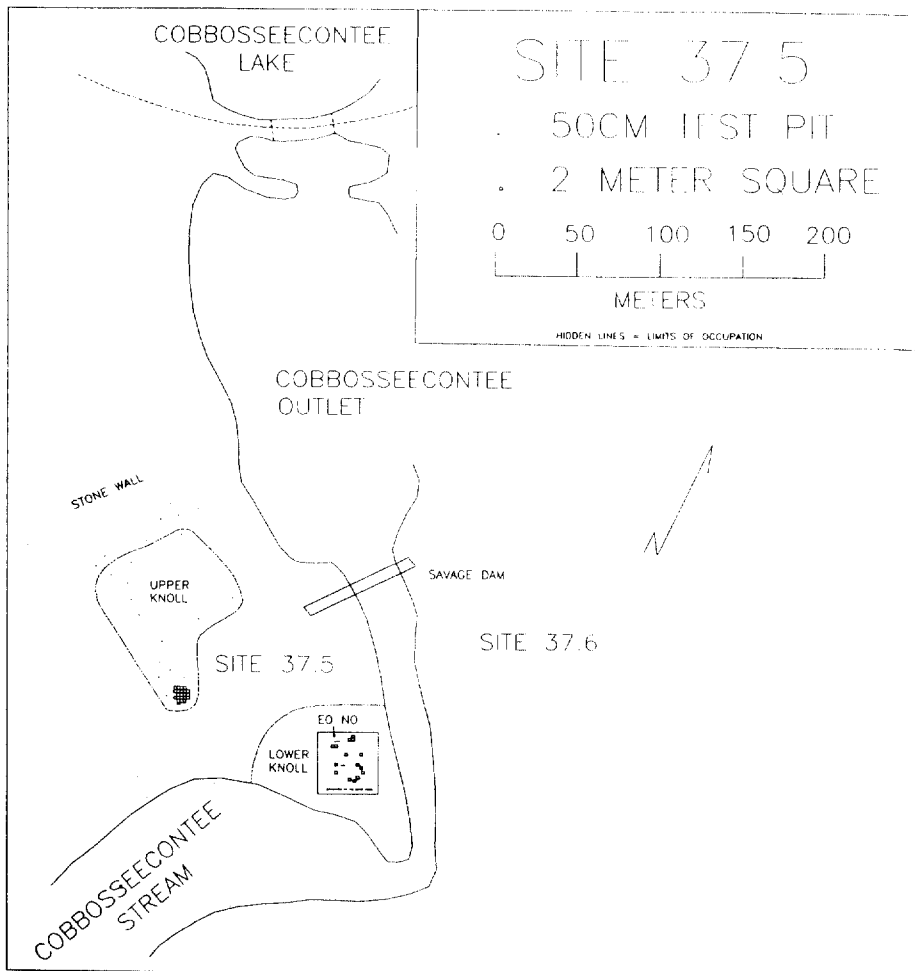


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BULLETIN



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A Salvage Effort on the Coast of Maine: The Lehmann Site (40-3)

Harbour Mitchell III

INTRODUCTION

The Lehmann Site (40-3) is an eroding, multi-component shell midden along the coast of Maine. While little remains of the shell midden itself, a relatively large area containing cultural materials remains on non-depositional, glacial deposits up to 45m back from the ocean margin. Although the site received only limited testing, evidence of occupation spans 4000-5000 years and covers a minimum of 2200m².

The town of Lincolnville, Maine has seen at least two centuries of physical and economic growth. In October, 1989, one of the many new homes being built along the coast was to be constructed on the shore of Ducktrap Harbor, Lincolnville. Though more than 45m back from the present shoreline, the construction site's potential to impact the previously recorded Lehmann Site was high.

After discussions with Dr. Bruce Bourque of the Maine State Museum, and Dr. Arthur Spiess of the Maine Historic Preservation Commission, an independent effort was developed by this author to salvage as much as possible prior to the commencement of the building effort.

With the gracious permission of the land owner, Mr. Heinz Lehmann, two grid locations were established within the impact area, i.e., the house foundation, and associated septic system (leach field). The salvage effort produced diagnostic artifacts, faunal remains, and unequivocal and probable pit features.

This report synthesizes the findings contained within two, more detailed manuscripts

that report the results of the excavations (Mitchell 1990, 1991).

REGIONAL GEOGRAPHY

The Lehmann site (40-3) is located along the shore of the West Penobscot Bay adjacent to the outlet of the Ducktrap River (Fig. 1). It is situated at the base of a series of mountains, Mt. Megunticook being the tallest at 1300 ft., that act to separate the immediate coastal plain from the interior. This chain of mountains stretches from Rockport to Northport, a distance of approximately 15 miles, and is crosscut by both the Megunticook and the Ducktrap Rivers.

Aside from acting to funnel all the water from the interior, these two river valleys allow convenient passage through the mountains and may have acted to channel regional human and animal movement to this narrow strip of coastal plain. The placement of site 40-3 at the outlet of one of these passes may explain, in part, the multicomponent character and broad spatial distribution of evidence at this location.

SITE DESCRIPTION

The area where the Lehmann house was to be constructed was an open field elevated 20-30m above, and 300m+ east of the Ducktrap River (Figure 1). The field edge is characterized by mixed second growth consisting primarily of maple, oak, and some softwood. The field faces south/southeast and maintains a shallow, 5% grade sloping gently to the site's eroding, ocean margin (Fig.2).

A small brook 5m east of the excavation area defines the eastern most limit of the field. Although classified as intermittent by the Maine State Department of Environmental Protection, it has maintained a small, consistent flow for as long as the author has been involved with the site (approximately three years). This brook represents the only currently available source of fresh water on the site. (The Ducktrap River is brackish for some distance upstream and has probably been so for a long period of prehistory.)

An additional area of shell midden can be seen eroding along the ocean margin on the eastern side of the stream, opposite from the present test area. However, no data pertaining to that area is available.

Excavation Strategy

The parameters for defining the excavation strategy were salvage and sampling. The two grid areas measure 11X21m and 9X15m, representing the foundation and septic grids respectively. The grids were laid out roughly end to end and separated by 11m (Figure 2) resulting in a nearly continuous sampling for a distance of 50m, parallel to and approximately 45m back from shore.

The grids were subdivided into 3x3m blocks with one 50x50cm unit being excavated in the southeast corner of each block (excavation units' designations are taken from the northwest corner of the 1X1m in which they are located). Within the foundation grid,

twenty-eight 50x50cm units were excavated within 22 contiguous 3x3m blocks, sampling an area totaling 198m². (An additional 3x3m block, with a 50x50cm excavation unit, was added east of the original foundation grid extending it to a maximum of 24m, see Figure 2).

Within the septic grid 33 50x50cm units were excavated within fifteen contiguous 3x3m blocks, sampling an area totaling 135m². A grand total of 15.25m² were excavated, with

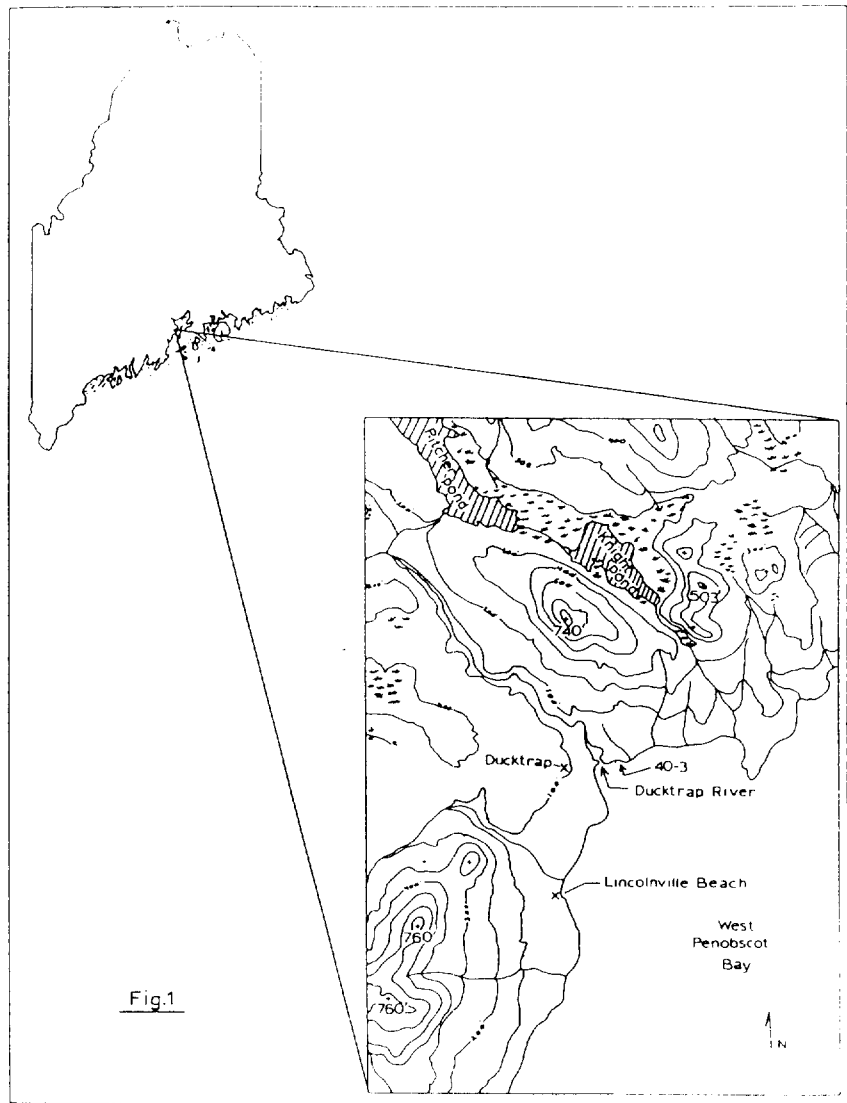


Figure 1. Location of site 40.3 along the coast of northwest Penobscot Bay, Maine.

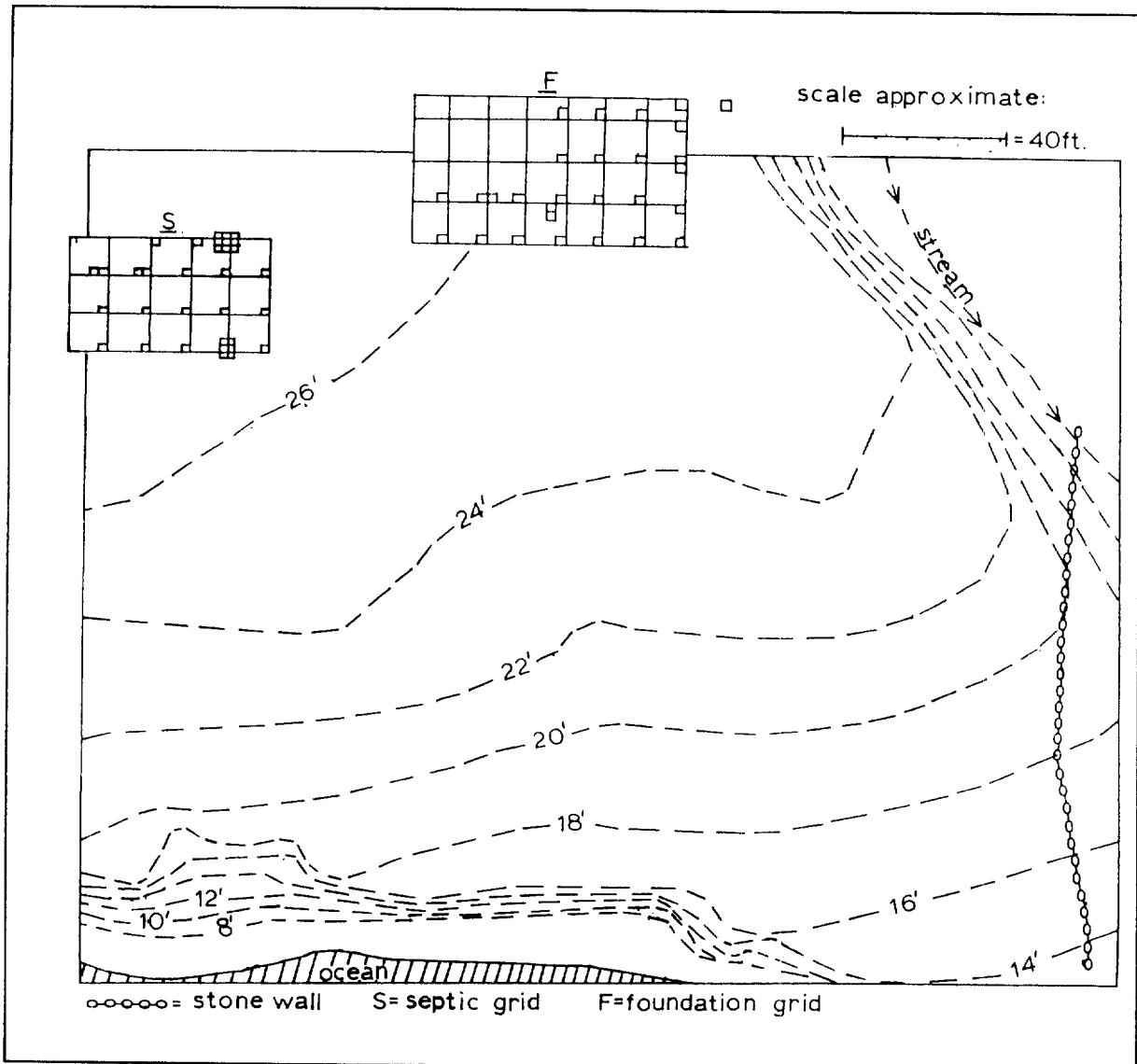


Figure 2. Excavation grids on site 40.3.

in a grided area of 333m².

The 50x50cm units were excavated in arbitrary 10cm levels, using a trowel, until natural matrix was encountered throughout one complete level. All soil was dry screened through 1/4" mesh hardware cloth, and all cultural materials were collected, provenienced, and bagged by level and unit. Charcoal and feature fill samples were taken.

During the excavation it was clear that the foundation portion of the impact area had

seen a great deal of occupation, based on the artifactual remains recovered and the number of features exposed. Unfortunately, however, the majority of temporally diagnostic artifacts were surface collected from back fill associated with the foundation's construction.

