 2050 to 1650 B.P. These attributes include the presence of fine through coarse grit, good vessel integrity, and the slight burnishing produced when the vessel's exterior surface was smoothed while still wet.

Only one sherd, 38.10.04 from N250 E72, was assigned to Vessel Lot 3. This sherd was tempered with a generally fine grit and a small amount of larger quartz grains. Overall the temper is of medium density and measures about .3 to .5 millimeters. This vessel, too, was constructed using the coil method. It was smoothed when wet to finish the surface, and was decorated on the exterior with fabric impressions. The greatest thickness of the sherd is 6.2 millimeters. The paste, exterior and interior are all black. Fabric impressions on the exterior are too faint to determine the type of twist or cordage. This sherd is assigned to Ceramic Period 6, the Late Ceramic period, circa 650 to 400 B.P., on the basis of its thinness, small size of temper, and exterior only cord impression. The square that yielded this late Woodland Ceramic sherd was the closest one to the outlet stream that we excavated, and about 30 meters west of the main focus of work in the Cates' garden. It may indicate horizontal separation of some components on the site, despite plowing.

DESCRIPTIONS OF STONE TOOLS FROM SITE 38.10

Ground Stone Artifacts

A total of 26 ground stone tools are included in the artifact collection contributed to the Vassalboro Historical Society by the Cates family in 1968. The MHPC excavation failed to recover any, although one was recovered by surface collecting. The ground stone assemblage described here includes plummets, gouges, adzes, stone rods and abraders, one pecking stone, a large preform and at least one axe. Two ground stone points are also present in the Historical Society's collection. However, descriptive and metric data for these are included within a subsequent section which presents the collection's diagnostic flaked stone points.

Each of the ground stone artifacts was visually examined and measured. Metric analyses are presented in Tables 6, 7, and 8, while a description of attributes such as the presence of flaked, pecked or ground surfaces and grooves for hafting are presented below for each ground stone artifact. The colors assigned to each tool were derived through comparison with the Munsell Rock-Color Chart. In many of the following descriptions, the artifacts' proximal ends are described as flaked. We feel that it is likely that flaking at this location represents use wear resulting from percussive blows. Thus, most or all of these tools were heavily utilized before being discarded.

Adze and Axe Category

Measurements of the twelve groundstone tools classified in the adze and axe category can be seen in Table 6. Four adzes from the 38.10 ground stone assemblage fall into a category identified by Brian Robinson (1991) as "steeply bitted". Robinson reports that steeply bitted adzes are present in Middle Archaic mortuary assemblages at the Sunkhaze and

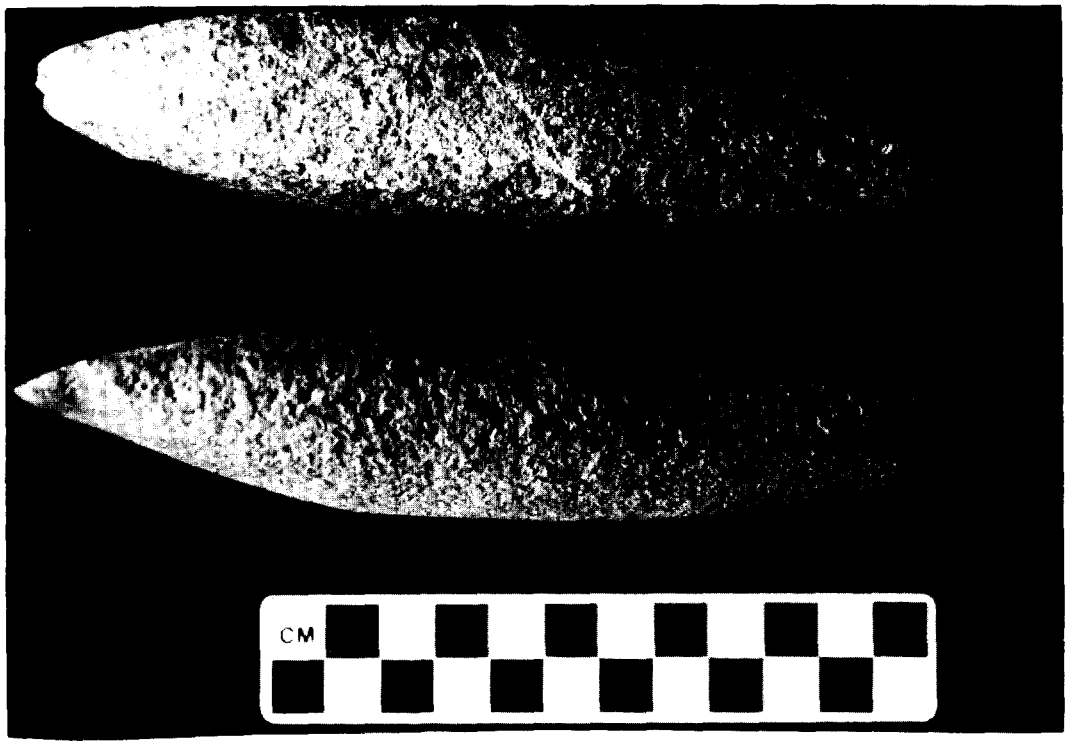

Figure 8. Steeply bitted adzes: top VHS 68.24.15; bottom 68.24.19.

Morrill Point sites in Milford, Maine and Salisbury Massachusetts respectively. Robinson characterizes steeply bitted adzes as having a greater-than-half-round cross section with a flat to shallow-channel dorsal face (Robinson 1991).

Adze numbered VHS 68.-24.15 (Figure 8) was made from a dark greenish gray medium grained sandstone. There is visible pecking present on the ventral, dorsal and lateral surfaces. Grinding and polishing are apparent on both the ventral and dorsal surfaces, with the bit highly polished. The proximal end tapers from all directions and is flaked and lightly pecked.

The remaining three steeply bitted adzes are all

Figure 9. Steeply bitted adzes: top VHS 68.24.27; bottom VHS 68.24.21.

Figure 10. Adzes: top VHS 68.24.20; bottom VHS 68.24.24.

made of diabase of varying color and grain size. VHS 68.24.19 (Figure 8) is composed of course grains of black and white. It is visibly pecked on all surfaces. There is limited polishing on both sides of the bit and on most of the remaining dorsal surface. The bit shows "handedness" or asymmetrical use wear. The proximal end tapers from all directions with a resulting round cross section.

VHS 68.24.21 (Figure 9) is composed of a finer grained diabase whose overall color is a greenish black with white. This adze is very short, wide and heavy, with a flat proximal end perpendicular to the bit. The dorsal surface and proximal end exhibit heavy pecking marks. The dorsal surface is well ground and the bit is polished on both surfaces. This adze, too, shows unevenly concentrated wear on the bit.

The smallest steeply bitted adze in the collection, VHS 68.24.27 (Figure 9), is also composed of a medium grained diabase. A larger percentage of feldspar in this adze produces a mottled olive and light olive gray color. The bit is especially long, measuring 2/3 of the total length and exhibits asymmetrical usage. The bit is polished on both sides with polishing extending further on the ventral surface. The proximal end is flat but angled (perhaps due to breakage). There is some pecking visible on the proximal third of the dorsal surface.

Aside from the steeply bitted adzes, there are two additional groundstone implements assigned specifically to the adze category. VHS 68.24.20 (Figure 10) is also composed of diabase. Like VHS 68.24.27, it is medium grained with a combined olive and light olive gray color. This adze is moderately weathered with only a small amount of polish visible on

both sides of the bit. Pecking is visible all over and is heaviest on the ventral surface.

The final definitely identifiable adze is number VHS 68.24.24 (Figure 10). It was formed from a dark gray sandstone. VHS 68.24.24 may not have been used or may have been discarded or lost during the process of being reshaped. Pecking is visible on every surface *including* the entire bit. There is some grinding visible on both the dorsal and ventral surfaces of the adze "body", but the ground area is a very small percentage of the whole tool surface. There are no polished surfaces evident anywhere on this adze.

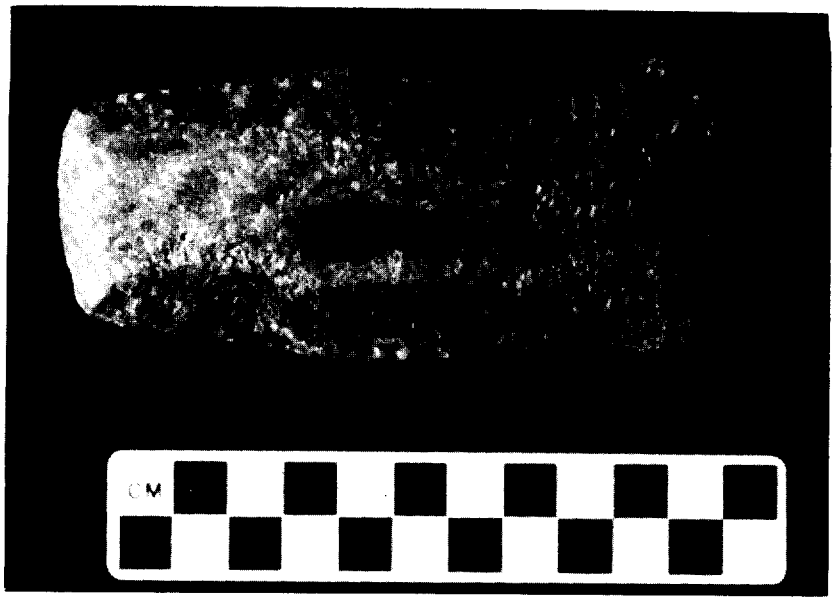

Figure 11. Axe with hafting groove: VHS 68.24.14.

One axe exists in the collection. VHS 68.24.14 (Fig. 11) is composed of a gray fine grained unidentified rock with lighter gray banding. There is pecking evident over most of the axe's surfaces. Flaking is apparent along the lateral borders of the bit. The bit itself has been ground on both surfaces and is relatively sharp. A hafting groove is defined by pecking. A portion of the original cobble cortex comprises most of one surface

Figure 12. Adze/axe VHS 68.24.23. Note diagonal grinding along the bit.

shown in Figure 11). The bit shows asymmetrical wear and there are apparently some small specks and streaks of red ocher adhering to the surface of this artifact.

There are several ground stone forms from the Historical Society's collection which we describe as either an adze/-axe or small adze/gouge. There are two artifacts in the adze/axe category. Both of these specimens have an asymmetrical cross section but they are only slightly asymmetrical, being minimally plano-convex in cross section. VHS 68.24.23 (Figure 12) is a large, wide and flat tool composed of a banded light olive gray very fine grained sandstone. There is a small amount of pecking visible on all surfaces, it being particularly apparent on the rounded proximal end. Fine grinding marks are visible on both the dorsal and ventral surfaces especially on the bit where they run diagonally. The entire implement is very smooth and polished. A portion of the dorsal surface is composed of flat, smooth cortex, while the rest of it was pecked, ground and polished to an equal smoothness. A small area along the bit appears to be stained with red ocher, which still adheres to the surface.

Figure 13. Gouge, top VHS 68.24.32. Small adze/gouge, bottom VHS 68.24.22.

VHS 68.24.16 (not shown) is also assigned to the axe/adze category. VHS 68.24.16 was formed from a medium dark gray very fine sandstone. It has obvious pecking marks on all surfaces with only a small amount of grinding and polishing confined primarily to the bit. Use wear on the bit is unevenly distributed. There is flaking present on the rounded proximal surface.

Two implements are assigned to the small adze/gouge category. VHS 68.24.22 (Figure 13) is composed of an olive gray fine grained sandstone. This artifact is badly weathered, though the bit (asymmetrically worn) is still relatively sharp. There are slightly visible peck marks along one lateral surface on the proximal end.

Once again, diabase was the chosen material for the second small adze/gouge. VHS 68.24.28 (Figure 14) is composed of a medium grained diabase. It is dark grayish black in color. Flake scars are visible on the proximal end and dorsal surface of VHS 68.24.28. There is obvious pecking present on all of the ventral surface and on the proximal end of the lateral and dorsal surfaces. The bit and dorsal surface are well polished, and wear on the bit is asymmetrical. The proximal end cross section

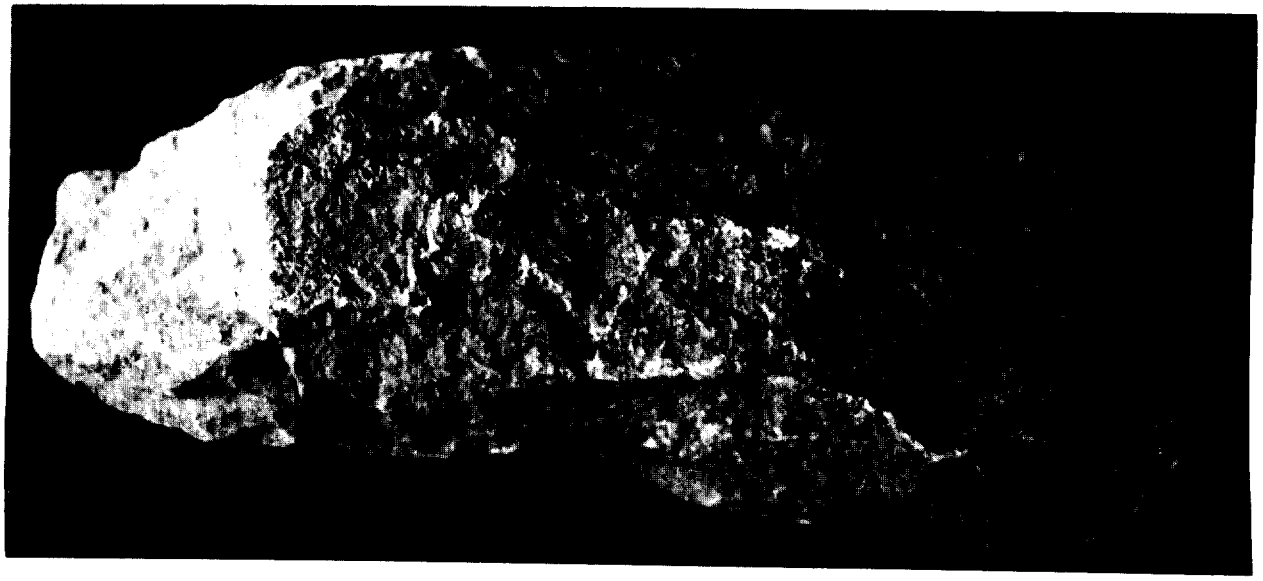

Figure 15. Axe/adze preform, MHPC 38.10.357.

has an unusual parallelogram shape due to unevenly bevelled sides. Probable red ocher stains are present on both the dorsal and ventral surfaces.