Subsequent to the completion of the foundation grid, it was decided to proceed with the same excavation strategy in the septic portion of the impact area. However, excavations in the septic grid were expanded to more

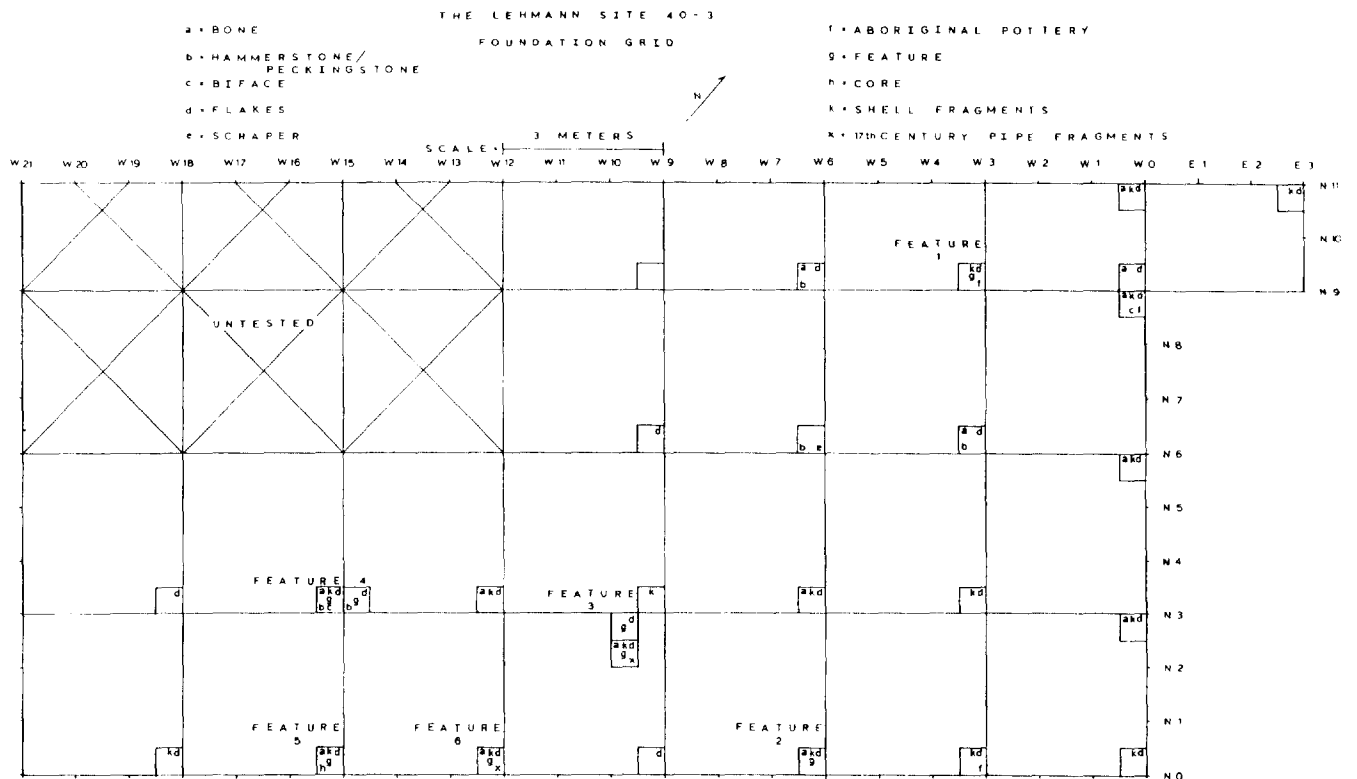


Figure 3. Location of artifacts and features in the Foundation Grid portion of the site.

fully expose several of the cultural features.

Features were numbered consecutively within each grid. To differentiate between features exposed in the foundation and septic grids, an "A" was added to the feature number from the septic grid. The septic grid was assigned southwest grid coordinates while the foundation grid was in the northwest quadrant.

Site Stratigraphy

Profiles from the excavation areas indicate three primary strata. The plow zone can be subdivided into two recent developmental layers. The uppermost level of the plow zone (approximately 0-15cm B.S., slightly less in the foundation grid) is a dark brown, sandy soil with little gravel and a dense root mat. The lower level (from 15-30cm B.S., slightly less in the foundation grid) is a dark, sandy soil with

a higher gravel content. The two plow zone sublevels are interpreted as representing a gradual "settling out" of gravel sized particles due to some form of bioturbation. It is believed the same process(s) has acted to sort cultural materials in the plow zone as well.

The second stratum is a well developed B horizon characterized by unconsolidated, mixed grained sands and gravels, varying in thickness from 30-40cm. It is generally bright yellow-brown.

Although a gray, Presumpscot clay-like matrix was encountered in several units in the foundation grid, the third layer is generally characterized by a homogeneous, gray, fine silty soil, with mixed sands and gravels.

Features

Fourteen features total were encountered in the foundation grid (6), and the septic grid

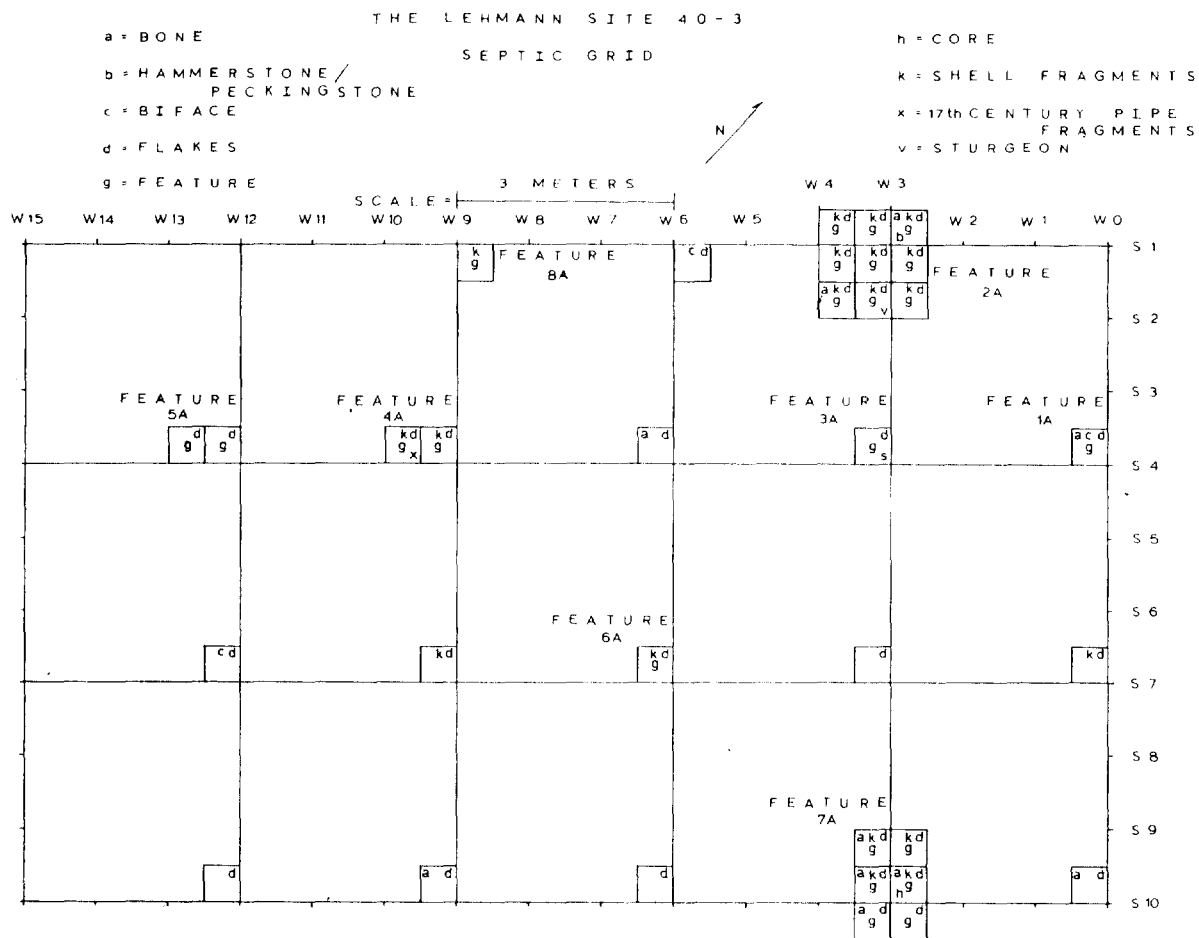


Figure 4. Location of features and artifacts in the Septic Grid portion of the site.

(8) (Figure 3, 4). Although most of the features were only partially exposed in 50x50cm test pits, the contrast in soil color, soil type, and the clear cultural content of several features that were more fully exposed leads the author to interpret the majority of features to be cultural pit features (Table 1).

Due to the non-depositional nature of the soil within the impact area, all cultural features are assumed to have originated at the ground surface. However, having no clearly defined profiles or matrices above the B horizon, cultural materials found there can not be associated with features. Having said that, the

analysis of debitage and fragmentary shell within the plow zone suggests a correlation may exist between horizontal patterns of distribution and several features (Figures 5, 6). In addition, like assemblages of debitage are found within several features. It must be stressed, however, that the nature of the cultural remains, the sample size, and the scope of the excavation all serve to inhibit absolute statements about contemporaneity between features, or contemporaneity between features and cultural materials; there are no charcoal dates available at this time.

The most confidently attributed examples

of cultural features are Features 1, 2A and 7A. Feature 1 contained in-situ, undecorated, grit tempered, aboriginal ceramics. Feature 2A contained a well formed, circular, rock hearth 1.2m in diameter, with considerable charcoal (Figure 7). Feature 7A contained possible red ochre or burned earth (in poor association), several pieces of calcined bone, debitage, a core, and a small amount of charcoal.

Whether or not the cultural attribution of all features is correct, the limited amount of testing revealed an unexpectedly high number of cultural features given the distance of the impact areas from the current shoreline.

ABORIGINAL ARTIFACTS

With the exception of two undecorated, aboriginal pottery sherds, all diagnostic and non-diagnostic artifacts from the impact area (Table 2) were recovered from the plow zone or the backdirt pile from the backhoe excavation of the house foundation. Two additional diagnostic bifaces were recovered during surface collection, one from the eroding face of the shell midden (Figure 8), and the other several hundred meters west of the impact area on the shore of the Ducktrap River.

Bifaces

At least two Late Archaic occupations are represented by four bifacial projectile points. The Moorehead Phase is represented by two complete bifaces; HL-57, recovered from N 9 W 1 in the Foundation grid, and HL-652, recovered from the backhoe's backdirt pile after foundation construction began (Figure 8, bottom row, 1st and 2nd from left respectively). Both have narrow blades, well-defined shoulders, and narrow stems extending downward from the neck. Both exhibit wear on the blade surfaces. HL- 57 is made of felsite, shows

Table 1. Attributes of features discovered at the Lehman site.

FEATURES														
FEATURE NUMBER	1	2	3	4	5	6	1A	2A	3A	4A	5A	6A	7A	8A
CONTENTS														
F.C.R.			X	X				X		X			X	X
FLAKES	X	X		X	X		X			X	X	X	X	
CHARCOAL	X	X	X	X			X	X		X	X	X	X	X
CALCINED BONE														X
CERAMIC (HIST.)					X									
CERAMIC (ABOR.)	X													
OCHRE (possible)														X
(INTERPRETED) FEATURE TYPE:														
PIT	X	?	?	X	X	X	X	X		X	X	?	X	X
HEARTH								X						
POST MOLD									X					
DEPTH														
Fea. 1	Fea. 2	Fea. 3	Fea. 4	Fea. 5	Fea. 6									
55cm	40cm	55cm	70cm	40	60									
Fea. 1A	Fea. 2A	Fea. 3A	Fea. 4A	Fea. 5A										
65cm	70cm	90cm	40cm	45CM										
Fea. 6A	Fea. 7A	Fea. 8A												
50cm	60cm	40cm												

significant amounts of retouch along the length of the blade edges, and is lightly coated with a red ochre-like stain. The form of the stem and blade proportions are similar to "stemmed biface form 1", found at Eddington Bend, specifically artifact #300 and #1012 (Peterson and Sanger 1987:99, Figure 29). Of these, #300 is associated with Feature 18 at Eddington Bend, and dated to 3940±100 years B.P. (Peterson and Sanger 1987:26). HL-652 is made from a black, fine grained, volcanic. It shows retouch only along the distal portion

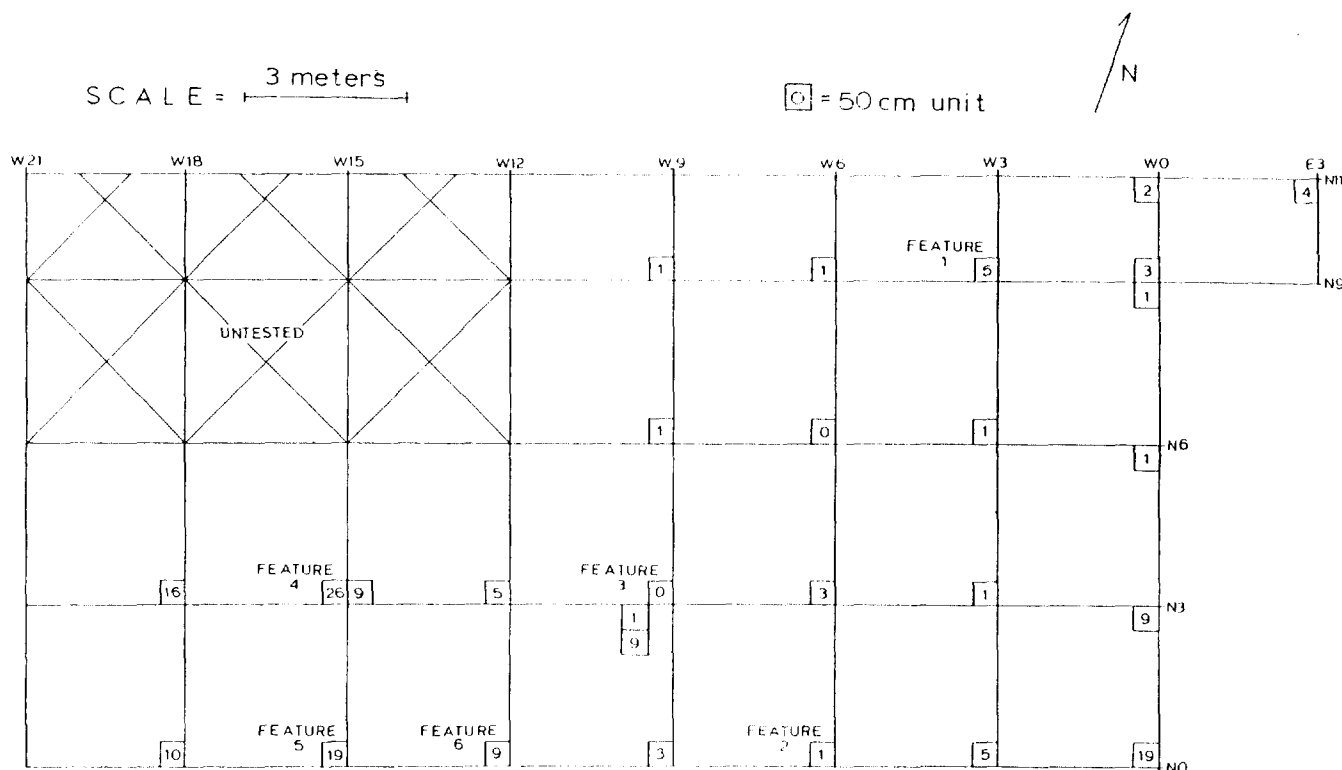


Figure 5. Number of flakes per unit recovered in the Foundation Grid portion of the site.

of the blade edges, and the tip.

The Susquehanna tradition is represented by two felsite bifaces. Both have well-thinned, broad blades that terminate in well-defined shoulders; they differ, however, in their stem morphology. HL-570 contracts directly from the shoulders to the base, while HL-651 narrows immediately below the shoulders to form a broad, contracting stem (Figure 8, bottom row, 1st and 2nd from right respectively).

Both HL-570 and HL-651 are similar to specimens from Occupation 3, in the Turner Farm Site (Snow 1980:243,247, Figures 6.5 and 6.7 respectively); Occupation 3 has dates averaging 3600 B.P. (Borque 1975:2). In addition, HL-651 is similar to specimens from the Young site's Group 5, Feature 3 (Borstel 1982:23, Plate 5, 26, 58). The average carbon date from Young site Feature 3 is approximately 3465 B.P. HL-570 was recovered from the backhoe's backdirt pile in the foundation

grid while HL-651 was recovered during a walk over of the banks of the Ducktrap River.

The Ceramic Period is represented by two partial, bifacial, projectile points. HL-653 (Figure 8, middle row, far right) was recovered from the eroding face of the shell midden. It is made from a purple-brown chert like material. The blade form is triangular, though the tip is broken, with well defined shoulders and side notches. The base is straight, bifacially thinned, and shows no evidence of grinding (Figure 8, center row, far right).

HL-985 (not shown) is the basal portion of a felsite projectile point or preform recovered from W 13 S 6 (the septic grid). The base is bifacially thinned and rectangular with no shoulders, stem, or notching present. No grinding is evident. A small amount of wear is present along the edges and on the blade surfaces. HL-985 is stylistically similar to specimens recovered from the Goddard Site

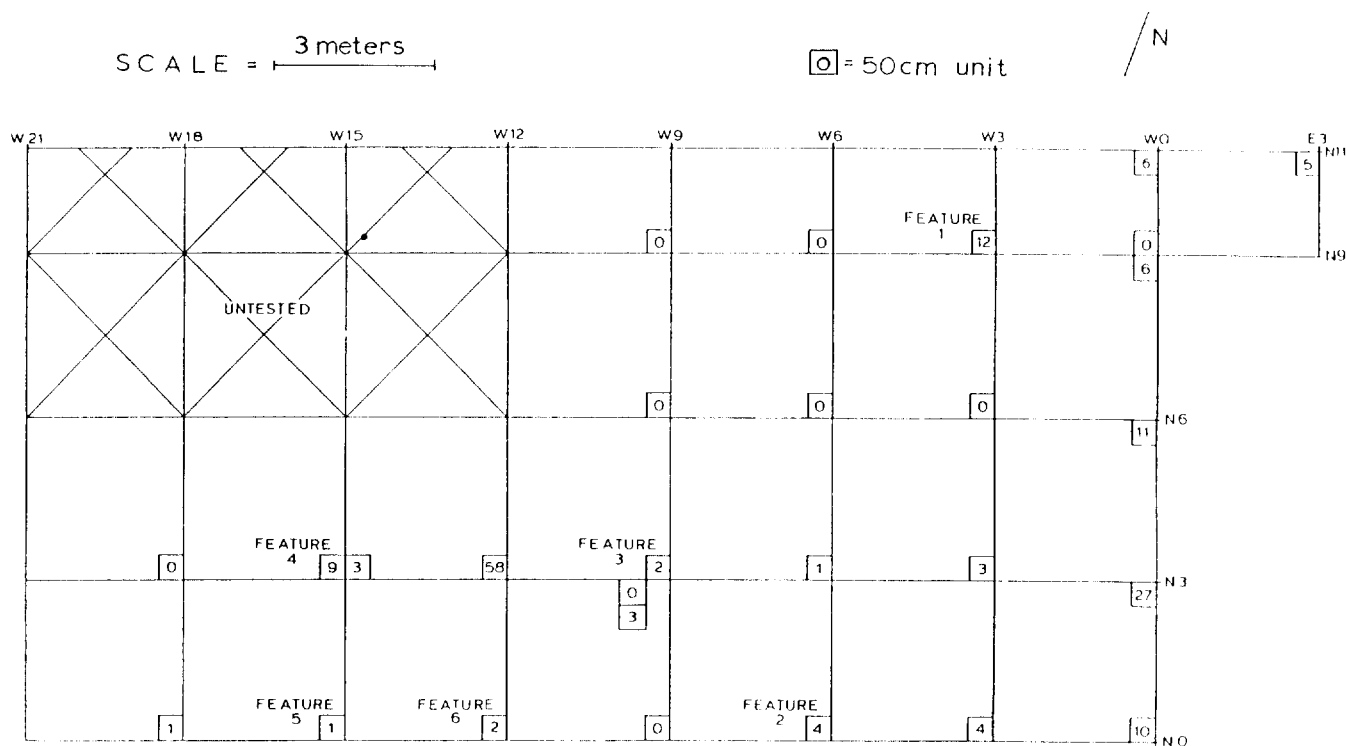


Figure 6. Number of shell fragments per unit recovered in the Foundation Grid portion of the site.

(Bourque and Cox, 1979: Plate II: i, j, k) and associated with the Late Ceramic Period (Bourque 1979:14).

Unifaces

One uniface was recovered during excavation efforts, and eight additional specimens were recovered along the eroding face of the shell midden (Figure 8, top row; center row, 1st and 2nd from left). Specimen HL-100, recovered from unit N 7 W 7 in the foundation grid (not shown), is made of felsite. It is small (2.4cm long), narrow (1.6cm across the unifacial bit), and roughly tear dropped shaped. The contracting stem is slightly bifacial and lightly notched.

All other specimens (Figure 8, top row; middle row, 1st and 2nd from left) are small, measuring no more than 2.5cm across the bit, and 3.5cm in maximum axial length. The materials represented include jasperoid (HL-270, 271, 272,268), felsite (HL-269, 276), and a

black, fine grained volcanic (HL-273, 274). These "thumb scrapers" most probably represent the Ceramic Period.

Celt

One celt, HL-837, was recovered from the plow zone, at 30cm B.S., in unit W 4 S 3 (the septic grid). Although adjacent to Feature 3A, it is not considered associated with the feature. It is broken, missing the bit end entirely, and measures 14.1cm long and 5.4cm wide. The maximum thickness is 3.1cm. The surface is pecked but shows no evidence of grinding. A slight hafting groove runs across one face of the poll end. The surface is spalled and eroded from weathering.

Hammerstones/Peckingstones

Four specimens were recovered that are

classified as hammerstones, and four were recovered that are classified as peckingstones. The morphological elements on hammerstones include pitting, crushing, and possibly traumatic flaking; while peckingstones generally exhibited only pitting along flaked arises. The hammerstones generally exceed 5cm in maximum, axial length, while the peckingstones are generally less than 5cm in maximum, axial length. These artifacts cannot be associated with any specific features or components within the site. They were either recovered from the plow zone or from the foundation backdirt after construction began.

Waterworn Cobbles

Five water worn, weathered cobbles that are atypical of the natural soil matrix, were recovered during the excavation. Generally they are small, approximately 10cm in maximum, axial length, and in some cases exhibit indistinct flake scars or battering marks.

Ceramics

Four aboriginal ceramic sherds were recovered from the foundation grid during excavation. All are undecorated and have quartz, grit



Figure 7. Feature 2A, a circular rock-filled hearth.

Table 2. Artifact counts recovered from the Foundation Grid, Septic Grid, and eroding midden face portions of the site.

	FOUNDATION GRID	SEPTIC GRID	MIDDEN FACE	TOTAL
Archaic bifaces	3	0	0	3
Ceramic bifaces	0	1	1	2
Biface fragments	1	2	1	4
(Total bifaces)	(4)	(3)	(2)	(9)
Unifaces	1	0	7	8
Celts	0	1	0	1
Cores	1	1	0	2
Ceramic sherds	4	0	29	33

temper. Two pieces, HL-81 and HL-84, are associated with Feature 1 in unit N 10 W 4. The two remaining pieces, HL-67 and HL-58, were recovered from the plow zone of units N 1 W 4 and N 9 W 1. No aboriginal ceramics were recovered from the septic grid.

Surface collection from the "front" of the site provides a much broader picture of the Ceramic Period occupation. The recovered sherds' surface treatments include cord wrapped stick impressed (n=6), dentate impressed (n=3), and rocker dentate impressed (n=1). Both quartz and shell temper are used in the cord wrapped stick impressed sherds, while dentate impressed sherds have granitic, grit temper. There are twenty-three additional (undecorated) sherds representing both shell temper (n=14) and grit temper (n=9).

There are three rim sherds in the collection. The first has grit temper and an everted, partial, rounded lip. The second has grit temper, an everted square lip, and dentate punctations on the flattened top of the lip. The exterior rim surface is treated with diagonal, dentate impressions as well as possible horizontal, dragged, dentate impressions. The third rim has shell temper, a partial, everted lip, and cord wrapped stick impressions.

Debitage

Debitage is the largest sample of cultural material recovered; the total for both grids is 394 flakes. Flakes were present in 58 of the 61 units excavated (95%). The horizontal distribution is likely in part the result of plowing.

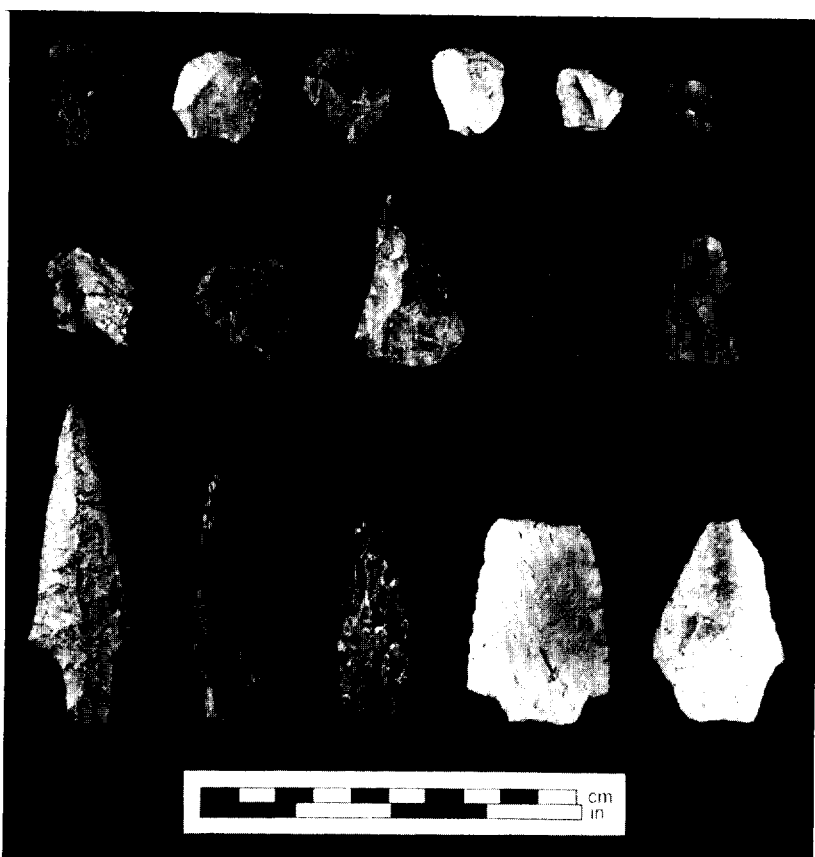


Figure 8. Uniface and biface artifacts recovered from the Lehman site.

The debitage is characterized by secondary thinning and pressure flaking associated with lithic tool reduction and retouch. Only 3% (n=12) of the flakes have exterior cortex present. The average maximum axial length is approximately 3cm. Flakes with a preserved bulb or platform average 2cm (n=229 or 58%).

Different materials are represented across the two grids (Table 3). However, it is not clear with which temporal or cultural components they are associated. Felsite is ubiquitous, being found in a number of features and in the majority of units. Other materials within the grids include a chert like, silicified quartzite (Type 1); a fine grained basalt; quartz; cherts; and a metamorphosed igneous material composed of silica and feldspar (Type 2).

Historic Artifacts

No documentary record of previous historic period occupation has been found. However, a general scatter of historic artifacts indicates some form of land use at two different periods of time; the late 18th—early 19th centuries, and the mid to late 17th century.

Ceramics

The majority of historic period ceramics are small, glazed sherds (1 to 2cm long) from the late 18th or early 19th century. The sample includes glazed red earthenwares, pearlwares, creamwares, hard whites, hard yellows, and a Jackfield-like ware. Types of surface decoration vary from none, to blue/green/orange polychrome, to blue transfer printing.

While these sherds are indicative of historic land use, there are few contemporary artifact classes in the sample. This lack of additional artifact types, plus the paucity of more substantive pieces of pottery suggests a secondary refuse context, possibly as a result of past agricultural practices.

Pipes

Four clay pipe fragments are represented in the sample recovered during excavation. Two pieces are stem fragments with bore diameters of approximately 8/64ths (Figures 3, 4). A third is a partial bowl/stem identified as a funnel angle, export pipe from the period 1650-1675 A.D. (Figures 3, 4). This date corresponds well with the 8/64ths bore diameter of the two stem fragments.

Examples of the same pipe style have been recovered directly across the bay at the Fort Pentagoet site, in Castine. There they represent the Pentagoet III period of occupation (Faulkner and Faulkner 1987:63) which could easily have been the source of the pipe. At this time there is not enough data to make the determination of whether the fragments represent a

Table 3. Debitage material counts recovered from the Septic Grid and Foundation Grid.