In addition to the ground stone adzes and axe present in the Historical Society's collection, one large axe or adze preform was discovered at Cates' Farm during the May 17th walk-over by Maine Historic Preservation Commission personnel. This large preform, MHPC 38.10-.357 (Figure 15), is made of a gray blue very fine grained meta-sandstone. It has been roughly shaped through flaking, but would undoubtedly have become a groundstone implement.

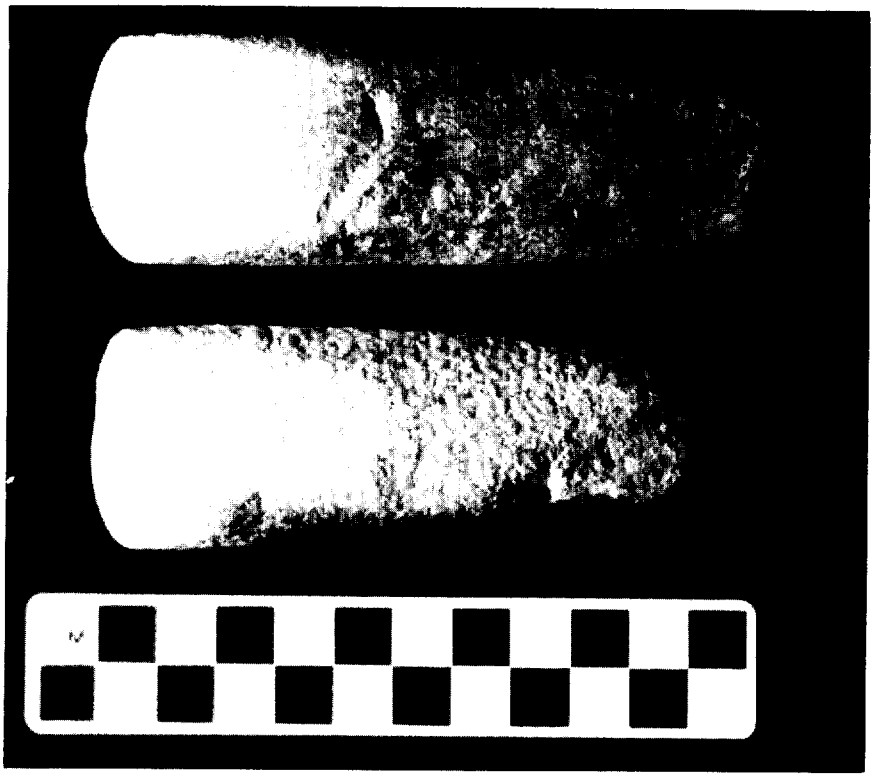

Figure 14. Small adze/gouge, top, VHS 68.24.28. Gouge, bottom, VHS 68.24.18.

Table 7. Measurements for ground stone implements in the gouge category. Measurements are in centimeters, weight in grams.

catalog#	Greatest Length	Proximal Width	Distal Width	Greatest Thickness	Channel Length	Weight (grams)
VHS.18	11.1	2.0	3.9	2.1	4.9	129
VHS.30	15.2	0.7	3.4	2.9	7.6	194
VHS.31	10.7	2.3	3.1	1.7	6.2	173
VHS.32	13.9	1.3	4.0	2.7	5.6	191
VHS.29*	12.3	2.0	3.5	2.6	4.6	167
VHS.17*	14.9	1.7	3.3	3.1	4.8	261
VHS.12	9.3	2.7	3.8	1.9	9.3	115
VHS.25**	12.3	3.8	4.1	3.0	5.9	272
VHS.13*	12.0	1.1	2.9	2.7	5.2	136

*Gouges worked (for hafting) near proximal end of channel.
Additional measurements: VHS.13, groove width 2.8. Groove thickness 2.5.
VHS.17, thickness 2.8.
**Gouge worked (for hafting) near proximal end of gouge.
Additional measurement: Groove thickness, 2.5.

Gouges

Gouges are woodcutting tools defined by a concave "groove" or channel on their dorsal surface. Most of the gouges present in the historic society's collection (Table 7) possess channels of less than half their length. The majority of the gouges possess excurvate bits so that the distal end is convex when viewed from above. Exceptions are noted.

VHS 68.24.18 (Figure 14) is a thin, shallow channeled gouge made from a light olive gray very fined grained meta-sandstone. The bit end of this gouge is squarish. Flaking is apparent on the proximal sides and end. The gouge is pecked all over, while polished surfaces are limited to both sides of the bit. This gouge exhibits lopsided use wear on the bit. Specks of red ocher are visible on the gouge's ventral surface.

VHS 68.24.32 (Figure 13) is a weathered piece, made from a light olive gray tuff. Pecking is visible on all surfaces, with only one small area on the dorsal surface exhibiting any polish. The bit of this gouge is *flaked*. The proximal end is very narrow and round in cross section. The bit is stained with iron (orange, not red ocher).

VHS 68.24.29 (Figure 19) is light olive gray in color. Like the other gouges made of tuff, this one is weathered. The bit is dull and has been flaked or broken. The channel extends less than one-half of the length of the piece, and has been ground and polished on both sides. Only a light polish remains in most areas, the one exception is found on the dorsal surface near the bit. Two shallow indentations on the dorsal surface near the proximal limits of the channel are present. This gouge does not narrow down to its proximal end as do the other tuff gouges. Viewed from above it presents a basically rectangular shape.

There are two more gouges made of tuff in the assemblage. VHS 68.24.30 (Figure 17) is also made of tuff, but in this case it is dark yellowish brown. This gouge is relatively long and narrow with a thick, triangular cross sec

tion. The channel length is about half the length of the gouge and the entire gouge tapers to a small rounded proximal end. The bit is dull and chipped. Pecking is visible over all the ventral surface and the distal portion of the ventral surface. The proximal two-thirds of the dorsal surface is ground and partially polished. Fine grinding or polishing marks are discernable on the lateral surfaces of this artifact. There are orange iron stains on one lateral surface.

The fourth tuff gouge, VHS 68.24.13 (Figure 17), is narrow with a thick triangular shaped cross section. In overall appearance it is quite similar to VHS 68.24.35 although it is about one-third smaller. It too, was formed from a dark yellowish brown tuff. Unlike the larger of the two, VHS 68.24.13 has a shallow groove pecked into its dorsal surface. This groove, like the shallow indentations found on VHS 68.24.29 (and VHS 68.24.17 below) is located near the proximal limits of the gouge's channel. Pecking is visible over most of the gouge but most of it has been ground smooth as well. Some polish is evident on the dorsal and lateral surfaces. The bit is dull and rounded but with none of the breakage or flaking apparent on the other tuff gouges.

Figure 16. Gouges: top, VHS 68.24.29; bottom, VHS 68.24.31.

Another gouge in the assemblage resembles, somewhat, the overall narrow but thick shape of the last two described (.30 and .13). VHS 68.24.17 (not shown) is made of a yellowish gray very fine grained meta-sandstone. In cross section it presents a deep narrow U-shape, the quarter length channel is quite shallow. The proximal end is tapered and flaked. Some pecking is visible, mostly on the lateral surfaces. All surfaces have been ground smooth and the bit is sharp and polished both the dorsal and ventral surfaces. A shallow indentation on the dorsal surface is located, again, at the proximal limits of the groove.

VHS 68.24.31 (Figure 16) was formed from a light grayish blue fine grained meta-sedimentary material. The channel is fairly long, approximately two-thirds the gouge's length. This small, thin gouge is very smooth and rounded, possibly due to weathering of the original pebble from which it was made. Pecking is apparent only on the lower half of the dorsal surface. The bit, too, is rounded but also exhibits some flaking.

VHS 68.24.25 (not shown) is unlike the other gouges in the assemblage. It is made of a greenish gray very fine grained meta-sandstone. VHS 68.24.25 is fairly wide and thick with a flat rectangular proximal end oriented perpendicular to the bit (similar to the steep bitted adze, VHS 68.24.21). The channel

length of this gouge is slightly less than half of the length of the piece, and it is very clearly delineated. Pecking is evident all over the dorsal and lateral surfaces, and parts of the ventral surface. There is evident grinding and polish on the ventral surface and the bit is highly polished on both sides. Fine polishing marks are apparent on the bit, running lengthwise on the dorsal surface and diagonally on the ventral surface.

The last gouge to be described, VHS 68.24.12 (Figure 18), appears to have been one well favored. It is the only full channeled gouge in this collection. Formed of an unidentifiable very fine grained black rock, it has a wide, sharp, well used bit. Use wear is asymmetrical and the bit is actually incurvate, exhibiting a concave outline when viewed from above. This is a fairly thin and wide gouge. Pecking is visible on all the less polished surfaces, and flaking scars are present on the proximal end and sides. Fine polishing marks are visible on much of the polished surfaces. On the dorsal surface and

Figure 17. Gouges: top, VHS 68.24.13; bottom, VHS 68.24.30.

Figure 18. A well used gouge: VHS 68.24.12.

catalog#	Greatest Length	Proximal Width	Greatest Width	Greatest Thickness	Groove Width	Groove Thickness	Weight (grams)
VHS.9	7.6	1.4	3.8	3.2	1.2	1.0	107
VHS.1	8.0	1.1	3.2	3.2	9.9	9.0	101
VHS.5	8.9	1.3	3.6	3.1	1.2	1.1	112
VHS.7	8.1	1.5	5.2	3.8	1.4	1.4	184
VHS.10	6.5	1.5	3.7	3.1	--	--	98
VHS.11	9.3	1.8	4.1	2.9	1.8	1.6	137
VHS.8	6.7	1.9	5.0	3.9	1.8	1.4	160
VHS.6	5.7	1.4	3.4	2.9	1.2	1.2	65

Table 8. Measurements of ground stone implements in the category of plummets from site 38.10. Measurements are in centimeters, weight in grams.

on both sides of the bit they are generally oriented lengthwise while the marks on the rest of the ventral surface run laterally. Some iron oxidation (not red ocher) is visible on both ventral and dorsal surfaces.

Figure 19. Plummets with Moorehead Phase characteristics: left to right, VHS 68.24.05, VHS 68.24.01 and VHS 68.24.09. Scale 90%.

Figure 20. Plummets: left to right, VHS 68.24.06, VHS 68.24.08, VHS 68.24.10.

Plummets

Eight plummets (Table 8) are present in the Historical Society's collection. Three of the plummets, VHS 68.24.05, .01 and .09 (Figure 19) exhibit the graceful symmetry and well defined knobs diagnostic of Moorehead Phase plummets (Cox 1990). The other plummets (Figures 20 and 21) cannot be assigned to any particular cultural phase or group, but may be representative of either the Vergennes or Brewerton Phase. An apparent red ocher stain is present on three of the plummets, VHS 68.24.08, .06 and .10 (Figure 20) and a very small speck of ocher may be present on VHS.68.24.01 as well. Four of the plummets were made from granite, two from sandstone, one from diabase and one from an unidentifiable black rock.

Ground Slate Points

Two flaked and subsequently extensively ground slate bifaces are also present in the Historical Society's collection. VHS 68.24.64 (Figure 22), made of black slate, probably derives from a Late Archaic phase but is not necessarily diagnostic of any one particular phase. It is similar to ground slate points recovered from a Vergennes Phase site in Vermont (the KI site, Funk 1988: Table 1; Ritchie 1980: Plate 27).

VHS 68.24.61 (Figure 22) is made of a brownish grey siltstone with black banding. It probably represents the tip and upper portion of a broad hexagonal cross-section lance or bayonet. Similar tools, usually formed from the same material, have been recovered in Nova Scotia, New Brunswick and the Great Lakes region (Bourque, personal communica

tion 1991). At the Davis-Tobie site in Alna, Maine a similar artifact was recovered from above a component dated circa 4500 B.P. (Bourque, personal communication 1991). Charles Willoughby (1980: Figure 3) illustrated two very similar, though more narrow, artifacts. Both were found near Webbers Pond in Vassalboro, about 4.5 miles southeast of the Cates Farm.