FLAKE MATERIAL TYPE	SEPTIC GRID		FOUNDATION	
	Count	%	Count	%
Felsite	172	76	135	81
Quartzite	41	18	0	0
Metamorphosed igneous	2	0.8	0	0
Fine grained basalt	0	0	16	9
Quartz	7	3	9	5
Chert	1	0.4	7	4
Other	4	2	0	0
TOTAL	227	99	157	99

Contact Period aboriginal or European component at the site.

The fourth fragment is of a bowl with vertical rows of eight pointed stars in relief on the exterior surface. This motif conforms with the later historic period evidence of the late 18th—early 19th centuries (Dr. Alaric Faulkner: personal communication).

Iron, Glass, and Coal

All iron products are temporally associated with the late 18th—early 19th century period ceramics. Hand forged and machine cut nails were recovered. No modern wire nails were recovered. Other iron products included 1/2 an oxen shoe, the female portion of a spike hinge, and a short length of iron strap. Only a few chips of modern glass were recovered. No glassware from the 18th or 19th century is present.

Coal is the only other modern, historic inclusion thus far recovered from the site. Its

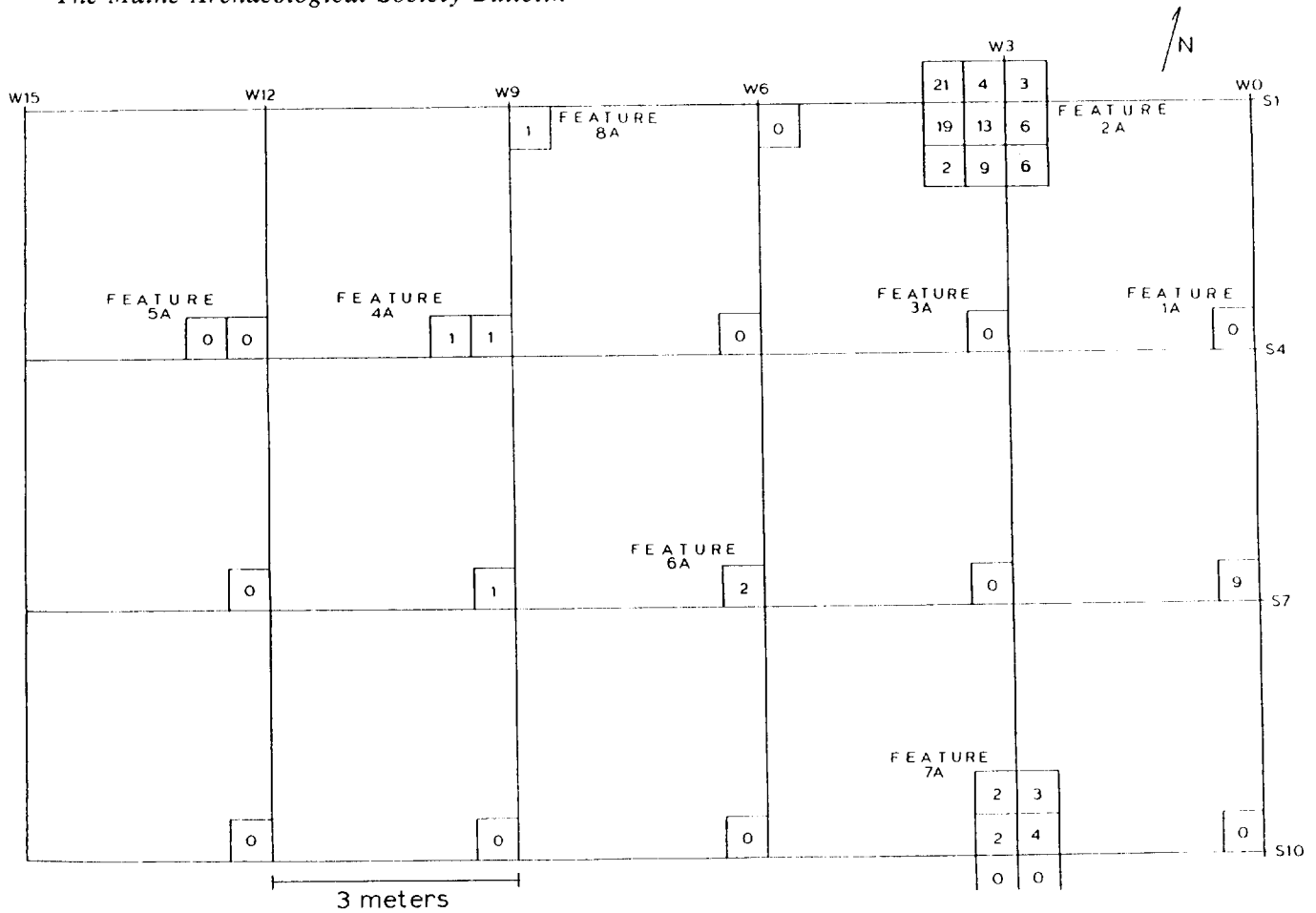


Figure 9. Number of shell fragments per unit in the Septic Grid portion of the site.

presence, and location within the site, is not understood.

FAUNAL REMAINS

Shell dominates the faunal sample within the impact area. Approximately 270 shell fragments were recovered 162 from the foundation grid and 108 from the septic grid. In only one instance was identification possible as a hinge fragment of *Mya arenaria* (from the septic grid).

Though there is little intra-site evidence, the author believes the fragmentary shell may reflect, in part, episodes of aboriginal, cultural activity. This hypothesis is supported by the accidental observation of a "pocket" of shell

at 30cm B.S. in the wall of the foundation hole during construction. A sample was taken and identified as *Mya arenaria*.

With regard to the distribution of shell fragments at 40-3, it is clear from mapping efforts that areas of higher and lower concentrations of shell fragments appear to exist within the grided areas (Figures 6, 9). It is possible that some association exists between shell fragment "concentrations" and features.

There are forty-two pieces of bone in the sample. Forty-one of the pieces are mammal, of which six are unburned and probably associated with the historic period component of the site. Fish is represented by a single fragment of calcined sturgeon scute (Figure 4).

Only three bone fragments are from below the plow zone (Feature 7A); the majority of the calcined sample cannot be associated with either the aboriginal or historic period components.

CONCLUSION

Evidence of five occupations occurs at the Lehmann Site including two Late Archaic period occupations, the Ceramic Period, the Contact Period, and the Historic Period (the late 18th or 19th century).

The number of unequivocal and probable cultural features, as well as the number and variety of lithic and ceramic remains, evidence a great deal of activity within the impact area. The recovery of calcined sturgeon remains may indicate a focus toward utilization of anadromous resources (possibly from the Ducktrap River), while the recovery of *Mya arenaria* clearly points toward utilization of marine resources.

Although the sample of diagnostic artifacts is small, when taken as a whole it illustrates broad temporal and spacial utilization of the site. However, within the impact area, diagnostic Late Archaic materials were recovered only in the grided area adjacent to the stream, while Ceramic period artifacts were recovered from both the grided areas. In addition, there is a complete absence of Archaic materials in the sample recovered from the face of the eroding shell midden. The Ceramic period clearly dominates along the eroding ocean margin. Clearly, more intensive efforts are needed at the Lehmann site.

EDITOR'S NOTE

Site 40.3 represents an unfortunate flaw in laws that might protect archaeological sites in Maine. In 1988 Bruce Bourque was given an MHPC grant for the following summer to work, in part, at site 40.3. The following spring, by mutual agreement of the grantor and grantee, the money was transferred to the Cobbosseecontee Dam site project, where it was urgently needed.

In October of 1989 Harbour Mitchell brought to our attention the imminent construction of a house on the property and proceeded to salvage archaeological data with the owner's permission. MHPC subsequently learned of a 3-lot subdivision proposal for the property, less than 20 acres in size. Approval of subdivisions of this number of lots and of size less than 20 acres are not subject to Maine Department of Environmental Protection review, but are subject to town Planning Board review only. Initial construction of the first house on this particular property, apparently, was not subject to shoreland zoning review because it was set back more than 75 feet from the shore. In April and May 1990 Bourque and Spiess commented independently on the significance of site 40.3 to the Lincolnville Planning Board and Code Enforcement Officer. Subsequently, Spiess appeared personally before the Planning Board to explain MHPC's comments. The Lincolnville Planning Board again considered the matter in a meeting of March 13, 1991. The Planning Board declined to impose restrictions on Lot 2, with its existing house and road. However, they voted that any sale of Lots 1 and 3, or any construction on Lots 1 and 3, must be preceded by appropriate archaeological work. Lot 3 is located along Route 1 a minimum of 350 feet back from the shore, and probably does not contain prehistoric archaeological material. Lot 2 does extend to the shore along the western portion of the property, and probably does contain a portion of site 40.3.

Throughout the process Mr. Lehmann has been most cooperative with Harbour Mitchell's attempts to salvage archeological data from damage by the initial house construction. In hindsight it seems a rare misfortune that 1) initial professional archaeological survey work on the site was postponed because of too many pressing needs for too few dollars, 2) and construction on a house subsequently started outside the shoreland zone but on a rare coastal archaeological site that extends more than 75 feet back from the water.

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Excavations at Cobbosseecontee Dam South

Bruce J. Bourque

INTRODUCTION

During the course of a survey of the Cobbosseecontee drainage in 1975, the Museum learned of an important archaeological locus, now including sites 37.5 and 37.6 on the banks of Cobbosseecontee stream in Manchester, which was actively being vandalized by artifact collectors. That year and again in 1976, using students from Bates College as crew, we undertook a series of test excavations at the two sites. The promising results of that work led to our successful application to the Historic Preservation Commission for substantial additional survey funds for work at the site. Complications arising from then Governor Longley's fiscal policy, and from confusion over land ownership in the area, caused us to abandon efforts to continue research there.

During the spring of 1988, we learned that ownership of property including site 37.5 on the south side of the stream had been clarified. It was to be sold to Outlet Park Associates, Inc. for the development of single family residences. We thereupon decided to resume research at site 37.5 in hopes of salvaging areas of the site destined for construction and in hopes of developing a plan in cooperation with the new owners to minimize long term damage to other areas of the site.

David Flanagan, representing the Associates, worked with me to determine which portions of the property were likely to be disturbed by the first phase of construction. In June, 1988, the Museum applied for and received a grant of \$3,118 from the M.H.P.C. to conduct further tests at the site, including the areas slated for construction. At that time MHPC also accepted and approved a grant

proposal for \$3,500 for tests of sites along the northwestern shore of Penobscot Bay.

Excavations began at site 37.5 in late April, 1989 and continued through June. Initially, our 1975 grid was reestablished and extended to cover the area where we planned excavations. Eventually, we also extended our spatial control to include a series of shovel tests designed to approximate the site limits along the inland margin of the site. The productivity of this work in the area slated for house construction (the upper knoll, Figure 1) caused us to request that the MHPC funds granted for Upper Penobscot Bay research be transferred to the Cobbosseecontee project. That request was granted in May, 1989. Fieldwork at site 37.5 continued throughout the month of June. Additional excavations were undertaken on the low knoll in May, 1990. In both cases, Bates College students constituted most of the crew.

SITE TESTING

Previous testing and interviews with amateur collectors had confirmed the presence of cultural remains along the low, level areas adjacent to the stream bank from the bridge to the dam, and from the dam to the base of the rapids that flow into a still stretch of the stream below it. From the bridge to the dam, such areas are tightly constrained by a steep slope, and are now submerged except during periods of low water. Testpits were excavated over an extensive area, primarily on higher ground above these known occupation areas, to estimate the inland margin of occupation. These test pits revealed a very extensive distribution of flaking debris, and other artifacts.

Our strategy for defining the site limits was to expand outward from the lower, level areas close to the stream, excavating test pits on non-steeply sloped areas until one encountered no cultural remains. Using this criterion, approximate "limits" for upper knoll and lower knoll areas are suggested on Figure 1.

It is important here to stress the extremely diffuse nature of the margins of the extensive, upland portion of the site. It seems doubtful that a clear limit for any of its numerous prehistoric occupations can be established without very extensive excavation. However, our work on the Flanagan house site on the upper knoll, described below, suggests

that no other major clusters of prehistoric occupation debris will be found in this peripheral area.

EXCAVATIONS

Our 1989 excavations focused upon two areas of Site 37.5 (Figure 1). One is the low knoll on a point of land on the south side of the stream below the dam. This is the area in which our 1976 excavations had been located. While promising, in 1976 they had produced too few data to confidently assess its range of prehistoric occupation, or the nature of the deposits. The second area of concentrated excavation was atop a high ridge downstream (southward) from the first (the upper or high

knoll). This spot was designated by David Flanagan as the future location of a new house. Further excavation during 1990 focused exclusively upon the low knoll.

Excavations on the Low Knoll

A total of 15½ 2 m² sections have been opened in various areas of the knoll. They were arrayed to generate an approximately random sample of this core area of the site, but also to avoid trees, large boulders and areas known to have been vandalized during the early 1970's.

All sections encountered a thin O soil zone that could be troweled off. Beneath it was found an A soil horizon of Paxton-Charlton

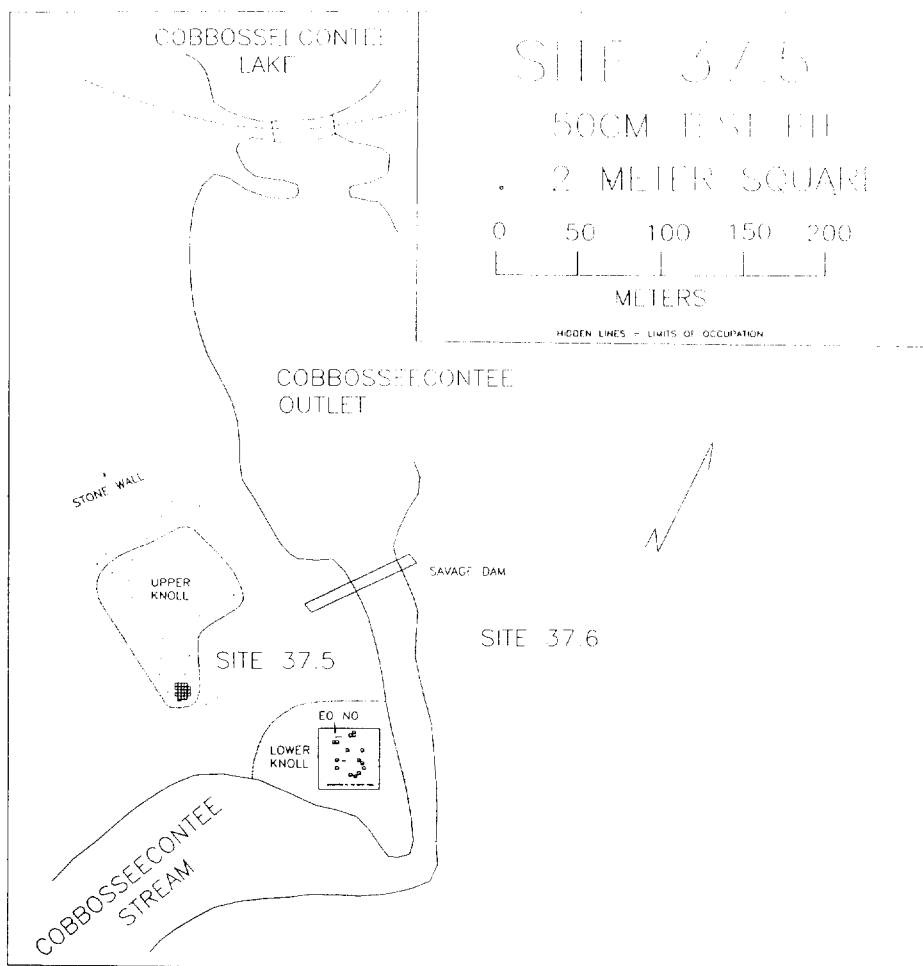


Figure 1. Map of site 37.5, indicating the upper knoll and lower knoll area, and area excavated.



Figure 2. Bifurcate-base stemmed biface from the low knoll, section E10N10.

very stony fine sandy loams (Faust and La Flamme 1978: map 58). It ranged in thickness from c. 25 to 50 cm. Beneath the A lay a B soil horizon of uneven thickness. The unevenness was caused by features extending downward from the A horizon, and a variety of other apparent disturbances of unknown nature, probably including tree throws and rodent burrows. A tan to greenish tan C horizon underlay the B horizon throughout the excavation area. Artifacts were found fairly uniformly throughout the O, A, and B horizons. Detailed stratigraphic analysis has not been undertaken because field observations indicated no stratigraphic differences among artifacts of different ages.

Artifact styles indicate that the lower knoll has been occupied periodically from Early Archaic times (c. 9,000-7,500 B.P.). Evi-

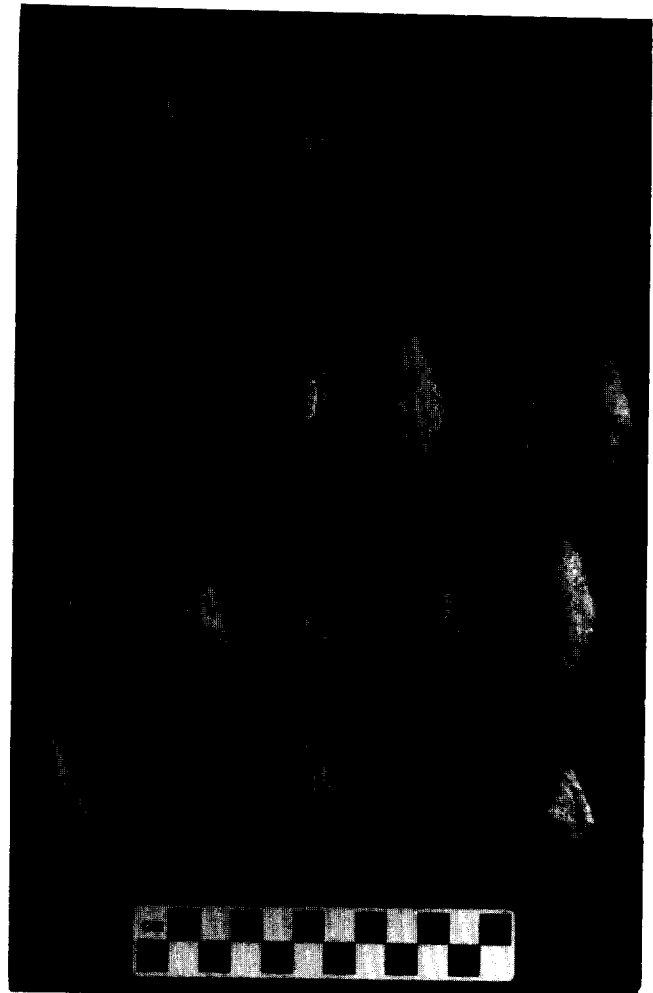


Figure 3. Upper row: Probable early ceramic period stemmed bifaces. Middle two rows: Probable late Archaic stemmed bifaces. Lower row: Probable middle Archaic stemmed bifaces. All artifacts from low knoll.

dence for Early Archaic occupation consists solely of a large bifurcate base point of fine grained siliceous material from section E10N0, near the top of the knoll (Figure 2). Evidence for later Archaic occupation is more common. At least five stemmed bifaces (Figure 3, bottom row) resemble those from Middle Archaic (c. 7,500-6,000 B.P.) contexts elsewhere on Cobbosseecontee Lake (mainly at the Lund site, 37.11). They are made from fine grained, siliceous rocks, some of which resemble rhyolite found at Orcutt Harbor. (Orcutt Harbor rhyolites are dark gray to black Siluro-Devonian

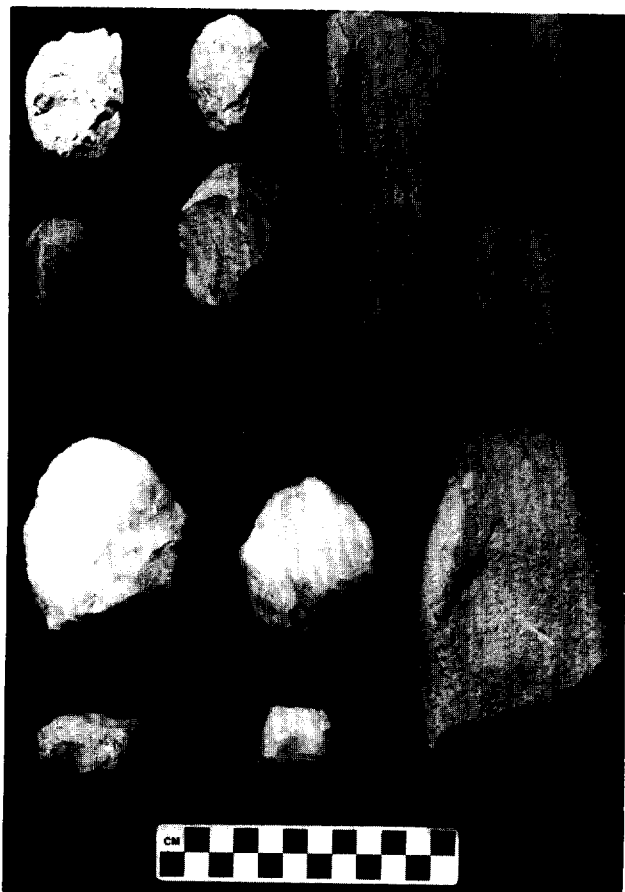


Figure 4. Upper left four: pecking stones. Center: Ground phylite (?) pigment stone. Lower left four: Quartz scrapers (?). Right four: Pecked and ground stone gouge fragments. All artifacts from low knoll.

age rhyolites of the Castine Formation which outcrop around Orcutt Harbor in southern Brooksville, Hancock County [Doyle 1992].) Three fully grooved gouges (Figure 4, upper right), four stone rods (probably whetstones for the gouges; Figure 5), and four thick quartz scrapers(?) (Figure 4, lower left; Figure 6, lower right) probably also date to the Middle Archaic period. A fourth gouge fragment (Figure 4, lower right), found in vandal's backdirt near our southernmost excavation on the low knoll, may also have been fully grooved. Another indicator of Middle Archaic



Figure 5. Probable whetstones, an ulu, and a flaked triangular point from the low knoll.

occupation is a fragmentary ground slate ulu (Figure 5, lower left).

Evidence of Late Archaic occupation includes five narrow stemmed bifaces (four of quartz) resembling those from dated Late Archaic components in southern Maine (Figure 3, second row up). Most are made of Kineo rhyolite and Orcutt Harbor-like rhyolite. A small Susquehanna tradition presence is attested by one preform of Vinalhaven banded spherulitic rhyolite, two broad, stemmed bifaces and six drill fragments. One of the stemmed bifaces, made of Kineo rhyolite, along with a smooth, flat pebble (Figure 7, lower center and left) and two tiny fragments of probable native copper were found in a deep pit (Feature 1-1989) in section E0S4, near the top of the knoll. A charcoal sample from



Figure 6. Upper three rows: undiagnostic flaked bifaces. Lower two rows: probable ceramic period uniface scrapers. All artifacts from low knoll.

this feature produced radiocarbon dates of $3,455 \pm 145$ (GX-14953) and $3,389 \pm 77$ (GX-14953-AMS). (See Figures 8a and 8b.)

Ceramic period occupation is attested by lithic artifacts and a large volume of ceramic sherds representing at least sixty vessels (26 kilograms, or .4 kilograms per m^2). Pottery styles range from Vinette I-like ware to probably very late thin ware with a cord malleated exterior (Figures 9 to 11). The sample includes at least two vessels with no decoration. The great majority of the decorated portion of the ceramic sample is stamped (dentate-stamped, plain rocker-stamped and dentate rocker-stamped), and of middle Ceramic period age.

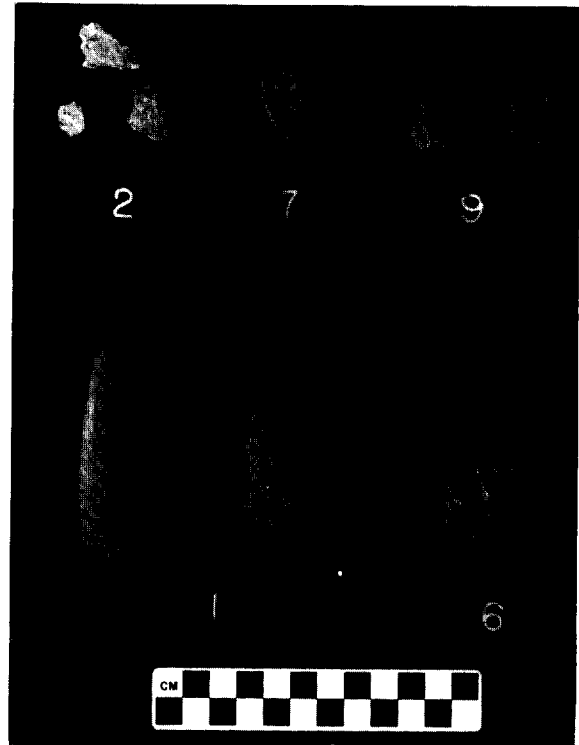


Figure 7. Artifacts from features numbered as indicated.

Flaked stone artifacts attributable to the Ceramic period include one triangular point (Figure 5, lower right), ten stemmed forms (Figure 12, top two rows) and eighteen uniface scrapers (Figure 6, bottom two rows). The triangular point is probably terminal prehistoric in age. The stemmed forms probably range in age from about 2,500 B.P. to less than 1,000 B.P. Nine of the scrapers are of an exotic, fine grained chert. One of probable Onondaga chert is notched (Figure 6, bottom row, fifth from the left). Another was apparently hafted in a socket using a mastic which has survived in carbonized form (Figure 13).

Excavations on the High Knoll

Excavations on the high knoll (Figures 1 and 14) encompassed $58 m^2$, most of the area indicated by David Flanagan as the probable footprint of a house planned for the site. Some disturbance had already occurred as the result of land clearance and soil testing, and

our excavations were sited to avoid such disturbance.

Occupation of this area ranged from perhaps as early as the Middle Archaic period to the late Ceramic period. Artifacts possibly pertaining to the Middle Archaic include three fragments of a well made rod-shaped whetstone (Figure 15, bottom) and a stemmed biface (Figure 15, top left). Other stemmed bifaces (Figure 15) resemble those of both the late Archaic Small Stemmed Point tradition and Moorehead phase, although some of these may also pertain to the early and middle Ceramic periods. A single plano-convex adze bit probably pertains to the Archaic period.

The flaked lithic sample was dominated by broad stemmed bifaces pertaining to the Susquehanna tradition (Figure 16). Nine probable drill fragments (Figure 17, bottom two rows) also probably pertain to the Susquehanna tradition. Raw materials are predominantly Kineo rhyolite and Orcutt Harbor-like rhyolite. Two of several small pit features produced

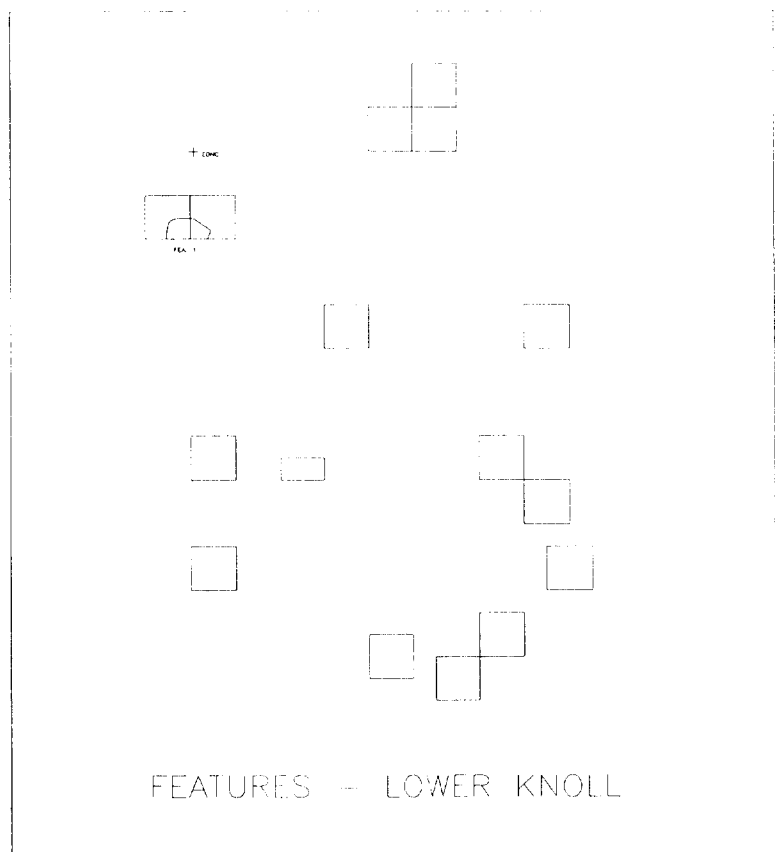


Figure 8a. Feature 1 location on the lower knoll.