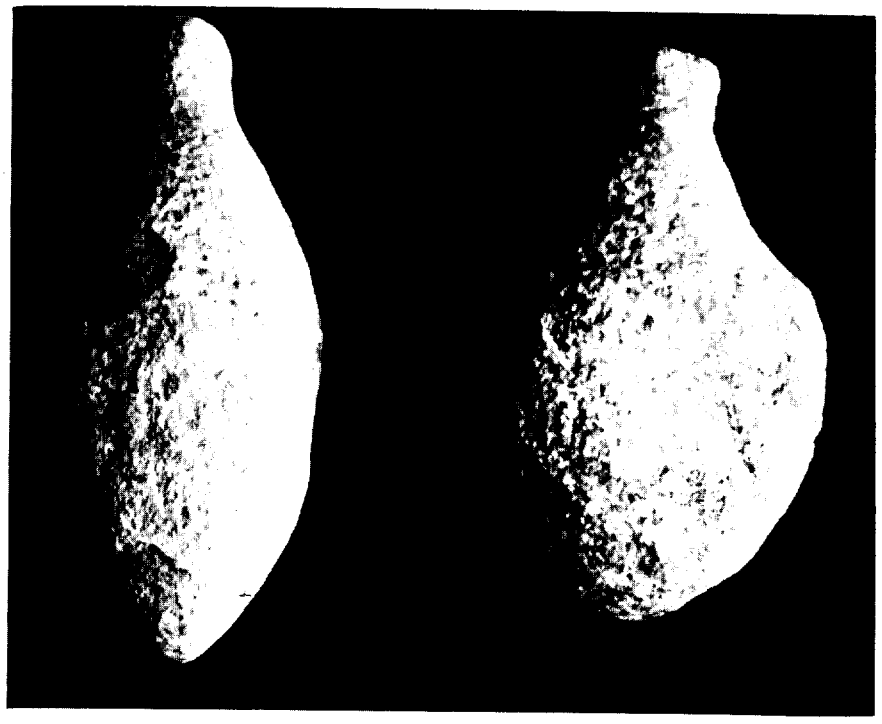

Figure 21. Plummets: left to right, VHS 68.07, VHS 68.24.11. Scale 90%.

Miscellaneous Ground Stone Artifacts

One spherical pecking stone (not shown) is present in the collection. This stone, VHS 68.24.4, is made of a fine grained granite. Evidence for its use is located within one confined area on the stone's surface. The diameter of VHS 68.24.4 is 5.6 centimeters and it weighs 196 grams.

Also found in the Historical Society's collection are two stone rods or whetstones. VHS 68.24.02 (Figure 23) is a smooth cylindrical whetstone made from mottled and banded gray siltstone. It is 15.5 centimeters long and its greatest thickness is 1.7 centimeters. Its weight is 67

Figure 23. Stone rods: top, VHS 68.245.33; bottom, 68.24.02.

grams. Multiple scratches and striations attest to its heavy usage.

VHS 68.24.33 (Figure 23) is an unusual ground stone artifact. which we have classified as a stone rod. It was made from a grayish blue quartzite. Pecking is visible over most of its surface, and pecking seems to have been used to shape a shallow groove down the midline of one side. The rod has been ground to a smooth finish overall. It is 19.4 centimeters long, 1.6 centimeters thick and weighs 160.2 grams.

Figure 22. Ground slate bifaces: left, VHS 68.24.61; right, VHS 68.24.64.

Flaked Lithic Artifacts

All the bifacial projectile points from site 38.10 underwent metric and qualitative analysis based, in part, upon measurement definitions presented by John R. Cross (1990). Metric data for the Cates Farm flaked artifact assemblage are presented in Tables 9 and 10. Points considered to be culturally or temporally diagnostic are presented in Table 9, while those not recognized to be representative a particular point "type" are presented in Table 10. Also included in Table 9, are data for two ground stone (diagnostic) projectile points from the collection.

Color descriptions presented below are based upon comparison to the Munsell "Rock Color Chart" (1984). Qualitative descriptions derive from analysis of several characteristics: breaks, resharpening or reshaping, use-wear, stem type, base shape and hafting type. Descriptions refer to complete artifacts unless otherwise noted.

All of the complete or diagnostic bifaces come from the Vassalboro Historical Society collection. Several bifacial artifacts were recovered during the 1990 MHPC field season at Cates Farm, although none are both complete and diagnostic.

Early and Middle Archaic Bifaces

The collection of points from the Cates' garden area includes one "Kirk-like" point (Snow 1980: Figure 4.2) indicating habitation of the site during the Early Archaic or early Middle Archaic periods (Dincauze 1976; Snow 1980), circa 8000 B.P. This point, VHS 68.24.50

Table 9. Metric data for bifacial points from site 38.10 assigned to a particular point type or temporal period.

Catalog #	weight (grams)	greatest length(cm)	midsection width(cm)	proximal haft width(cm)	base width(cm)	midsection thickness (cm)
VHS. 50	20.9	6.4	2.2	1.5	1.2	1.2
VHS .38	6.4	4.4	1.8	1.3	1.o	.6
VHS .44	13.5	4.6	2.4	2.0	1.2	.9
VHS .37	10.2	6.1	1.6	1.8	1.9	.6
VHS .65	13.2	6.3	2.1	1.9	2.5	.7
VHS .36	13.6	--	2.5	1.9	2.3	.6
VHS .62	48.1	12.4	2.8	2.0	2.5	1.1
VHS .63	27.9	10.0	2.3	1.5	1.8	.7
VHS .60	17.6	7.5	2.3	1.8	2.1	.7
VHS .39	18.6	7.5	2.0	--	2.2	.8
VHS .64	13.2	7.0	2.2	1.5	1.6	.6
VHS .61	43.4	--	3.4	--	--	.8
VHS .48	55.8	--	4.5	3.0	1.9	2.6
VHS .49	50.8	--	4.9	2.3	1.9	1.0
VHS .41	17.2	--	3.0	1.6	1.3	.7
VHS .47	22.7	--	2.9	2.2	1.9	1.0
VHS .59	9.6	7.0	1.9	1.3	1.4	.6
VHS .58	5.6	>3.8	1.4	1.1	1.4	.8
VHS .46	18.9	--	2.9	1.8	1.5	.8
VHS .35	11.2	--	1.8	1.5	1.0	.8
VHS .53	7.1	42	1.6	1.3	1.4	.9

(Figure 24), is made of greenish gray Kineo Rhyolite and is fairly large and thick (1.2 cm thick). It is essentially a corner-removed expanding stemmed point. The base is excurvate and the stem was modified for hafting through both unifacial and bifacial flaking. The point's edges are slightly denticulated. There is no grinding discernible on any surface or edge.

Two "Neville-like" points (Dincauze 1976: Plate 3; Starbuck n.d.: Plate 5) are also present in the Historical Society's collection. The smaller of the two, VHS 68.24.38 (Figure 24), is made from Kineo rhyolite as well, in this case, a grayish olive green. It was clearly made on a minimally retouched flake. The stem is contracting and the base is slightly incurvate. Bifacial and unifacial flaking was used to prepare the stem for hafting. The larger of the two "Neville-like" points, VHS

Figure 24. "Neville-like" bifaces: left, VHS 68.24 44; middle, VHS 68.24.38. "Kirk-like" biface: right, VHS 68.24.50.

68.24.44 (Figure 24), is also made of Kineo rhyolite, weathered to a yellowish gray color. This point is incomplete, exhibiting a torsion or use break resulting in a missing tip. Like the smaller of the two points (VHS 68.24.38), the stem is contracting and has also been prepared through unifacial and bifacial flaking. The base of VHS 68.24.44, however, is excurvate.

Vergennes Phase Bifaces

Several points in the assemblage indicate native American occupation during the Vergennes Phase of the Laurentian Tradition. Like the Vergennes components presented by Funk (1988:33, Table 1), the Vergennes assemblage at 38.10 is dominated by "Otter Creek-like" points. Accompanying the "Otter Creek-like" bifaces, as in Funk's sample, is one "Brewerton Side-Notched" point and a "Vosburg-like" or "Otter Creek-like" side-notched biface. Additionally a non-stemmed asymmetrical biface probably also represents the Vergennes component.

The "Vosburg- or Otter Creek-like" (Cox personal communication 1991, Dincauze 1976: Plate 9) side notched biface, VHS 68.24.37 (Figure 24), was formed from a weathered yellowish gray rhyolite porphyry. This biface is asymmetrical. The stem was prepared for hafting through alternate unifacial flaking and the base is incurvate. The base and stem have both been ground for hafting.

The "Brewerton Side-Notched" biface (Bourque personal communication 1991, Funk 1988: Plates 3 and 14), VHS 68.24.65 (Figure 25) is made of an olive gray and dark gray banded (probable) Onondaga chert. This side

Table 10. Metric data for bifacial implements from site 38.10 unassigned to a particular point type or temporal category.

catalog #	weight (grams)	greatest length	midsection width	proximal haft width	base width	midsection thickness
VHS .57	8.4	5.1	2.0	>1.7	1.1	.4
VHS .42	10.9	6.4	2.1	1.2	1.1	.7
VHS .54	7.7	4.8	1.7	1.2	1.0	.6
VHS .56	7.8	4.8	2.0	1.3	1.0	.7
VHS .52	5.7	4.4	1.3	.7	.8	.7
VHS .40	11.9	--	1.9	1.5	--	.7
VHS .51	6.2	--	2.0	--	--	.6
VHS .43	7.5	--	2.5	--	--	.8
VHS .45	4.6	--	1.8	--	--	.5
VHS .34	10.5	6.1	2.4	--	--	.5
MHPC .74	4.7	--	--	--	--	.4
MHPC .87	10.0	4.1	2.5	1.7	1.8	.8
MHPC .85	24.0	>5.9	2.1	--	--	1.0
MHPC .86	5.3	--	--	--	--	.8
MHPC. 92	3.4	--	--	--	--	.6
MHPC .307	102.0	7.9	5.1	--	--	2.2
MHPC .104	3.3	--	--	--	--	.3

notched biface is a beautifully crafted artifact with a plump, lenticular cross section. Its stem is expanding and the base excurvate and thinned bifacially. The stem was shaped for hafting by unifacial flaking, while the base was thinned by alternate unifacial flaking. Both edges of this artifact exhibit resharpening by the presence of multiple retouch flake removals. One edge shows a concentration of retouch flake removal along one surface. Only the hafting notches have been ground.

The four "Otter Creek-like" points can be seen in Figure 26. VHS 68.24.36 is the mid section and base of an "Otter Creek-like" (Funk 1988, Ritchie 1980, Petersen and Putnam 1974) biface. It is made from a yellowish gray felsite. This break is considered to be a use break. As with all the "Otter Creek-like" points, it is a broad side-notched biface. The basal shape of this point is straight, and appears to have been left unfinished with part of the original striking platform retained. The stem was worked bifacially for hafting. Grinding on this point base is confined to the side notches.

Another of the "Otter Creek-like" points, VHS 68.24.62, was formed from a yellowish brown, weathered, very fine grained interbedded sandstone with possible tourmaline inclusions. It is a long, narrow point with a straight edged base. Grinding on this point, too, is confined to the side notches and is quite light. Preparation of the stem for hafting was both unifacial and bifacial.

VHS 68.24.63, the third of the "Otter Creek-like" points, is made of a dusky yellow green weathered very fine grained quartz rich meta-sandstone. It is also fairly long and narrow. Grinding is present around the haft and on one side edge. The expanding stemmed base is slightly excurvate, the stem was shaped unifacially for hafting.

The final "Otter Creek-like" point, VHS 68.24.60, is made of a yellowish grey, weathered, quartzite. It is more broad and short compared with the other complete "Otter Creek-like" specimens. Its entire base and one side were ground. The base is straight edged and the stem was flaked bifacially to prepare the hafting surface.

One other biface (Figure 25) can probably be placed typologically within the Vergennes Phase component at site 38.10 (Cox pers. communication 1991). VHS 68.24.39 is made from a dark greenish grey volcanic rock (globule tuff). This biface is unstemmed and asymmetrical. The base shape is slightly excurvate and has been shaped bifacially. No grinding is apparent on any surface.

Figure 25. Vergennes Phase bifaces: left to right, VHS 68.24.65, VHS 68.24.37, VHS 68.24.39.

Susquehanna Bifaces

Three broad stemmed Susquehanna bifaces (Figure 27) are present in the collection. These three bifaces are all asymmetrical in shape suggesting that they were possibly used as knives rather than projectile points.