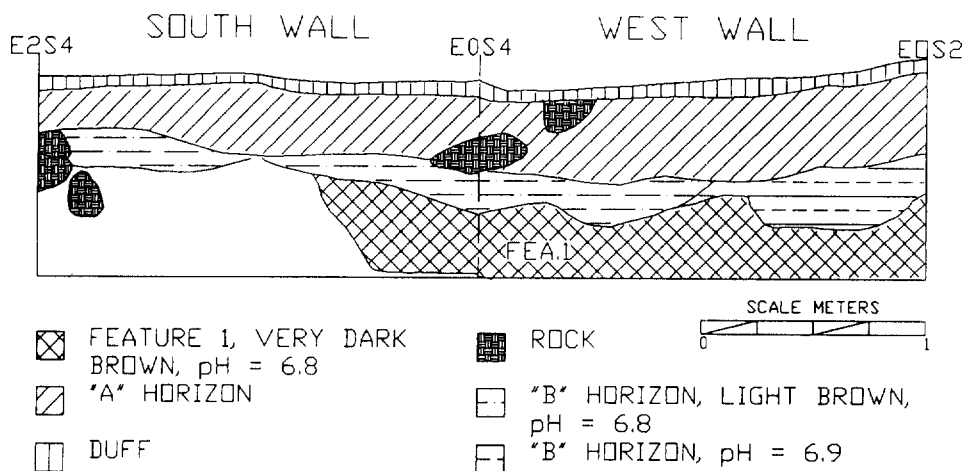


Figure 8b. Feature 1 profile, drawn from fieldnotes.

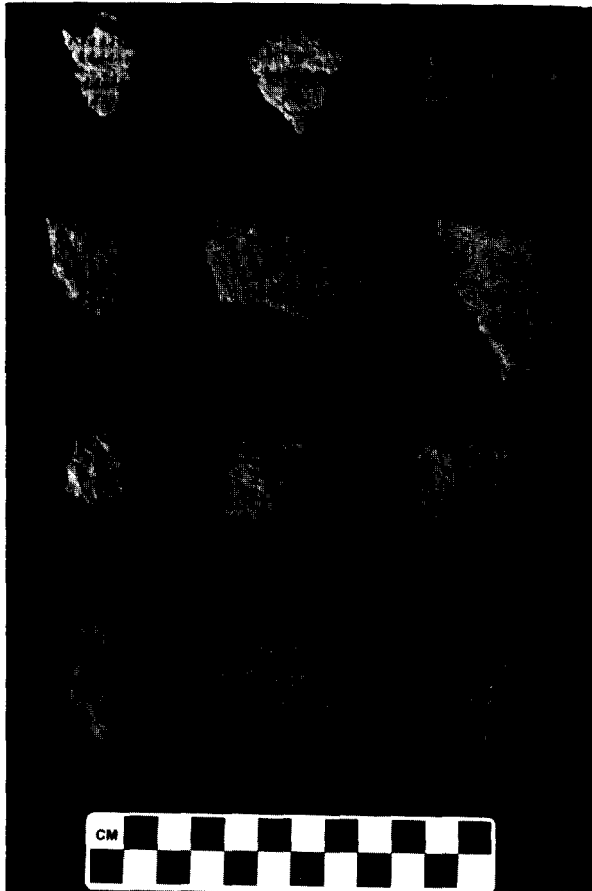


Figure 9. Cord impressed and plain sherds from low knoll. Bottom three rows are rim sherds.

Susquehanna bifaces. One of these (Feature 6-1989) was radiocarbon dated to 3535 ± 230 (GX 14954) and 3449 ± 72 (GX-14954-AMS). (See Figure 18.)

Ceramic period remains from the high knoll consisted primarily of pottery sherds, from at least eleven vessels (3 kilos or .05 kilos per m^2 ; Figure 19). Decorated sherds were predominantly rocker-stamped (at least 9 vessels) although cord-wrapped-stick decorated ceramic sherds (at least one vessel) were also present (Figure 19, middle row right).

Lithics of Ceramic period age from the high knoll are limited to five uniface scrapers of exotic grey chert similar Normanskill chert

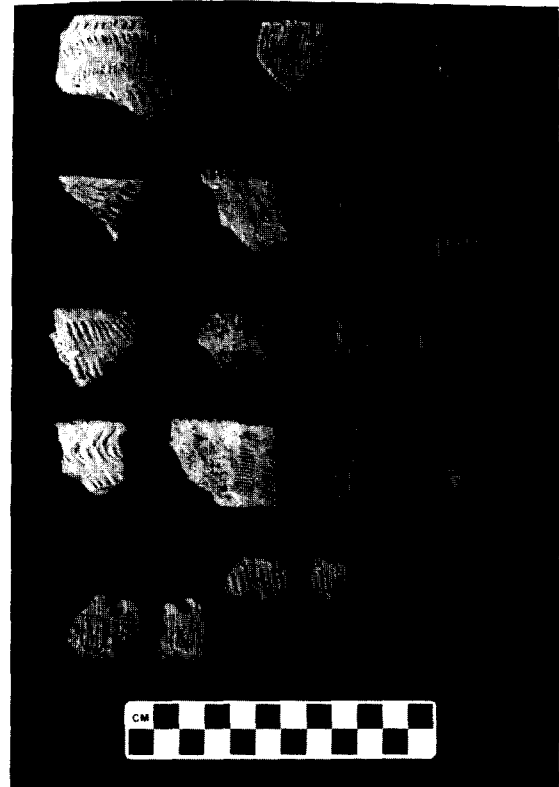


Figure 10. Stamped rim sherds from the low knoll.

from New York (Figure 17, third row up). One stemmed point may also pertain to the ceramic period (Figure 15, top left).

No work was undertaken on the high knoll in 1990. However, a visit to this area showed that the original plans for terrain alteration had changed somewhat. The actual house site remained as indicated by Mr. Flanagan. However, the planned route of the access road had shifted from north-south to east-west. Unfortunately, this change disturbed some of the area along the ridge top where our 1989 tests had shown clear signs of prehistoric occupation.

DISCUSSION

The artifact sample from site #37.5 spans about 8,000 years. Moreover, when considered in association with site #37.6 across the stream, it appears that nearly all identifiable

Figure 11. Stamped rimn sherds from low knoll. Note the mending hole on the lower left specimen.

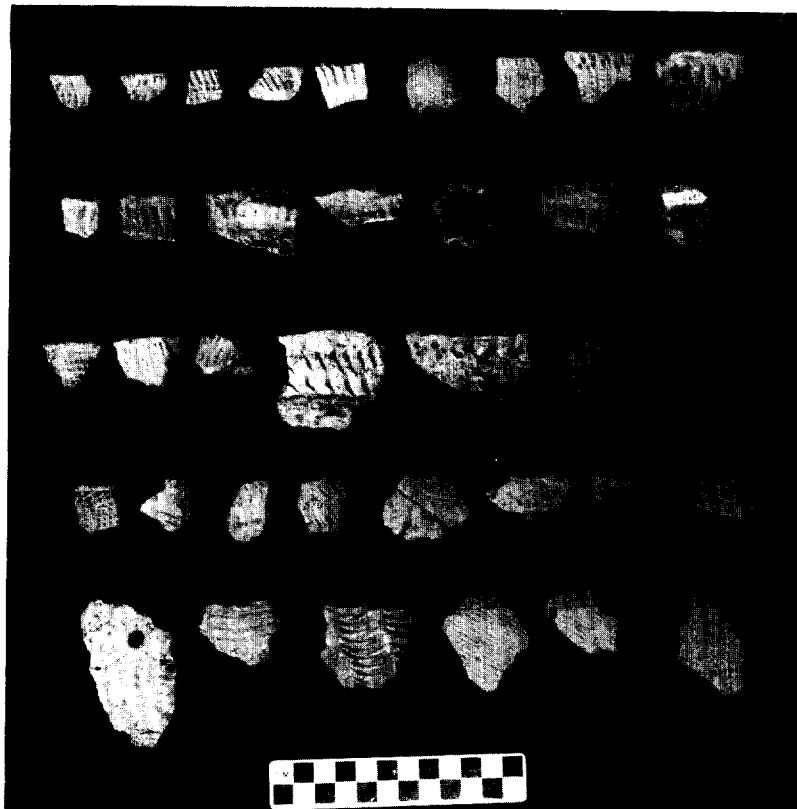


Figure 13. Scraper showing mastic residue, from low knoll.



cultural groups within that time span occupied the area, probably on a seasonal basis. However, these occupations appear to have been of variable size and also to have used differing areas of these two sites. Thus Susquehanna tradition occupation focussed upon the high knoll of 37.5, while Vergennes phase occupation seems to have occurred only at site 37.6. The heavy concentration of ceramics on the lower knoll at 37.5 indicates that this was a frequent focus of occupation throughout the Ceramic period. Unfortunately, this tendency for components to be differentially located is not sufficiently marked to allow the specific attribution of nondiagnostic cultural remains, including most bone refuse and features. Neither are non-diagnostic cultural remains separable stratigraphically. Indeed, soil turbation appears to have been extensive enough to obliterate the upper portions of discrete features.

The discovery of copper fragments in Feature 1 on the low knoll is interesting. Previously, the only association of copper with the Susquehanna tradition came from the Turner Farm site, where 12 copper beads were found in a secondary cremation deposit (Bourque 1991: 70).

Faunal remains from site 37.5 include calcined fragments from white-tailed deer, bear, beaver, river otter and turtle in addition to small fish bones and sturgeon scutes (Tables 1 and 2). Unfortunately, of these only a few fragments of beaver bone can be attributed to specific occupations. Nevertheless, the location of this site (and 37.6) strongly implies that the taking of anadromous and catadromous fish was the primary reason for prehistoric occupation. While neither the available artifact or bone samples provide unambiguous support for such an interpretation, analysis of midden samples for mercury and phosphate concentrations might provide a more direct support for this hypothesis.

In view of the likelihood that fishing was an important criterion for all Archaic components at sites 37.5 and 37.6, it is surprising that no plummets have been recovered. The function of these ubiquitous objects remains unclear. Most frequently, they are interpreted

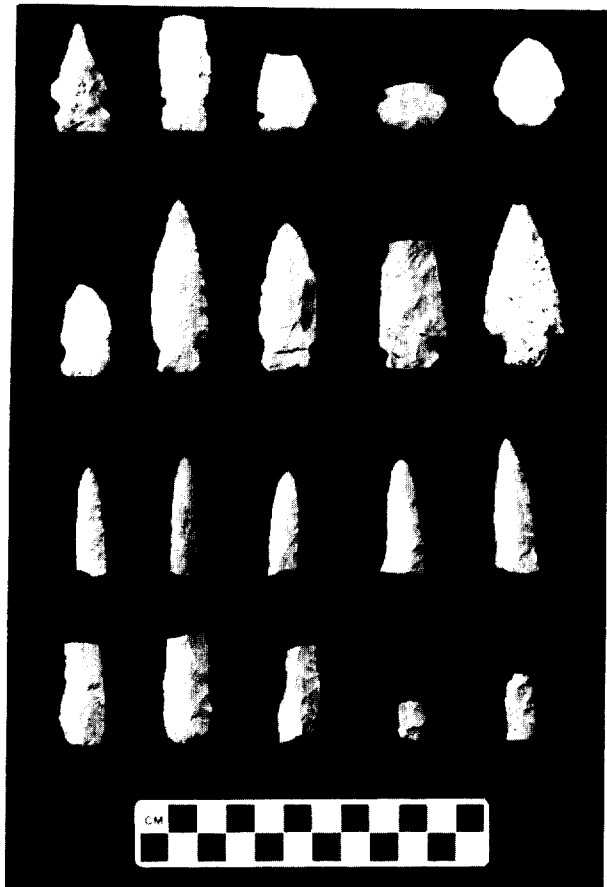


Figure 12. Upper two rows: probable Ceramic period stemmed bifaces. Lower two rows: probable Susquehanna tradition drill bits. All artifacts from low knoll.

as fishing gear, probably net weights. Plummets have been found at several sites in the Cobbosseecontee area, including at the nearby Middle Archaic Lund site, and would thus be expected at sites 37.5, and 37.6. Perhaps their absence is explained by the use of spears or traps instead of nets in the shallow portions of the stream adjacent to sites 37.5 and 37.6.

While our research at site 37.5 was very rewarding in some ways, no further excavations are planned at the lower portion of the site in the near future, for two reasons. First, the presence of a permanent residence of the owner, who is sympathetic to archaeological concerns, will strongly discourage vandalism

in the remaining areas of high sensitivity over the next several years. Secondly, from a research perspective, the artifact sample now in hand allows a fairly accurate characterization of the lower knoll's periods of occupation, and the nature of the artifact samples from those periods. Furthermore, it is also clear that the distributions of culturally diagnostic remains from the site's many occupations are not sufficiently discrete, either vertically or horizontally, to easily clarify their associations with most of the less diagnostic artifacts, bone refuse, flake concentrations, hearth scatters, and other features. Another limitation of the site is the extent to which bioturbation has reworked the top 30 cm or so of the site, destroying most evidence of shallow features and structures such as houses. Finally, with few exceptions, features there have not been highly productive of charcoal samples which might provide an independent means of establishing their date or cultural origins.

The low knoll portion of the site remains highly important as one of very few in southern Maine which includes probably undisturbed Early and Middle Archaic deposits. Furthermore, its early Ceramic period evidence is unusual at a more local level.

The high knoll and other upland areas of the site contain intact deposits of probable Middle Archaic to late Ceramic period age. But aside from the concentration found on the Flanagan house site, these deposits are diffuse and would require extensive excavation to recover. On the other hand, pit discreteness and density may be higher on the upper knoll portion of the site.

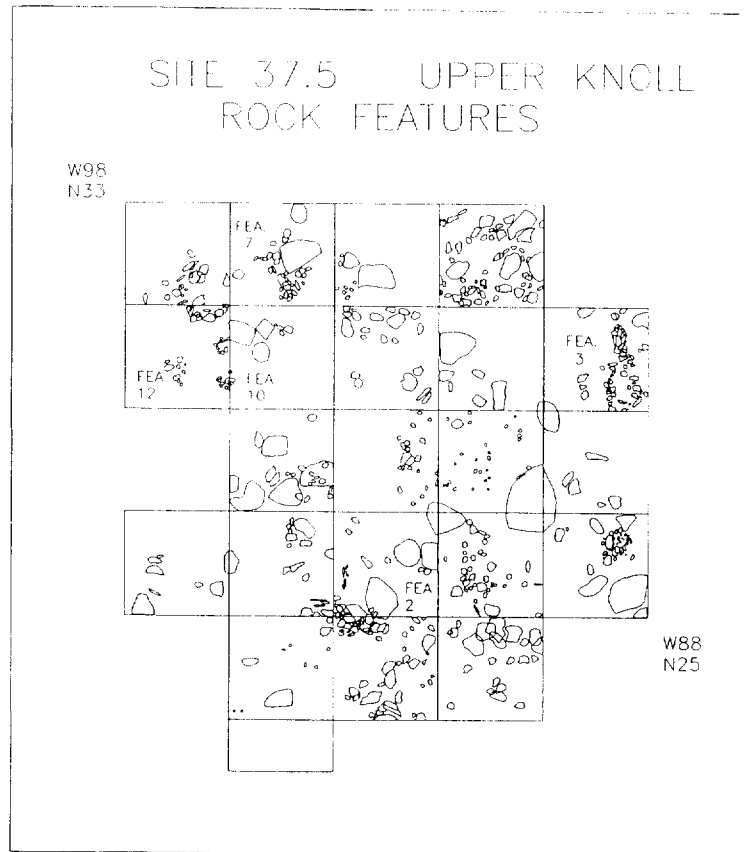


Figure 14. Upper knoll features.

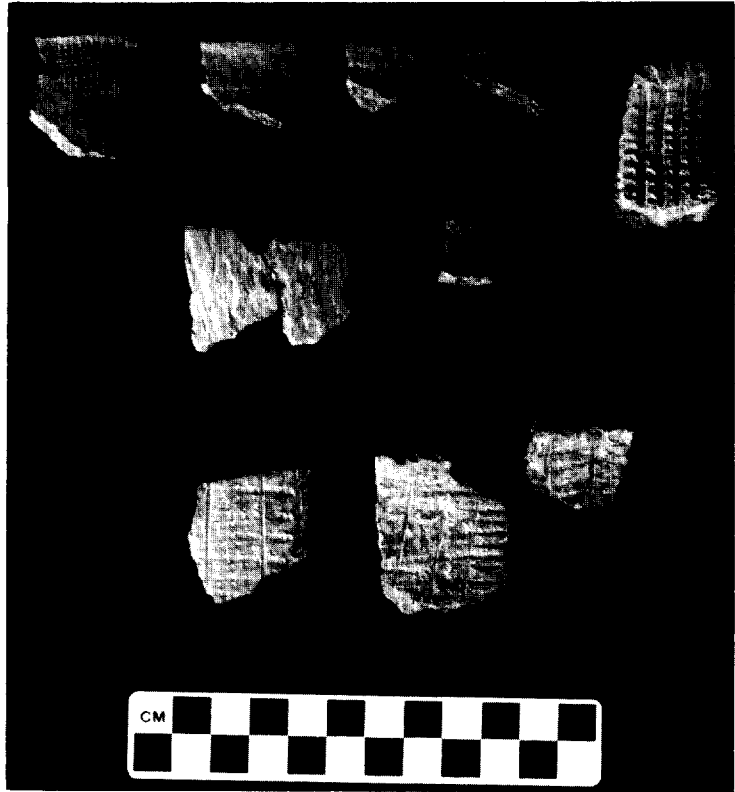
Table 1. Faunal remains from Feature 1 on the Lower Knoll. The feature is ascribed to the Susquehanna Tradition.

Taxon	Element
Beaver	Ulna, proximal left
Bear	Phalange, 2nd proximal
Mammal	41 fragments
Painted Turtle	Carapace, Marginal scute
River Otter	Radius, diaphysis
	Femur, distal

Table 2. Faunal remains from Features on the Upper Knoll, with cultural affiliation. Culture is unassigned where left blank.

Feature	Taxon	Element	Culture
1	Mammal	2 Fragments	
2	Mammal	2 Fragments	Ceramic
5	Mammal	2 Fragments	
6	Mammal	4 Fragments	Susquehanna
	Beaver	Sacrum frag	
7	Mammal	43 Fragments	Ceramic
	Beaver	Metacarpal 3, left fused Femur, head unfused	
9	Mammal	12 Fragments	Ceramic
	Beaver	Caudal vertebra, disc unfused	
13	Mammal	5 Fragments	
	Beaver	Metatarsal 1, proximal right fused	
14	Mammal	66 Fragments	
	Beaver	Scapula, distal right Tibia, diaphysis, left	
	Sturgeon	2 scute fragments	
19	Mammal	2 Fragments	

Figure 19. Pottery sherds from the high knoll. Note the mending hole on the specimen in the middle row left.



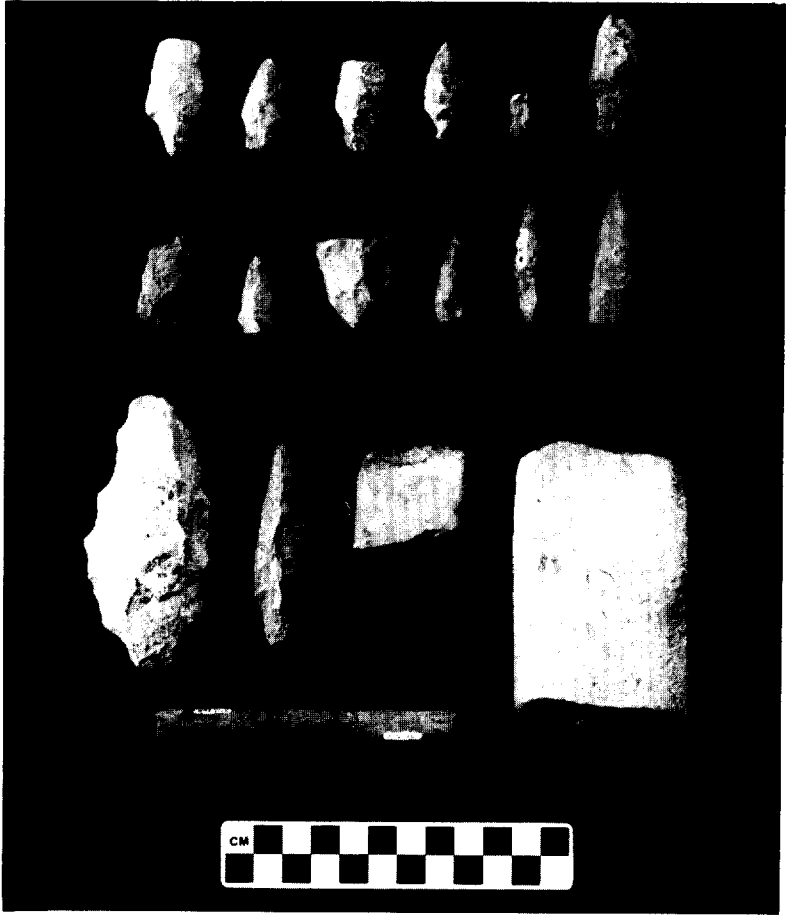


Figure 15. Flaked and ground stone artifacts from the high knoll.

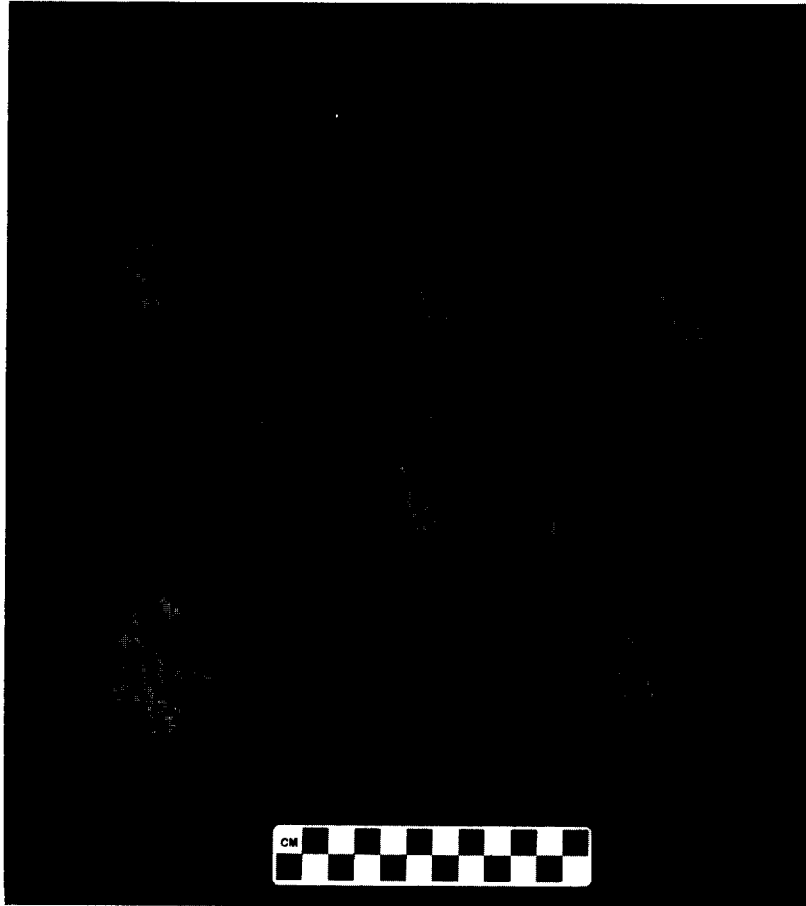


Figure 16. Susquehanna tradition stemmed bifaces from the high knoll.

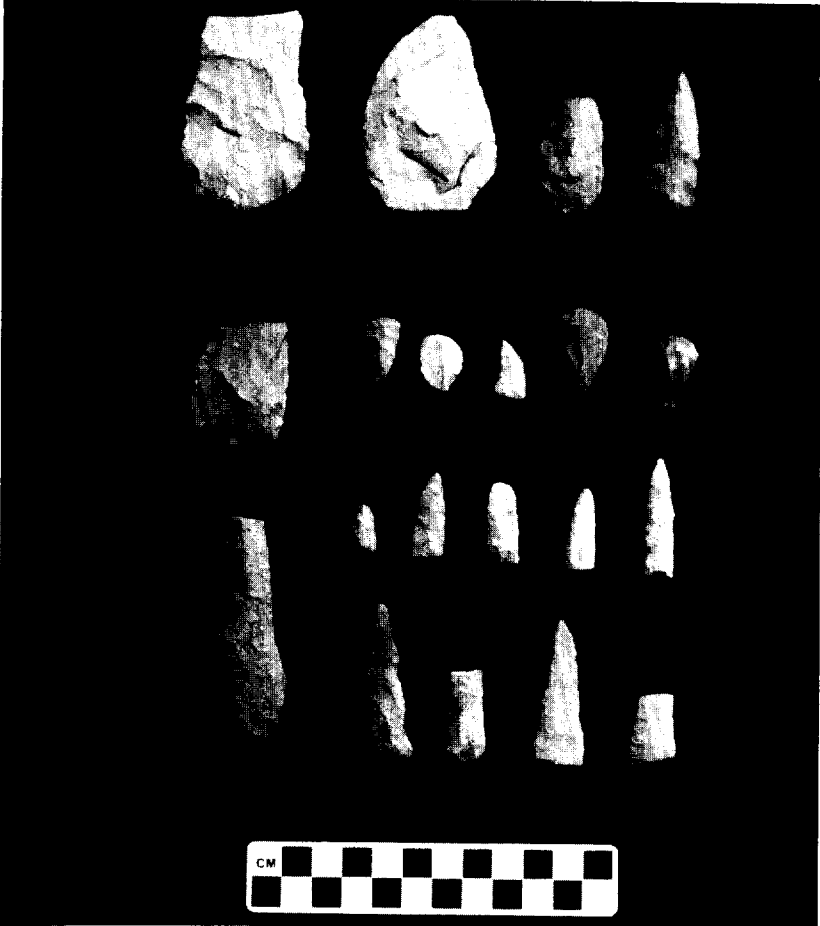


Figure 17. flaked stone artifacts from the high knoll.

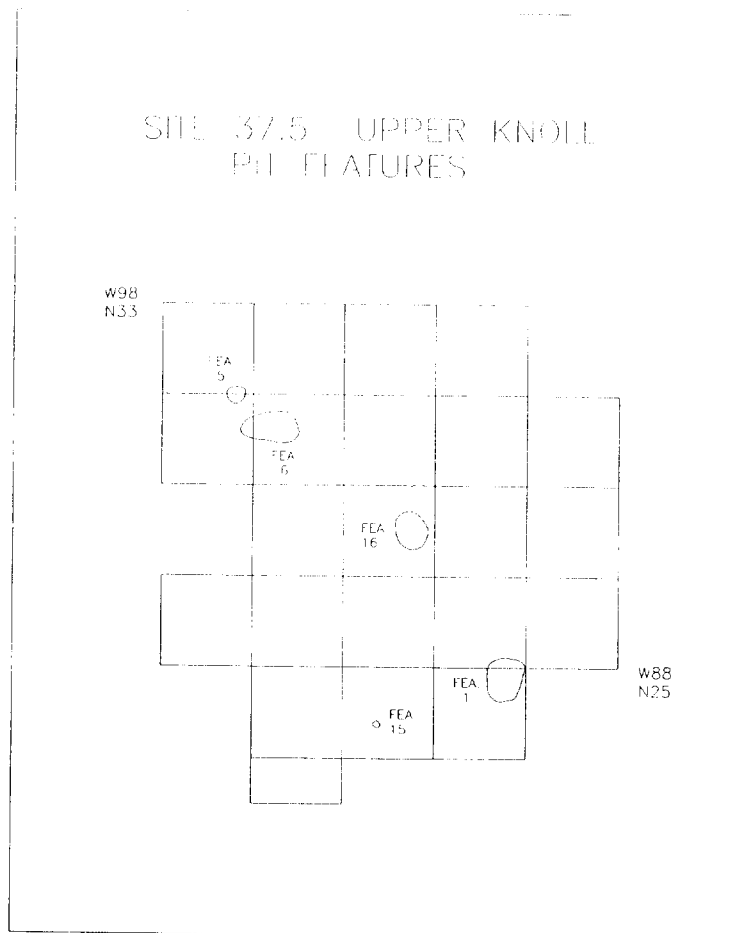


Figure 18. Location of pit features on the upper knoll.