The first Susquehanna biface to be described, VHS 68.24.48, is made of a weathered, striated Kineo rhyolite (yellowish grey). The tip area is missing from this artifact, presumably broken off during use. Additional breakage along the edges is of more recent origin as indicated by different patination, probably the result of plowing. The stem of this broad point is contracting, and exhibits both unifacial and bifacial hafting preparation. The

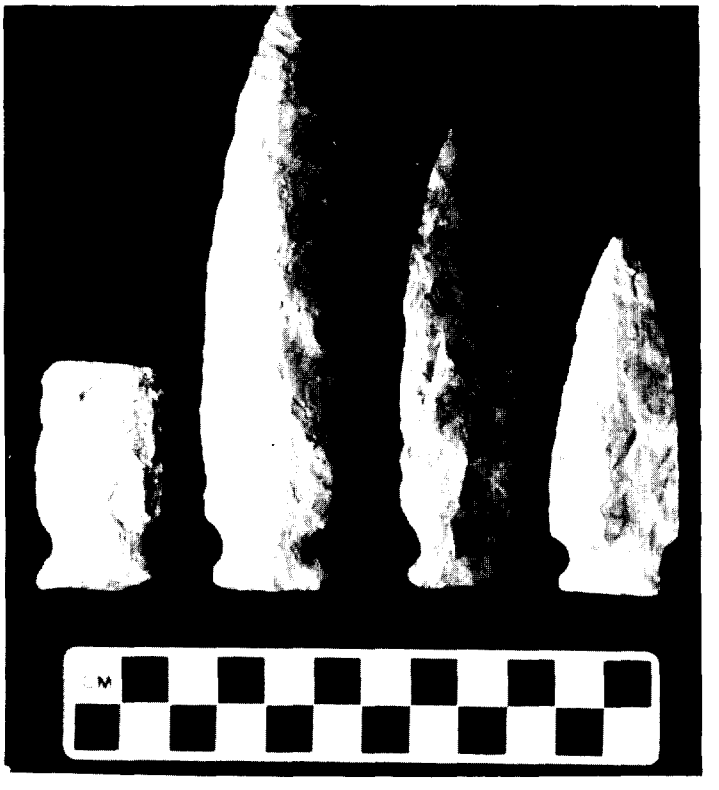

Figure 26. "Otter Creek-like" bifaces: left to right, VHS 68.24.36, VHS 68.24.62, VHS 68.24.63 and VHS 68.24.60.

base is excurvate. The stem was also ground along both sides for hafting.

VHS 68.24.49 is also made from Kineo rhyolite, in this case of an unweathered dark greenish grey. Again only the mid-section and base of this biface are present, breakage occurring as a result of use. The stem is contracting, bifacially flaked for hafting and the base is excurvate. The edges of the entire stem were ground. One side has also been ground to approximately 4.5 centimeters above the shoulder. The opposite side has been reworked bifacially resulting in a slightly incurvate edge.

Figure 27. Late Archaic bifaces: far left and two on right, Susquehanna bifaces from left to right, VHS 68.24.41, VHS 68.24.48, VHS 68.24.49; second from left, VHS 68.24.47.

Smaller than the two Susquehanna bifaces just described (width at the shoulder 3.0 cm as compared with 4.9 and 4.5 cm), VHS 68.24.41 is also formed of Kineo rhyolite, highly weathered to a light yellowish grey color. Its shape is very similar to VHS 68.24.48. The stem is contracting and the base is excurvate. It is difficult to judge whether or not additional flaking was employed to prepare the stem for hafting.

There is one more point base which is probably attributable to the Late Archaic period but cannot, at this date, be attributed to a specific type or phase. VHS 68.24.47 (Figure 27), is a point base and mid-section and is made from Kineo rhyolite, lightly weathered to a grayish yellow green. Broken straight across the mid section, this break is considered to have resulted from use. The expanding stem of this biface is straight based. The base was either broken off or left with a flat platform. No ground areas are present.

Ceramic (Woodland) Bifaces

There are five bifaces which derive from the Ceramic or Woodland period occupation (Figure 28). Early Woodland occupation of site 38.10 is indicated by the presence of an "Orient Fishtail" analogue (Ritchie 1980: Plates 55 and 57) and a quartz point analogous to one in the New Brunswick Oxbow site projectile point sequence (Allen 1980: Figure 4).

The "Orient Fishtail" biface, VHS 68.24.59, was created from argyllite, weathered to a light yellowish grey. Although a portion of the base has been recently broken, the slender, graceful shape with a slightly defined shoulder enable identification of VHS 68.24.59 as an "Orient Fishtail" point. Its stem is, typical

Figure 28. Woodland bifaces left to right: VHS 68.24.35, VHS 68.24.46, VHS 68.24.58, VHS 68.24.53, VHS 68.24.59.

ly, expanding and has been bifacially modified for hafting. Extensive weathering prohibits the identification of grinding.

VHS 68.24.58 is a small point made of white quartz. Only the tip is missing from this specimen. It appears to be almost identical to a small expanding stemmed point from a component radiocarbon dated to circa 2600 B.P. at the Oxbow site, New Brunswick (Allen 1980, Figure 4). Grinding is present around all of the stem. The base of this biface is incurvate. The overall shape of this biface is slightly asymmetrical.

Three more bifaces from the Historical Society's collection are placed in the Woodland period. Two of the three would seem to indicate aboriginal occupation of the Cates Farm during the early Middle Woodland period. VHS 68.24.46, a base and mid-section, is made from light olive gray Kineo rhyolite. It apparently broke across the mid section as the result of usage. It is straight stemmed and the base is excurvate. Both unifacial and bifacial modifications were utilized along the stem and around the base to prepare this artifact for hafting. All edges of the haft are ground. Though incomplete, it is still apparent that this biface is quite asymmetrical, perhaps indicating its use as a knife.

VHS 68.24.35, a contracting stemmed biface, was also formed from Kineo rhyolite (grayish olive green). Its base is excurvate and, like VHS 68.24.46, was modified both along the stem and around the base for hafting. This point, however, does not exhibit grinding on any of its edges.

The last of the bifaces that probably indicates Woodland period presence on the site, VHS 68.24.53, is again made from Kineo rhyolite, in this case, a dark greenish black. It is placed in the Woodland period because of its general appearance, i.e. small and side-notched, and because it was reworked with alternate flaking to produce a drill form typical of Woodland period drills. Its base shape is incurvate and it has been bifacially worked for hafting.

Figure 29. Non-diagnostic bifaces: from left to right, VHS 68.24.56, VHS 68.24.52, VHS 68.24.54, VHS 68.24.57, VHS 68.24.42.

Untyped Bifaces

There are several complete or almost complete specimens from the historic society's biface assemblage. Several of these bifaces can be seen in Figure 29 and their metric data are presented in Table 10. The majority are relatively small or medium in size. The base shapes do not lend themselves to any well known "type", but we feel that the majority may be Woodland period in age. Only two are described in detail below.

VHS 68.24.57 is a very thin, well made point produced from Mistassini "chert" (actually a quartzite, see Denton 1989 and, Martijn and Rogers 1969), a white and grey semi-translucent material from central Quebec. Although it is missing one shoulder and one edge of the stem, its general

Figure 30. End scrapers: top row from left to right, MHPC 38.10.94, MHPC 38.10.77, MHPC 38.10.75; bottom row from left to right, MHPC 38.10.337, 38.10.332, MHPC 38.10.89.

shape is reminiscent of Adena bifaces (Snow 1980: Figure 7.21). It is a contracting stemmed point, with an excurvate base. Both the stem and the base have been bifacially modified for hafting. This biface has been reworked along both edges. No grinding is present.

The last bifacial artifact from the VHS collection described here is a unique piece. In outline, VHS 68.24.55 (Figure 30) resembles most a bow-tie! It is bifacially worked along all its edges. It may have been used as a scraper, with both concave edges used to form wooden or bone shafts, or to strip woody plants. VHS 68.24.55 is 3.2 centimeters long by 1.6 centimeters wide. The long concave edges each measure 2.3 centimeters from end to end. VHS 68.24.55 was formed from a dark grayish black rhyolite.

Descriptions of the biface fragments recovered by MHPC follow; and metric data are presented in Table 10. All of these bifacial artifacts were recovered from either the plow zone or the lower garden surface.

MHPC 38.10.74 is a partial base and midsection of a corner notched biface. It was formed from a dark greenish gray Kineo rhyolite. This point is broken in two directions. One break across the midsection is presumably the result of usage. The well thinned edge along the remaining side and base do seem to indicate that this was, indeed, a finished point. The lateral break along the midline may have resulted from attempted reshaping of the biface or may be associated with the use break across the mid section. A small portion of the original striking platform remains on the remaining base corner.

MHPC 38.10.87 is also made from a light olive green Kineo rhyolite,

Table 11. Measurements (in centimeters) for concave scrapers from site 38.10.

Catalog #	Greatest Length	Width	Midpoint Thickness	Length of Concave Edge
MHPC.356	3.0	2.4	.6	.5
MHPC.292	1.7	1.1	.2	.5
MHPC.335	3.5	2.6	.6	1.7
MHPC.73	2.6	1.7	.7	1.2
MHPC.338	2.8	2.6	.8	1.8
MHPC.117	8.0	5.8	1.7	2.8
MHPC.105*	3.5	2.5	1.0	1.9
MHPC.330*	7.6	3.6	1.5	3.6
VHS. 55*	3.2	1.7	.5	2.4

*Possible concave scrapers.

Figure 31. End scrapers: top row from left to right, MHPC 38.10.94, MHPC 38.10.77, MHPC 38.10.75; bottom row from left to right, MHPC 38.10.337, 38.10.332, MHPC 38.10.89.

weathered in parts to a yellowish gray. It is a mid-stage biface preform. Much of one surface exhibits the original flake surface, although fine retouch flaking along one edge was started, beginning the formation of an incurvate base and side notched haft.

A second bifacial preform (MHPC 38.10.85) is made from a dark greenish gray Kineo rhyolite. This preform is very like some Susquehanna drills, and may have been destined for just that. Like MHPC 38.10.87, a few small retouch flake scars are discernible along small areas of this preform. A third biface preform (MHPC 38.10.307) is a large, crude preform in the earliest stages of shaping. It is also made from Kineo rhyolite (a flow banded greenish gray). Two biface tips and one midsection were also recovered. MHPC 38.10.86 is a tip made from (Vinalhaven) banded striped rhyolite. Though only 2.7 centimeters along its longest remaining edge, the great relative width (again 2.7 cm) of this point tip indicates that it was probably a Susquehanna Tradition broad biface. The other biface tip, 38.10.104 is made of a greenish black mudstone with iron inclusions. It is a thin tip section broken as a result of use. The midsection, 38.10.92, is made from Kineo rhyolite (dark greenish black). Little else can be said about this fragment except that it broke during use and was part of a thin, finely made biface. One other bifacial tool was recovered at the Cates' Farm site. This artifact, MHPC 38.10.105, was manufactured from a grayish black siltstone. It has been worked along one edge and a tip has been formed through bifacial flaking. It may have functioned as a graver or a drill. The worked edge could also have been used as one of the "concave scrapers" described below. Measurements for 38.10.105 are presented along with the concave scrapers in Table 11.

Unifacial Scrapers, Utilized and Retouched Flakes, Hammerstones, Whetstones and Cores

Among eleven scrapers recovered at the Cates Farm site are six which we have assigned to a "concave scraper" category (Figure 30). These tools are often described as "spoke shaves" in archaeological literature. As well as being used to shape wooden or bone shafts, they may also have functioned to strip bark or woody fiber from plant materials. Some metric data describing the five concave scrapers recovered at site 38.10 are presented in Table 11. Three of the concave scrapers are of Kineo rhyolite (MHPC 38.10.356, .117 and .335), one other is of an unidentified rhyolite (MHPC 38.10.338), one of Saugus rhyolite (MHPC 38.10.73), and the last one is of a dark gray siltstone (MHPC 38.10.292).

There were also six end scrapers recovered from site 38.10 (Figure 31). Of the scrapers, MHPC 38.10.77, .94, .75 and .89, are typical of the general Woodland period, while the two large, chunky scrapers are not assignable to any particular cultural period. The distribution of materials used or the manufacture of end scrapers is very similar to that of the concave scrapers. As with the concave scrapers, three of the end scrapers are Kineo rhyolite (MHPC 38.10.337, .89 and .75), one was formed from an unidentified rhyolite (MHPC 38.10.-332), one from Saugus rhyolite (MHPC 38.10.-94) and one from a black chert (MHPC 38.10.-77). Table 12 presents some basic metric data for these endscrapers.

There were five hammerstones, one whetstone and eight cores or core fragments recov

Table 12. Some measurements for end scrapers from site 38.10. Measurements presented are in centimeters.

Catalog #	Greatest Length	Width	Mid-point Thick-ness
MHPC.77	1.4	1.2	.4
MHPC.94	1.8	1.7	.6
MHPC.75	2.2	2.0	.5
MHPC.89	2.5	2.2	.7
MHPC.332	4.5	2.3	1.2
MHPC.337	4.1	2.6	1.2

yered at site 38.10 by MHPC. Tables 13 and 14 present metric data for these artifacts. One of the hammerstones and the whetstone were recovered from Feature 2. The hammerstone (MHPC 38.10. 115) is granite, the whetstone (MHPC 38.10.121) is made of a bluish gray fine grained sandstone. Of the remaining four hammerstones, three are Kineo rhyolite and one is diabase. Six of the eight cores recovered are Kineo rhyolite, one is a black rhyolite and one is quartz.

Eight utilized or retouched flakes were recovered during excavation and survey at the Cates Farm site as well. One of these, MHPC 38.-10.330, may have been destined to become another of the "concave scrapers" described above (Table 11). In addition to the worked concave edge, the "tip" has also been worked. Six of the eight utilized or retouched flakes are Kineo rhyolite, one is a brown siltstone, and another is quartz.

Table 13. Some metric data for hammerstones from site 38.10. Lengths and widths are presented in centimeters while weights are in grams.

Catalog #	Material	Length	Width	Weight
MHPC.115	Granite	4.8	4.3	81.8
MHPC.121*	Sandstone	4.4	3.6	59.0
MHPC.110	Diabase	6.7	5.6	322.0
MHPC.97	KR**	4.9	4.6	71.5
MHPC.96	KR	5.1	4.2	71.5
MHPC.103	KR	5.6	4.3	136.3

*Also used as a whetstone.
**Kineo rhyolite

Table 14. Some metric data for cores and core fragments from site 38.10. Measurements presented are in centimeters and weights are in grams.

Catalog #	Material	Length	Width	Weight
MHPC.84	KR*	8.1	7.3	235.4
MHPC.76	KR	4.1	3.6	36.1
MHPC.81	KR	5.6	3.4	49.6
MHPC.106	KR	2.8	2.3	9.3
MHPC.116	KR	5.1	3.9	72.4
MHPC.102	KR	8.3	7.1	455.0
MHPC.119	Black rhyolite	4.9	2.7	15.4
MHPC.88	Quartz	4.5	1.7	21.7

*KR = Kineo rhyolite

CONCLUSIONS

The Cates Farm prehistoric site (site 38.10 in the Maine Archaeological Survey) covers a series of landforms along 400 meters of the north shore of China Lake east of the current outlet stream. The site is divided into two unequal parts by an intermittent drainage. The eastern portion covers a knoll overlooking the Kennebec Water District pumping station. Prehistoric material on this knoll is much less dense than the western portion of the site, and of unknown age. The western portion of the site, lying between the outlet stream and intermittent drainage comprises a roughly triangular area of roughly 130 meters by 100 meters (6500 square meters) now used by the Cates' brothers as a vegetable and flower garden. Within this western, or Lower Garden, area of the site there is definite evidence of differential concentrations of prehistoric debris. An area of the Lower Garden approximately 50 x 90 meters in size had been plowed, which allowed a systematic, mapped surface collection. The western half of the plowed Lower Garden, within 30 meters of the stream,

contained by far the greatest density of prehistoric material. Four of our 1x1 m test units were located outside this concentration, three outside the plowed portion of the garden, which confirm the pattern of decreasing prehistoric material density away from the outlet stream.

Prehistoric occupants of the Cates Farm are known from a collection of lithic artifacts made by the Cates family over several generations, and from Maine Historic Preservation Commission test excavations conducted in 1990. The MHPC test excavations added subplowzone features, calcined bone, fire-cracked rock, and ceramics to the list of prehistoric material recovered from the site.

Judging primarily from diagnostic stone and ceramic artifacts, the Cates Farm site has been occupied sporadically for over 8000 years. There is one stemmed point probably attributable to the Early Archaic, and two stemmed points clearly attributable to the Middle Archaic (Neville and Stark Complexes). The latter probably postdate 7200 B.P. The largest number of diagnostic bifaces are large side-notched Otter Creek points of the Vergennes Phase, circa 6000 to 4500 B.P. A large number of ground and pecked stone artifacts from the site are attributable to either the Vergennes Phase or Middle Archaic. At least one of the prehistoric features we encountered on the site has been radiocarbon dated to 5000 B.P., clearly in the Vergennes Phase span of occupation. We conclude that the Vergennes Phase occupation was the most intense one on the site, and is responsible for the majority of the lithic material from the site. The Moorehead Phase is not represented by any diagnostic points. Three well made plummets are assigned to the Moorehead Phase, however, on the basis of typological assumptions that poorly made plummets are earlier in date (perhaps Vergennes Phase), and better-made plummets are later in date. The Susquehanna Tradition (circa 4000 to 3000 B.P.) is represented by the second largest number of diagnostic stone points. The succeeding Ceramic (or Woodland) period is indicated by a few diagnostic stone points, a few endscrapers, and six sherds of ceramic. These sherds were recovered from the plowzone in three of seven 1x1 meter test units. The sherds may have come from as few as 3 vessels: one Ceramic Period 1 (or Early Ceramic) Vinette-I like vessel, one Ceramic Period 2 (or early Middle Woodland vessel), and one Ceramic Period 6 (or Late Ceramic) vessel. There is, so far, no evidence of 17th century European trade goods on the site.

The densest area of the site, the garden between 10 and 30 meters from the outlet stream, is the apparent find locus for most of the Archaic material, and was the definite find locus for all but one of the ceramic sherds. As mentioned above, we confirmed that at least one Vergennes Phase garbage pits and perhaps other features have survived below the plowzone in this area. The one Late Ceramic sherd came from the test unit closest to the stream, so there may be some horizontal separation of components on the site.

Two subplowzone garbage pits (Features 2 and 5) were excavated. They are large, generally indistinct at the plowzone-subsoil interface, but become much clearer when one encounters dark brown or black organic rich soil at the bases of the pits. Encountering two pits in three square meters (3 1x1 m units) excavated in the densest (2500 square meter) part of the site indicates a high probability for survival of a large number of such features. Both features contained fire-cracked rock, probably produced by open campfires (as opposed to stone boiling), calcined bone and charcoal. The calcined bone is identified as turtle, large mammal, and small (unidentified) fish. These bone scraps indicate, as we might expect, an economy focussed on the lake and surrounding woods. The charcoal in Feature 2, dated 5000 B.P., was a mix of hardwood species. The charcoal in Feature 5 was mostly birch and pine, and is undated.

Debitage (flakes of stone) from the site are overwhelmingly composed of Kineo rhyolite with smaller amounts of quartz. Exotic raw materials are found only in a few tools: a white quartzite (like Mistassini quartzite) and Saugus rhyolite in Ceramic period artifacts, and Onondaga chert in a classic Brewerton point.

Some of the ground stone tools (gouges,

plummets) retain traces of a mineral pigment which is probably red ocher. It is likely, therefore, that one or more features containing such tools covered with red ocher had been plowed up by initial farming activities on the site. Such a feature is likely to have been a "Red Paint" grave in which human bone did not survive, and may have dated to the Middle Archaic, the Vergennes Phase, or another Late Archaic component which left no other evidence.

In sum, the majority of the material culture recovered from the Cates Farm, comprising diagnostic biface points, ground and pecked stone, debitage, calcined bone and charcoal, demonstrably or probably dates to the Vergennes Phase. Sites with a primary Vergennes Phase component are rare in Maine, and this may be one of the westernmost such sites since there don't seem to be any west of the Kennebec Valley. A systematic program to identify and excavate the surviving subplowzone features in the most concentrated part of the site would likely provide much information on the Vergennes Phase occupation.

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Recent Archaeological Investigations in the Messalonskee Portion of the Central Kennebec River Drainage

John Crock

INTRODUCTION

Recent archaeological phase I survey and phase II testing conducted in the Messalonskee Stream and Messalonskee Lake portions of the Kennebec River drainage has resulted in the identification of 33 previously unknown aboriginal sites, and the investigation of one previously known site. This research has established that this area was minimally occupied from as early as the Middle Archaic period to the Contact period, ca. 5500 B.C. - A.D. 1750. Of the total number of sites, nearly half of them (16) can be attributed to known periods of regional prehistory based on temporally diagnostic artifacts and radiocarbon dates.

This work was conducted for Central Maine Power Company (CMP) as part of federally required hydroelectric project relicensing. The archaeological survey and testing encompassed the areas presently impounded by four of CMP's hydroelectric dams including the Oakland, Rice Rips, Automatic and Union Gas project areas. The combined projects include approximately 14.6 km (9.1 mi) along Messalonskee Stream, more than 41 km (25.4 mi) of lakeshore, and encompass more than 15.3 sq km (3,790 ac) of surface water. Normal high water within the area of the projects ranges from approximately 21.1 m (69.1 ft) above mean sea level (a.m.s.l.) at the Union Gas impoundment to 71.9 m (235.9 ft) a.m.s.l. at Messalonskee Lake.

The broad Kennebec River drainage basin covers a total area of about 15,280 sq km (5,900 sq mi), of which a great majority lies upstream from the combined project area. From the headwaters of the Kennebec River at Moosehead Lake, the river drops about 312 m (1023.4 ft) over its approximately 241.4 km (150 mi) course to the Atlantic Ocean (Corps of Engineers 1985). The combined Messalonskee projects are situated within the rolling coastal lowlands physiographic zone of central Maine, approximately 60 km (37.2 mi) above the confluence of the Kennebec and Androscoggin Rivers at tidal Merrymeeting Bay near the Atlantic coast (Figure 1).

The combined Messalonskee projects study area was defined as all landforms that are subject to the effect of the existing Oakland, Rice Rips, Automatic and Union Gas head ponds and dam facilities. The nature of inundation within these head ponds has had, and will continue to have, a direct effect on the archaeological deposits preserved there. Furthermore, at least some archaeological sites present prior to dam construction likely have been completely destroyed by inundation and erosion over the 75(+) years that the projects have been in operation. This unfortunate consequence of hydroelectric dam construction has been demonstrated by archaeological projects conducted throughout Maine (e.g., Bartone et al. 1991; Cowie and Petersen 1988, 1992; Crock et al. 1991; Nelson et al. 1991; Robins et al. 1990).

The first notable archaeological research in the Kennebec River drainage was undertak-

The Maine Archaeological Society Bulletin 32:1:45-61 (1992)

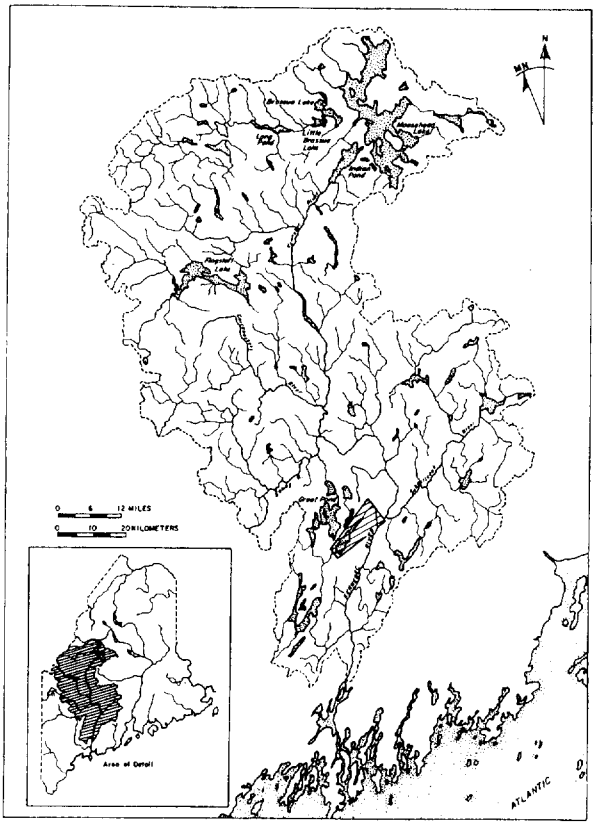

Figure 1. Location of the Messalonskee projects study area in the Kennebec River drainage basin.

en by Charles Willoughby in 1895 when he identified four major workshop sites on Moosehead Lake at Mt. Kineo, the famous green rhyolite source (Willoughby 1901, 1935:Fig. 64). In the early 1900s, McGuire also conducted work at several locations on Moosehead Lake including Kineo (McGuire 1908:552). Perhaps the most notable early investigations were conducted by Moorehead in the 1910s and thereafter during several expeditions in search of "Red Paint" burials and other cultural remains (Moorehead 1922:215). In a matter of several years, Moorehead and his "force" were able to cover a large portion of the state with test holes, successfully locating nearly 500 "Red Paint" style burials (Moorehead 1922:127). The Messalonskee Lake area and nearby Belgrade lakes were no exception to Moorehead's rather thorough search; he identified three cemetery sites in 1920 near the outlet of Messalonskee Lake (ME 53-2, ME 53-4 and ME 53-10) just outside the present study area (Moorehead 1922:101).

More recent investigations in the Kennebec River drainage, largely the result of federally mandated hydroelectric dam relicensing, have produced an copious amount of archaeological data over the past decade (Bartone et al. 1990; Cowie and Petersen 1992; Crock et al. 1991; Parker and Petersen 1988; Petersen 1991a; Petersen and Putnam 1986; Robins et al. 1990; Spiess et al. 1983; Spiess 1984; Quinn and Petersen 1991). As a result of these and other projects, we can now safely assert that the broad drainage was occupied throughout all periods of prehistory, from the Paleoindian period to the Contact period, ca. 9000 B.C.-A.D. 1750.

SAMPLING METHODS

Given the rather large and diverse area of the combined Messalonskee projects, sampling was necessarily employed to maximize identification of endangered archaeological sites. The project area was initially broken down into sampling areas which were suspected to preserve sites, the elimination of areas obviously disturbed by either historic Euroamerican developments (e.g., the Maine Central Railroad), or head pond inundation. Areas which containing steep slopes and/or swampy, inaccessible terrain were deemed uninhabitable and were also eliminated. Of the 102 sampling areas investigated during the phase I survey, 69 ultimately received walkover inspection and subsurface testing; the remaining 33 were field checked and determined to be unsuitable for aboriginal habitation.

Over the course of the Messalonskee phase I survey, conducted during both the 1989 and 1990 field seasons, a total of 870 0.5 m x 0.5 m test pits were excavated. Of these test pits, a total of 100 (11%) were positive for aboriginal remains, resulting in the identification of 33 previously unknown aboriginal sites, and the confirmation of one previously known site (Crock et al. 1991; Ferreira and Petersen 1990).

Following the phase I survey, phase II testing was conducted at 31 of these sites dur-

Figure 2. Phase II field work in progress at site ME 52-30 in the Oakland Project area, facing east. Note typical wooded site setting and Messalonskee Lake to the right.

ing the 1990 and 1991 field seasons (Crock and Petersen 1992; Crock et al. 1991). Two sites were not recommended for phase II testing (ME 37-17 and ME 37-25), and a property dis pute among the owners prevented testing at a third site (ME 37-24). Overall, the phase II testing included the excavation of 652 0.5 m x 0.5 m test pits and 25.5 larger 1.0 m x 1.0 m test units (Figure 2); surface collections were also conducted at six sites. A total of 153 (23%) of the phase II test pits and 23.5 (92%) of the test units proved positive for aboriginal remains.

RESULTS AND CULTURAL SETTING

While more than half of the sites investigated produced cultural remains, many apparently represent either ephemeral campsites with minor cultural deposits and/or are the remnants of sites largely eroded by the operation of the various hydroelectric projects. As mentioned above, of the 34 sites now known in the project area, 16 can be attributed to various periods of prehistory based on diagnostic artifacts and radiocarbon dates. The temporal attributions of these sites are discussed below within the context of the known prehistory of the Kennebec River drainage and broader region.

Evidence of Paleoindian period occupation, ca. 9000-7000 B.C., in the Kennebec River drainage is rare, largely known only from the headwaters area in the Brassua Lake-Moose River region. A classic fluted point collected by an avocational archaeologist is currently curated at the University of Maine (Orono) and another point and related tool assemblage was recently collected by an avocational arch-

aeologist from a site in the same area. No unequivocal Early or Late Paleoindian sites are currently known within the project area or on the main stem of the Kennebec River, although some are known nearby. One probable Late Paleoindian site (ME 53-38) was recently discovered on a high landform near the Union Gas Project area, but it lies clearly outside of the area presently affected by the hydroelectric project (Spiess 1988).

Evidence of subsequent Archaic period populations, ca. 7000-1000 B.C., is more common in the Kennebec River drainage, but not much better understood. The earliest portion of this sequence, the Early Archaic period, ca. 7000-4000 B.C., is very little known; but sites are evident on Flagstaff Lake, near the mouth of the Kennebec River on Merrymeeting Bay, and elsewhere (e.g., Sanger 1975; Spiess, Bourque, and Gramly 1983; Spiess, Petersen, and Hedden 1983). Human occupation in the project area during the Early or Middle Archaic period, ca. 7000-4000 B.C., was identified at site 53-42, and at the Ellis Brook (ME 37-26) and Tyler (ME 53-48) sites. Quartz core/uniface scrapers attributable to the Early and/or Middle Archaic periods, ca. 7000-4000 B.C., were recovered from all three sites. These core/uniface scrapers have been repeatedly documented in association with early Holocene occupations at sites such as Sharrow and Brigham in the Piscataquis River portion of the upper Penobscot drainage in Milo (Petersen 1991b; Petersen et al. 1986).

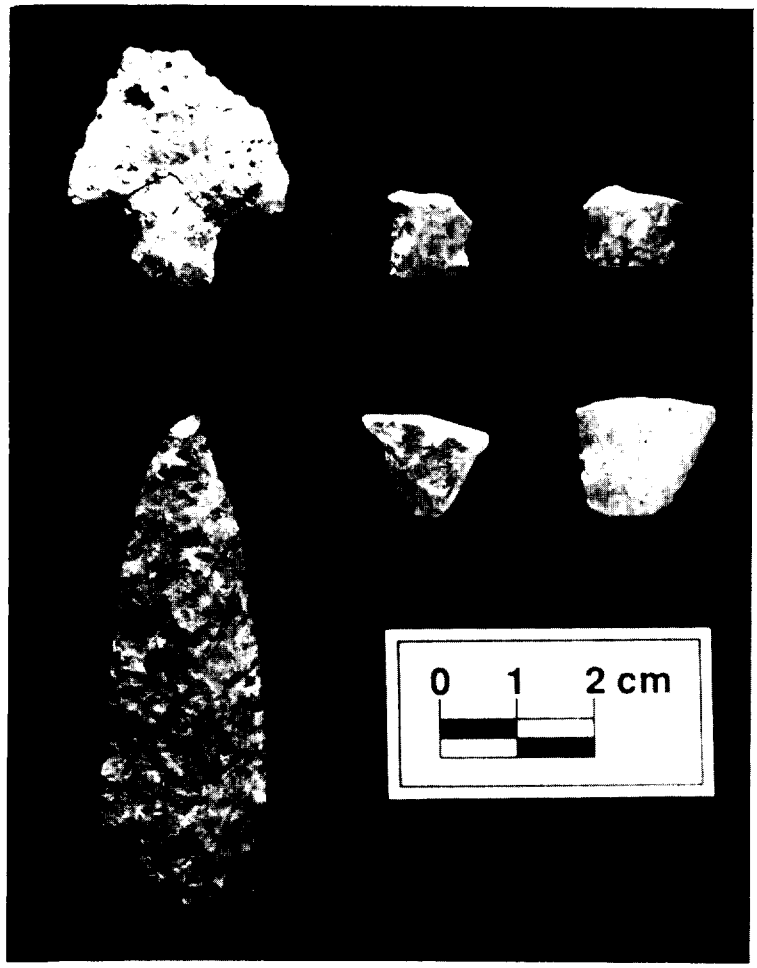

Figure 3. Middle Archaic period projectile points and fragments from site ME 53-41 in the Oakland Project area. Top row: Neville-type [# 11(1), 108(1), 98(1); bottom row: Stark-type [#95(1), 108(3)], and Stark/Neville-type [#108-(2)].

Sites of the Middle Archaic period, ca. 5500-4000 B.C., are more common in local and regional contexts. These include the above mentioned Sharrow and Brigham sites, as well as localities near the outlet of Moosehead Lake, on Flagstaff Lake, within the Ft. Halifax Project area, around Cobboseecontee Lake and elsewhere in Maine (e.g., Bartone et al. 1990; Hamilton et al. 1984; Sanger et al. 1977; Spiess, Bourque, and Gramly 1983; Yesner et al. 1983). In addition, evidence of Middle Archaic period occupation has been recently documented at the Smith's Landing site (ME

69-16) within the Williams Project area near Solon (Petersen 1991a).

The Middle Archaic period is represented by at least three sites in the Messalonskee projects study area. An assemblage of stemmed rhyolite projectile points and stem fragments attributable to this period were recovered from undisturbed contexts at site ME 53-41 and represent a single component (Figure 3). These tools all represent Stark and Neville type forms, quite similar to those recovered at the type site (Dincauze 1976). Site ME 52-30, another single component site, produced a preform for a similar Stark type rhyolite projectile point, in addition to a full-channeled gouge (Figure 4), both of which are attributable to the Middle Archaic period. The projectile point preform is almost identical to a similar artifact recovered in a Middle Archaic period context at the Smith's Landing site (ME 69-16) in the Williams Project area. The third site in the project area with a Middle Archaic period component is the Goldman site (ME 52-26). One rhyolite stem fragment recovered at the site is probably attributable to the Middle Archaic period.

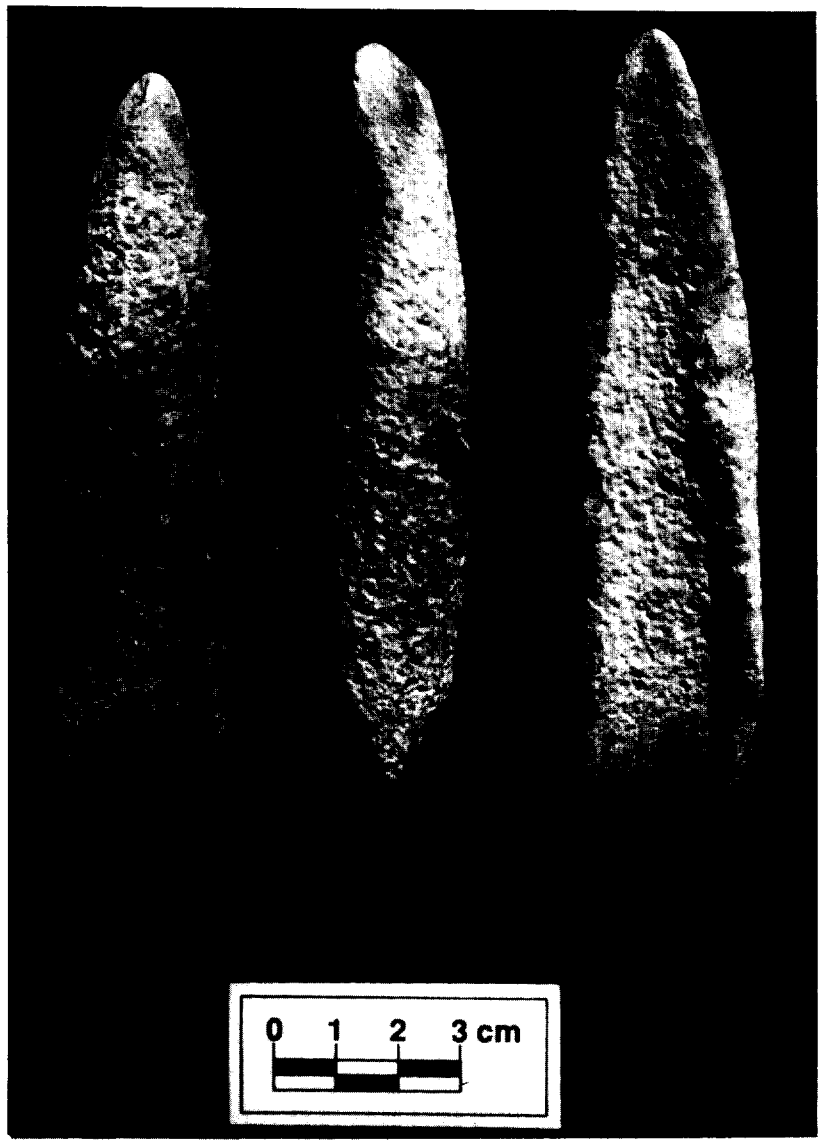

Figure 4. Middle Archaic period ground stone full-channeled gouge left: reverse, center: lateral, right: obverse [cat. no. 90(1)] recovered from site ME 52-30 in the Oakland Project area.

Late Archaic period sites, ca. 4000-1000 B.C., are still more common locally and regionally. These remains although imperfectly understood, represent a variety of regional complexes (e.g., Borstel 1982; Bourque 1976; Gramly and Rutledge 1982; Hamilton et al. 1984; Moorehead 1922; Sanger et al. 1977). Unequivocal evidence of Late Archaic period occupations is known from the Smith and Smith's Landing sites in the Williams Project area (Petersen 1991a), from the nearby Evergreens site (Spiess 1984; Spiess et al. 1983), and throughout the greater Moosehead Lake area (Hamilton et al. 1984; Robins et al. 1990).

The Late Archaic period is the most well-represented period of prehistory in the Messa

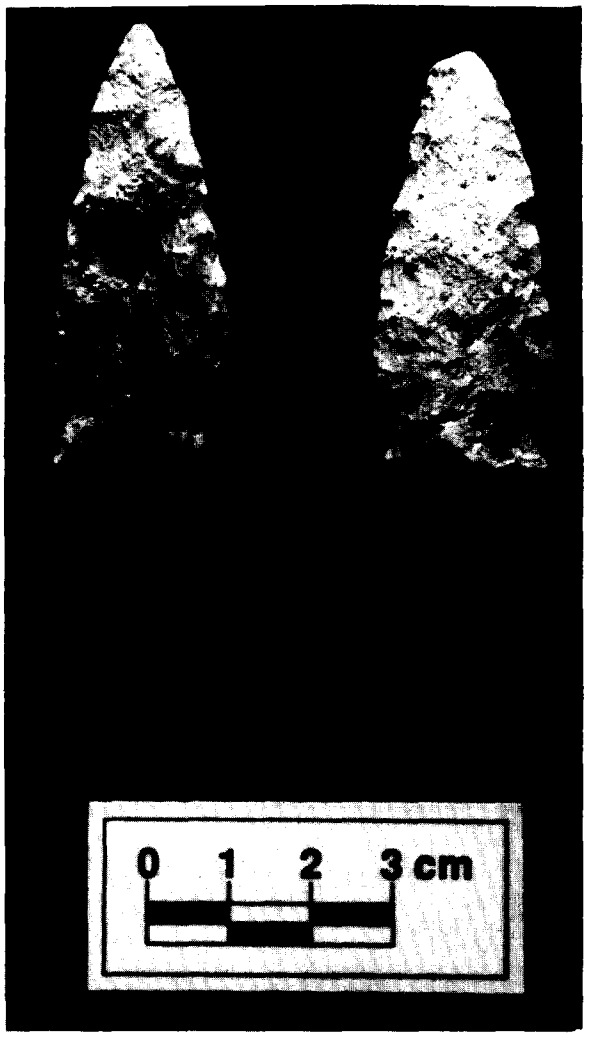

Figure 5. Late Archaic period Laurentian tradition rhyolite projectile points recovered from the Kinny site (ME 52-28) in the Oakland Project area [left, Vosburg-type, cat no. 32(10; right, Brewerton-type, cat. no. 28(1)].

lonskee project study area; a total of six sites produced lithic tools attributable to a variety of commonly accepted traditions and complexes within this period. A chert side-notched Otter Creek type projectile point attributable to the Laurentian tradition, ca. 4000-2500 B.C. (Ritchie 1971), was recovered at the Campbell Cove site (ME 37-19). Laurentian tradition artifacts were also recovered at the Kinny site (ME 52-28) and represent the site's only occupational component. Two rhyolite side-notched projectile points were recovered from an undisturbed context at the Kinny site (Figure 5). One is very similar to Vosburg type points which have been identified at numerous sites in the Northeast (e.g., Petersen et al. 1985; Ritchie 1971), but rarely in Maine. The other projectile point is likely related to a Brewerton type (Ritchie 1971).

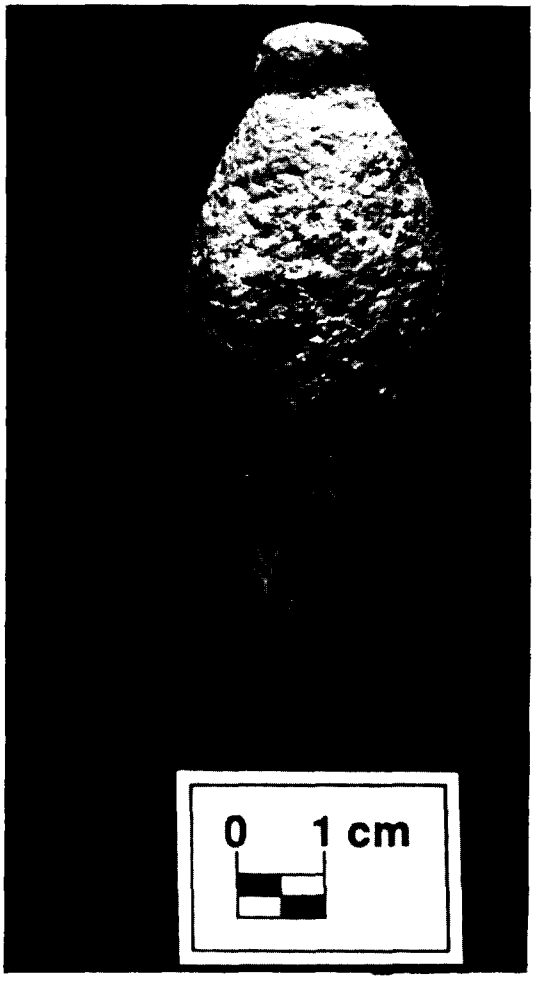

Figure 6. Late Archaic period Moorehead complex or Laurentian tradition ground stone plummet recovered from site ME 37-18 in the Oakland Project area [cat. no. 34(1)].

Artifacts attributable to the Moorehead complex of the Late Archaic period, ca. 2500-1800 B.C., were recovered from at least two sites in the study area. Several small stemmed

projectile points and fragments recovered from site ME 37-16 document a Moorehead complex occupation. In addition, a radiocarbon date of 4460 ± 90 years B.P, or 2510 B.C. (Beta-42185) was obtained from feature 4 at site ME 53-42. Although no diagnostic artifacts were recovered in association with feature 4, this date allows suggestion of an occupation contemporaneous with the Moorehead complex at this site. One ground stone plummet recovered from site ME 37-18 (Figure 6) can be attributed to the Late Archaic period, either the Moorehead complex or the Laurentian tradition. As mentioned above, the three sites Moorehead identified near the project area were cemetery sites, very likely attributable to the Moorehead complex as well (Moorehead 1922). Of further note, a Late Archaic period Moorehead complex cemetery is known on the Sebasticook River near its confluence with the Kennebec River in Winslow, near or within the Ft. Halifax Project area (Moorehead 1922; Wellman 1984).

Four sites in the study area produced lithic artifacts likely attributable to the Late Archaic period Susquehanna tradition, ca. 1800-1000 B.C. A steep edge, "high back" scraper recovered from the Whispering Pines site (ME 37-1)(Figure 7), along with a point base from the Campbell Cove (ME 37-19) site and a point tip recovered from site ME 37-16 are likely attributable to this portion of the Late Archaic period. A rhyolite broad stemmed, Atlantic type projectile point was surface collected at the Ellis Brook site (ME 37-26) by the landowner, suggesting a Late Archaic Susquehanna tradition occupation of this site as well.

Four additional artifacts diagnostic of Late Archaic period populations, ca. 4000-1000 B.C., were recovered from the study area. These include a clear quartz small stemmed projectile point and an expanding stem rhyolite projectile point base from the Whispering Pines site (ME 37-1)(see Figure 7) and two rhyolite small stemmed points from the Campbell Cove site (ME 37-19), further substantiating the age of these two sites. One other site, Chowder Ledge (ME 37-20), produced an assemblage of lithic tools attributable to the general Archaic period, ca. 7000-1000 B.C.

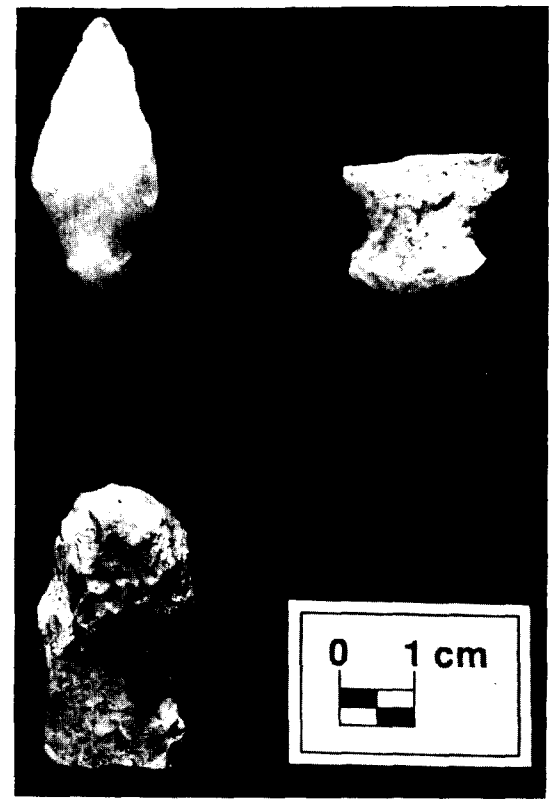

Figure 7. Artifacts recovered from the Whispering Pines site (ME 37-1) in the Oakland Project area. Top left: Late Archaic period quartz small stemmed projectile point [cat. no. 34(1)]; top right and bottom: probable Late to Terminal Archaic period rhyolite expanding stemmed projectile point and Susquehanna tradition rhyolite steep edge scraper [cat. nos. 194(1) and 187(1)].

The final major era of prehistory, the Woodland or Ceramic period, is variably represented in the Kennebec River drainage and elsewhere (e.g., Petersen et al. 1986; Sanger 1982; Sanger et al. 1977; Spiess 1984) Evidence of all three Ceramic subperiods, Early, ca. 1000 B.C.-A.D. 100; Middle, ca. A.D. 100-1000; and Late, ca. A.D. 1000-1550 has been documented at various sites upstream from Waterville in the Weston, Williams and Wyman project areas (Cowie and Petersen 1992; Parker and Petersen 1988; Petersen 1991a). Additional Ceramic period sites are known farther upstream in the Moosehead Lake region (Ham

ilton et al. 1984; Robins et al. 1990). More locally, a variety of Ceramic period sites have been discovered in the Waterville-Winslow area including sites in the Ft. Halifax Project area, as well as others on or near the main stem of the Kennebec River (e.g., Bartone et al. 1990; Spiess 1988).

Evidence of Early Ceramic period occupations was recovered from two sites in the study area. Fabric paddled, "Vinette I"-like ceramic sherds were recovered from site ME 53-42, and a radiocarbon date of 2830 ± 80 years B.P., or 870 B.C. (Beta-42186) was returned for a hearth feature from the Tyler site (ME 53-48). In addition, the Dorvall site (ME 53-72) has been attributed to the Early or Middle Ceramic period ca. 1000 B.C.-A.D. 1000, based on the recovery of a ground phyllite pendant (Figure 8) and early Middle Ceramic period, ca. 100 B.C.-A.D. 300, undecorated, grit-tempered ceramic sherds.

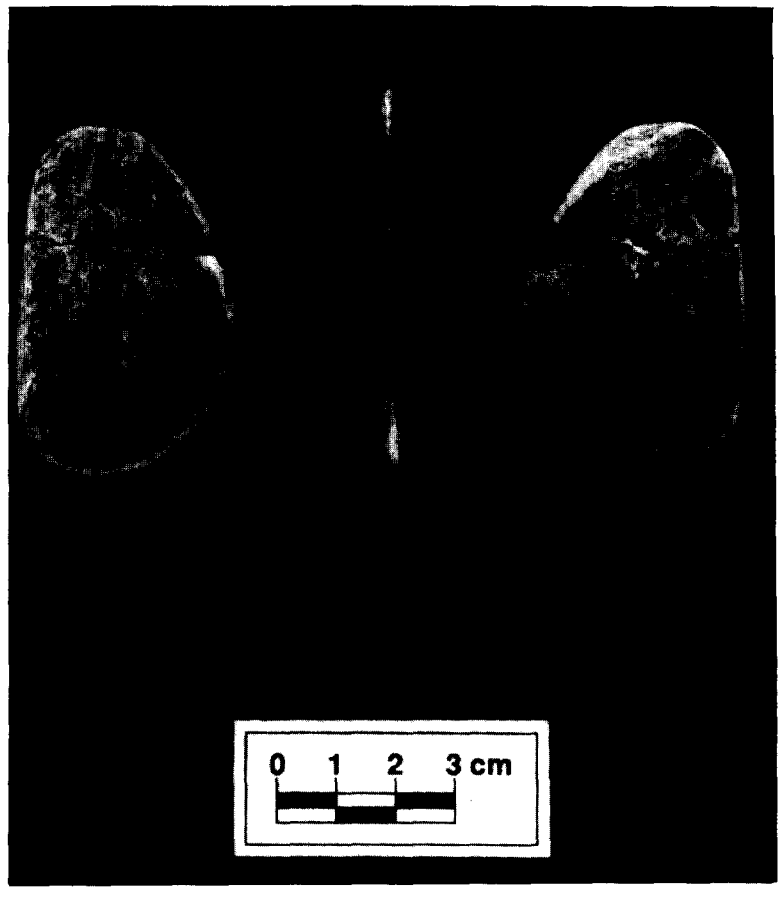

Figure 8. Early or Middle Ceramic period ground stone pendant left: obverse, center: lateral, right: reverse [cat. no. 3-s-1] recovered from the Dorvall site (ME 53-72) in the Automatic Project area.

Four sites in the study area have produced cultural remains including both aboriginal features and temporally diagnostic artifacts attributable to the Middle Ceramic period, ca. 100 B.C.- A.D. 1000. These sites include the ME 37-16, Whispering Pines (ME 37-1), Star Point (ME 37-21) and Fish Brook (ME 53-52) sites.

Early Middle to middle Middle Ceramic period, ca. 100 B.C.-A.D. 600, rocker dentate ceramic sherds were recovered from both ME 37-16 (Figure 9) and the Whispering Pines (ME 37-1) site. Radiocarbon dates returned for aboriginal features from site ME 37-16, the Whispering Pines and Fish Brook sites place the features identified at these sites within the Middle Ceramic period. Feature 1 at site ME 37-16 was dated to 1120 ± 60 years B.P., or A.D. 830 (Beta-42184); feature 1 at the Whispering Pines site was radiocarbon dated to 1870 ± 70 years B.P., or A.D. 80 (Beta-42183); and feature 1 at the Fish Brook site was radiocarbon dated to 1290 ± 90 years B.P., or A.D. 660 (Beta-42187). Finally, clear quartz bipolar blades and blade cores were recovered during phase II testing at the Star Point site (ME 37-21). These artifacts are very similar to specimens documented in Middle Ceramic period contexts at the Sharrow site on the Piscataquis River (Petersen, personal comm. 1991).

Four sites represent the most recent occupation of the Messalonskee study area during the Late Ceramic period and perhaps the Contact period. A variety of shell-tempered ceramic

sherds with cord wrapped stick decoration were recovered from site ME 37-16 and are attributable to the early Late or late Late Ceramic period, ca. A.D. 1000-1550. A number of grit-tempered sherds with fabric paddled exteriors attributable to the early Late Ceramic to Contact period, ca. A.D. 1000-1750, and undecorated grit-tempered sherds attributable to the late Late Ceramic or Contact period, ca. A.D. 1300-1750, were also recovered at the same site, perhaps indicating a later occupation. One grit-tempered, incised rim sherd, also attributable to the late Late Ceramic or the Contact period, ca. A.D. 1300-1750, exists in a private collection from the Goldman site (ME 52-26), apparently collected by the landowner. Undecorated grit-tempered sherds attributable to the late Late Ceramic period were recovered from site ME 53-42 as well. Additionally, one rhyolite projectile point attributable to the Late Ceramic period, ca. A.D. 1000 - A.D. 1550, was recovered from the Paridis site (ME 53-43) during the phase II testing.

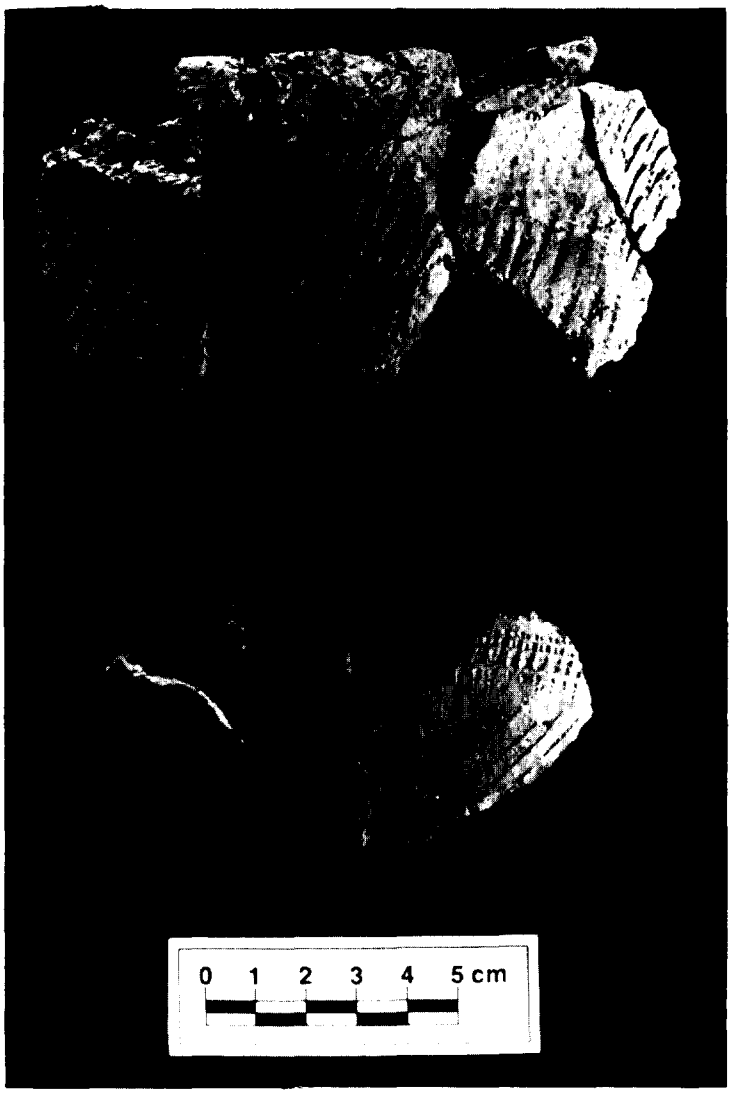

Figure 9. Early to middle Middle Ceramic period aboriginal ceramic sherds and fragments recovered from site ME 37-16 in the Oakland Project area [cat. nos. 179-41(1-4), 180-41(1-2), 222-41-1, 182-41-1]

It is clear from the preceding overview that Messalonskee Lake and the studied portions of Messalonskee Stream were regularly occupied from the Early or Middle Archaic period, ca. 7000-4000 B.C., onward through the Late Ceramic or Contact period, ca. A.D. 1000 - A.D. 1750. Of particular note, however, is the relatively high incidence of single component Archaic period sites and the relatively small number of Ceramic period sites. A total of seven sites with Archaic period attributions were not apparently inhabited by later Ceramic period populations. This is in direct contrast to sites such as those on the Piscataquis River where preferable landforms were reoccupied for millennia (e.g., Petersen 1991b). This may indicate that the project area was less intensely occupied in more recent prehistory, or perhaps that higher Archaic period water levels have been reestablished by the present impoundment, making some landforms which were inaccessible during Ceramic times accessible once again.

The combined phase I survey and phase II testing artifact inventory from the Messalonskee projects study area includes a total of 5,427 aboriginal artifacts, 158 of which are

Figure 10. View of typical, undifferentiated soil profile. West wall of test unit N20 E26 at site ME 53-41 in the Oakland Project area shown here.

lithic tools and 643 of which are ceramic sherds and fragments. In addition, over 10,000 calcined bone fragments were recovered, the large majority of them clearly related to aboriginal occupations. However, over 8,000 calcined bone fragments alone were recovered from 1 mm mesh screening of the Middle Ceramic period feature 1 at site ME 37-16, representing over 40 bullhead (*Ictalurus* sp.) individuals, among other species.

In addition to the artifacts, a total of ten cultural features, mostly hearths, were identified and sampled at seven of the sites. Of the ten features, only five contained enough charcoal to be radiocarbon dated. Of these five, only one returned a date older than 880 B.C. The relatively few identified cultural features, especially features of Archaic period antiquity, likely reflects the poor preservation characteristic of the predominantly non-depositional, "spodosolic" soil profiles typical at the majority of the sites (Figures 10 and 11). Sediments were basically uniform at most sites, with profiles usually consisting of a humus and associated albic horizon overlying developed silt loam and Pleistocene age deposits. This situation can be contrasted with the excellent degree of preservation documented in alluvial settings in Maine (e.g., Cowie and Petersen 1988; Petersen 1991).

A comparison of raw material types among the lithic artifacts reveals a heavy reliance on rhyolite. Of the 134 tools recovered during the phase II testing, 61% were rhyolite, 16% were quartz and 6% were chert; the remaining 17% are composed of a combination of quartzite, felsite, graywacke and tools of other igneous, sedimentary or metamorphic rocks. The breakdown of lithic flakes recovered during the phase II testing is much the

same; of the 3,228 flakes, 78% are rhyolite, 19% are quartz and the remaining 3% are composed of chert, felsite, quartzite, argillite and unknown raw material types.

The dominance of rhyolite in the artifact inventory seemingly reflects the timeless availability of the material both locally within the study area and within the broader Kennebec River drainage. The presence of Mt. Kineo rhyolite in particular is not surprising given the relative proximity of the study area to the main source at Moosehead Lake and its location within the zone of glacially deposited rhyolite. The utilization of readily available, water-worn rhyolite cobbles was documented in the project area, particularly at the Late Archaic period Kinny site (ME 52-28). Exactly what portion of the material was acquired locally from naturally occurring glacial deposits versus the portion perhaps directly quarried at Mt. Kineo cannot be determined based on the available information. However, it is likely that a combination of both sources were exploited over time. A secondary preference for quartz is also not surprising; quartz cobbles are present in readily accessible glacial deposits along the lakeshore and stream in the study area.

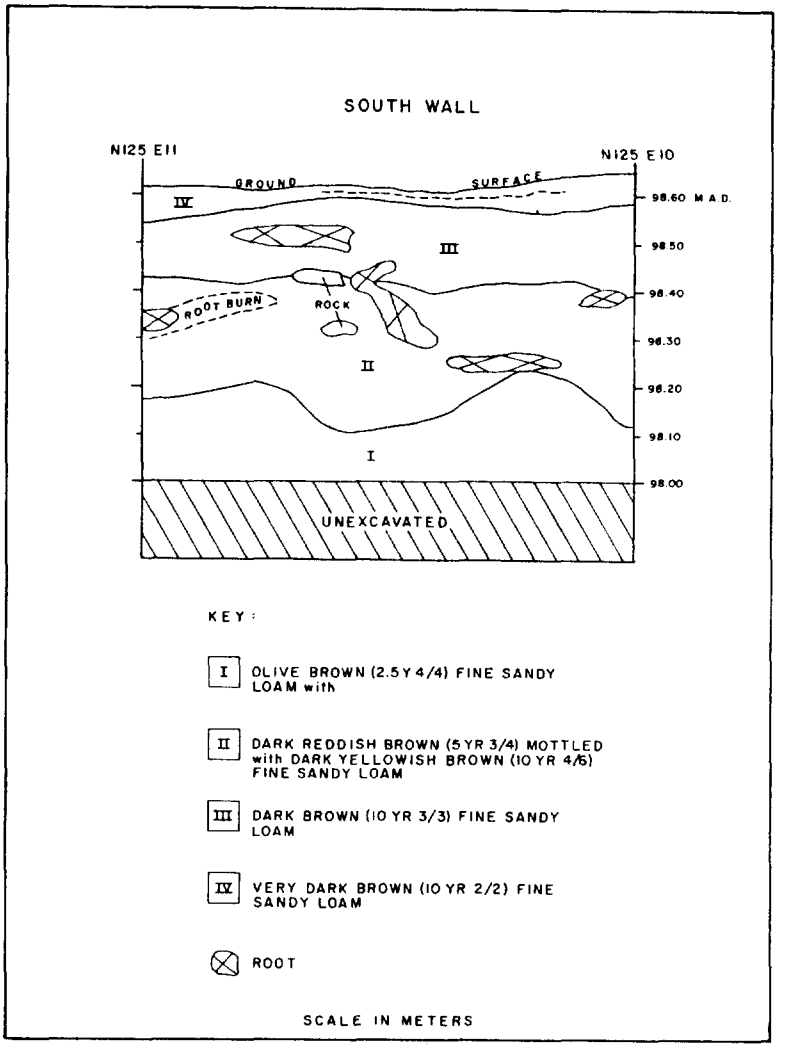

Figure 11. Typical soil profile from the Messalonskee Project. South wall of test unit N125 E11 at the Dorvall site (ME 53-72) shown here.

Relatively few artifacts are made of exotic raw materials. However, the presence of several Munsungan chert flakes, one biface tip/uniface scraper of weathered New York Onondaga chert, and flakes of an exotic chalcedony demonstrate the existence of long distance trade networks. Although none of the "exotic" raw materials were recovered in association with diagnostic artifacts or radiocarbon dates, they were all recovered from sites with clear Ceramic period occupations.

SITE DISTRIBUTION AND SETTING

The distribution of archaeological sites within the Messalonskee projects study area reflects a common preference for confluences, inlets and outlets, and prominent points of land. Within the sample of sites now known in the study area, 71% are situated in such high priority areas; the remainder are located on less descript landforms and generally represent less significant sites. Of the sites identified, 65% are located on Messalonskee Lake, while only 35% are located in the Messalon

Figure 12. View of severe erosion at site ME 37-18 in the Oakland Project area, facing north. Note crew member for scale.

skee Stream portion of the study area. This apparently uneven distribution is likely the result of a number of factors including but not limited to: 1) the larger area of the lake versus the stream (i.e., a greater area of lakeshore was studied, hence more sites were identified); 2) the nature of inundation and erosion which has had a more destructive effect on the recent Holocene stream alluvium than on the more resilient Pleistocene lakeshore sediments (hence more lake sites have been preserved); and 3) a more intense lake-oriented pattern of aboriginal settlement and resource exploitation, whereby the stream was less intensely occupied. Relative artifact densities recorded for lake sites versus stream sites would lend support to the latter explanation (Crock and Petersen 1992; Crock et al. 1991).

Of the 34 sites now known within the project area, nearly all are situated entirely on well drained, both fine- and coarse-grained, late Pleistocene sediments. A few sites along Messalonskee Stream apparently exhibit Holocene alluvium as well, often in conjunction with glacio-marine sediments of greater antiquity. All of the sites are situated on landforms which directly abut the head ponds and range from essentially 0-6 m above the existing water levels, although the majority lie only 0-2 m above the full head ponds. The relative proximity of the sites to the impoundments further suggests that some indeterminable number of sites originally present along the margins of the headponds are now inundated. For this reason, the sample of sites identified does not necessarily reflect the full sample of sites which existed in the study area prior to inundation and modern development.

PROJECT EFFECTS

The archaeological sites in the project area are situated at or slightly above the head ponds where they are subject to ongoing erosion, due to the operation of the projects in many cases. Fluctuations in water levels and/or the increased water table brings the head ponds into contact with relatively unstable sediments which were rarely, if ever, contacted prior to their existence. This process has eroded and continues to threaten some of the archaeological sites now known within the combined study area (Figure 12). At the majority of the sites, the results of inundation and erosion are readily apparent, evidenced by shallow shelves of denuded cobbles and boulders which extend out from the present shoreline some 10-15 m.

Although only two of the 34 sites lie solely within the Fluctuation zone as defined by the National Reservoir Inundation Study conducted by the National Park Service (Ware 1989), many others appear to be represented in both the Fluctuation and Backshore zones. In other words, while portions of most sites are subject to the rise and fall of the corresponding head pond, most of these sites preserve deposits back away from the terrace margin, on landforms not currently affected by the operation of the impoundments. However, this does not mean that portions of sites located in the Backshore zone are not adversely affected by factors such as recreational traffic, lakeside development and camping activities which are indirectly related to the existence of the impoundments. Messalonskee Lake in particular is one of the more densely populated lakes in Maine, and as a result some cultural resources have been disturbed if not destroyed altogether by development. Remarkably, many of the now known sites preserve intact cultural deposits despite the degree of recent development along the margins of the impoundments.

CONCLUSIONS

The results of archaeological phase I survey and phase II testing in the Messalonskee projects study area demonstrate the cultural significance and diversity of this previously unstudied portion of the Kennebec River drainage. It is now clear that this area was occupied by aboriginal populations from the Early or Middle Archaic period onward throughout prehistory. Based on the results of the phase II testing, it is expected that archaeological phase III mitigation of some sort may be conducted at as many as ten of the most significant threatened sites in the study area at some time within the next decade.

Until recently, few systematic and extensive archaeological studies of small lakes, ponds and streams have been conducted in Maine; hence, aboriginal utilization of these areas is not completely understood. The results of the Messalonskee studies demonstrate the archaeological sensitivity and importance of these smaller waterways and are testimony to the need for continued research in diverse local environmental settings. The available sample of sites now known in the Messalonskee projects study area with their attendant differences provides another rare opportunity to study variation between sites. It is suspected that current and future research in the Messalonskee Stream and Messalonskee Lake areas can be used to help formulate a long-needed model of interior aboriginal adaptation(s) over time given the relatively good state of preservation and the apparent diversity in terms of site size, content and setting. This reconstruction may well be more broadly useful and significant beyond local contexts in Maine for comparison with the few other such studies that have been conducted in the Northeast.

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EDITOR'S COMMENT

The scarcity of Late Archaic and Ceramic Period sites on Messalonskee Stream may indeed be due to the steep nature of the stream, and its difficultly for canoeists. A direct carry from the outlet of Messalonskee Lake to the Kennebec River may have been preferred.

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