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A Hell Gap Point and Late Paleoindian in Maine

Arthur Spiess

Editor's Note

The article contains the detailed description of a Hell Gap point found in Maine, followed by a summary of what is currently known about Late Paleoindian in the State. The latter section is based upon a "Context", or summary management document formerly called a "Study Unit", developed by the author for use in making decisions about archaeological site significance. This portion of the article is analogous to the summary for fluted point Paleoindian (Wilson and Spiess 1990) recently published in the Bulletin (30:1:15-32), and continues our practice of publishing these summaries for use and comment by our membership.

THE HELL GAP POINT

Point Provenance

This specimen was discovered about 1980 by school children playing in their backyard in the vicinity of Sidney, Maine. The township of Sidney lies along the west side of the Kennebec River between Augusta and Waterville, approximately 80 km upriver from the ocean. One of the finders subsequently (about 1990) donated the point to his teacher at Carabec High School, Eric Lahti, years after he had moved to a new residence. The finder of the artifact could not remember the exact location of the discovery. Therefore, this piece does not come from a confirmed prehistoric archaeological site. However, neither the finder nor his family were particularly interested in prehistory, nor did they have any other prehistoric material in their possession. We believe that the point was found on/in the surface of the ground somewhere around Sidney, Maine. Whether it was dropped there 10,000 years ago, or by a third party within the past century or so, is an open question.

Point Type, Weight and Material

This point is so distinctive in shape, skill in manufacture, and edge attributes that its extreme close resemblance to the Hell Gap point of the northern high plains is remarkable. It is, in fact, virtually identical to heavily resharpened (and often basally broken) Hell Gap points such as those from the Casper site in eastern Wyoming (eg. Frison 1974: Figures 1.35c, 1.36b&c, 1.37c, 1.38a&b, etc.). The Casper site Hell Gap component has been dated by two radiocarbon dates averaging 10,014 B.P. (Frison 1974).

The point weighs 19.7 grams. Its length is 63.2 mm, greatest width is 35.0 mm, and greatest thickness is 7.3 mm. The material is a deep crimson (red) silicified sandstone of Munsell color 5R3/4 "dusky red" (Rock Color Chart, 1984, Geological Society of America). In some terminological schemes this material might be called orthoquartzite. Orthoquartzite is a silica-cemented sedimentary rock; and this point is composed of cemented even grained (well sorted) very fine sand size particles. There are a few fragments of lighter or darker minerals in the sand, but they are of similar size to the sand grains. The vast majority of the sand particles are between 88 and 125 microns (3.5-3.0 phi size range), but a few are larger (to 200 microns) and many are smaller (50 to 88 microns) as observed microscopically under transmitted and reflected white light. The vast majority of the sand particles appear to be clear, orange, or rose-colored quartz sand. The majority of the crimson color is derived from the color of the silica cementing the sand particles together, which perhaps has a high iron oxide content.

The nearest analogous material that the author has seen in collections from Maine is

a yellow-brown to dark brown even-grained quartzite which is often a minority material in Ceramic Period collections, particularly among endscrapers. From my limited experience looking at Maritimes Provinces archaeological collections, this brown quartzite material is much more common in collections from eastern New Brunswick and Nova Scotia than in Maine. I do not know the bedrock origin of the brown quartzite, nor of the red quartzite made into the point reported herein, although we are assuming that they are geologically related based upon their visual similarity.

This quartzite is not nearly as useful for use wear analysis as are finer-grained cherts. Moreover, the entire artifact is covered with a light waxy sheen, and all arrises (ridges between flake removals) seem to be lightly rounded, as if the artifact has been exposed to modest abrasion. There is no chance to detect microscopic use wear of the polish or scratch variety on this point. Only flake and microflake morphology are observable.

Point Edge Form and Use History

The point is biconvex or lenticular in cross section, but there is a clear dorsal and ventral side. One side is almost flat, which is by definition the ventral side. The other side exhibits greater convexity. We surmise that the difference in convexity between the two sides originated because the point was made on a large flake-based biface preform, and that the ventral side of the original flake remained flatter than the dorsal side throughout the manufacture process.

The base of the point has been snapped off. In dorsal view the left base exhibits a rounded corner which is formed partially by a break and partially by retouch. It is possible that this retouch scar was intentional, beginning in toward the original point base, but it was probably a minor indentation in the edge from thinning flake removal. The right basal corner also curves medially, but the curvature is entirely due to fracture. There is an apparent modern flake removal (slight surface color difference) of a small flake from the ventral side of the right lower corner. The dorsal side of the right lower corner is the initiation for

a minor break facet which extends 12mm across the base on the dorsal side. Most of the base of the specimen as preserved is a single, complete break facet at nearly 90° to the horizontal plane of the artifact (as well as nearly 90° to the long axis). This large break surface is patinated similarly to the rest of the point. It occurs at roughly the same place as do many similar breaks on Hell Gap points from the Casper site, so we consider it to be an ancient break. There is, therefore, no way of knowing how long the stem of the point was originally.

The most prominent interruptions in the outline of the point occur at the tip, the shoulders below the tip and the basal corners, of course. In addition, there is one subtle break in the generally straight outline of each side of the point. Looking from the dorsal side, the one on the left is a more marked change in edge retouch, almost a small "shoulder". This break in outline occurs 19.0 mm distal to the broken basal corner, and 23.2 mm proximal to the shoulder of the point at maximum width. The break in outline on the right side is more subtle. It occurs 20.05 mm distal to the broken basal corner and 21 mm proximal to the shoulder at maximum width. As we shall discuss below, I believe the similarity of these four measurements is significant.

Distal to the basal corners, there are three types of treatment on the edge of the point. Type A (as we shall call it here for convenience sake only) extends from the basal corners distally to the shoulders at greatest width: both sides of both edges show relatively regular retouch flakes with modal size of 1.5 mm width and 2 mm length (perpendicular to the edge). A few are much larger. All are scalar flakes. The resulting edge is sinuous when viewed edge-on, with about a 0.5 mm "wavelength". The edge, however, has been further dulled or blunted and rounded by light abrasion (although nonetheless heavier than the abrasion on the Type B distal edge).

Between the shoulders at maximum width and about 6 mm short of the tip on each side is a combination of edge treatment we are calling Type B, for clarity of discussion. Type B edge treatment includes occasional scalar flake removal, but not as regularly as along

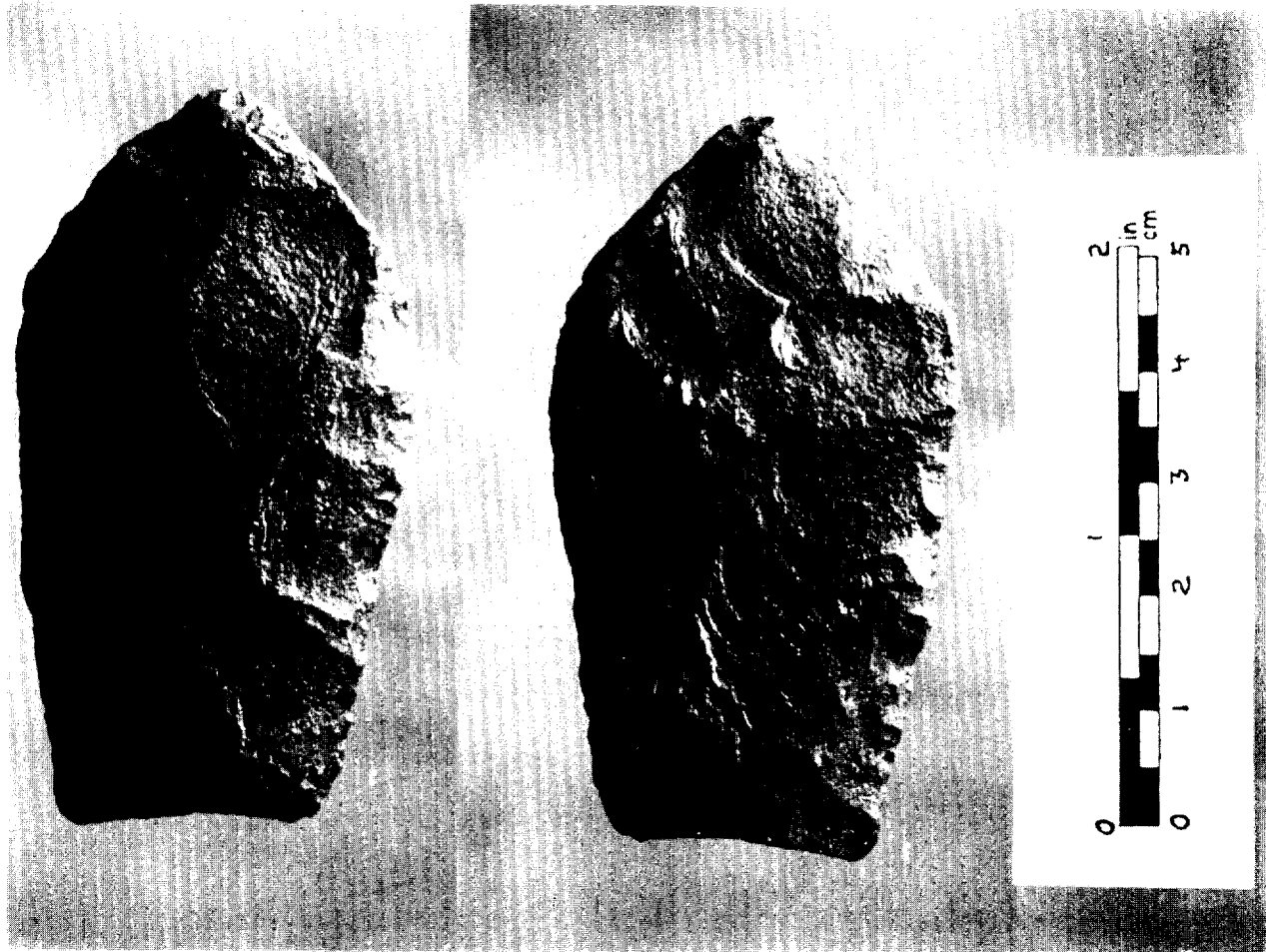


Figure 1. The Hell Gap point for Sidney, Maine. Dorsal view at left, ventral view at right.

the Type A edge. Moreover, the edge is sharper to the feel, and has not been dulled or abraded as much as the (lightly) abraded Type A edge.

The tip of the point, explicitly a portion within 6 mm on either side of the rounded distal tip (Type C edge) is blunted by light grinding. Moreover, the tip is offset (looking edge-on) to the ventral side. Looking from either the dorsal or ventral side, one can see that the tip is slightly offset from the general continuity of the Type B edge also, as a slight protrusion. The area within 6 mm of the tip

had not received the sharpening retouch applied to the Type B edge.

Many of the Hell Gap points from the Casper site have long distal tips beyond the point of maximum width (shoulders). Those with shorter distal tips have undergone one or more episodes of resharping. The specimen described here from Maine had undergone one more episode of resharping, the last one of which was abandoned before resharping of the tip was concluded. (Probably the tip could not be resharping to a point and remain in the flat plane of the rest of the piece.) Subse-

quent to this abortive resharpening episode, the point was discarded. We now wish to return to consideration of the slight breaks in edge outline about 20 mm above the broken base and below the shoulders. Since the entire Type A edge was lightly ground up to the shoulders, we assume that on its last episode of hafting it was lashed up to the shoulders at maximum width. However, the small break in edge outline midway along the Type A edge may represent a spot that previously had been the distal point of lashing in a haft. We suspect that approximately 20 mm of the base broke off at some point during the life of the specimen (in the haft, or during resharpening?), and the point was reset 20 mm deeper into a pre-existing haft. An analogous situation of breakage and reshaping in a socket or haft of dimension that can be deduced from the stone tool is reported for Paleoindian flake shavers or limaces (Grimes and Grimes, 1985, *Archaeology of Eastern North America* 13:35-57).

This point, therefore, represents a specimen that was truly at the end of its useful life before discard. Assuming that this point was discarded about 10,000 years ago where it was found, what does it mean to find a point type common on the High Plains in Maine? We explore this and other questions in the Late Paleoindian context that follows.

LATE PALEOINDIAN CONTEXT INTRODUCTION

"Late Paleoindian" is a term applied across much of northern North America to assemblages containing point types considered to be successors to the fluted point. Late Paleoindian in Maine is defined by a series of point types and a parallel-oblique retouch flaking technique which may be present on some of these point types. Although these point types can possibly be dated between 10,200 and 9000 B.P., Late Paleoindian is not explicitly defined as a block of time.

On the High Plains the Paleoindian Period is characterized by lanceolate (some fluted) and stemmed point styles which date between roughly 11,500 B.P. (Clovis and Goshen) and 8000 B.P. (Frison 1991a: 23-79). The Early Plains Archaic is defined by the appearance

of side-notched points. In the East, too, the dichotomy between early lanceolate and stemmed points versus side-notched or corner-notched points (necessarily predating 8000 B.P.) defines Late Paleoindian versus Early Archaic. The notches were at one time implicitly taken by archaeologists to indicate a new concept of hafting the point to its spear, and by extension a different style of hunting, economy, lifestyle, etc. While this basic assumption is questioned today, the terminological division between Paleoindian and Archaic continues in common use.

Recognition of a Late Paleoindian culture stage as distinct from fluted-point (early) Paleoindian seems to be a product of eastern archaeologists recognizing parallels with the Plains Paleoindian sequence that extended later than fluted points. As stated above, the most recent synthesis of High Plains prehistory (Frison 1991) does not split the Paleoindian tradition of lanceolate point use into distinct early and later subdivisions. Willey and Phillips (1958) early expressed exactly the problem that still haunts us today: close typological correspondence between some point styles in the northeast and the Plains late Paleoindian sequence. They first accept the unified Plains Paleoindian sequence (1958:88), as still used by Frison today, and discuss the relative timing of fluted point appearance in the west and east. Then, after pointing out that if there was any substantial delay in eastward movement of the fluted points from a western origin there would not be time to "jam in" late Paleoindian material before Early Archaic, they recognize the strong east-west typological parallels in the late Paleoindian sequence as well. For example: "Some of the point types that we have tentatively placed in an 'intermediate' category, especially Plainview, also have been reported widely in the East, but, since the forms are more generalized, the nature of the relationship to their western counterparts continues to be questionable. ... Parallel-flaked points of the Eden-Scotsbluff types are less often reported in the East. Their general distribution in North America seems to be more northerly than that of the earlier fluted-point types..." (Willey and Phillips 1958: 90).

Other authors developed a shorthand term to apply to the late Paleoindian (originally Plainview) sequence on the plains: "Plano". Plano is used by Willey (1966:44) and Jennings (1968:95ff) in general reviews of North American prehistory, and as a western late Paleoindian referent by northeastern authors (Ritchie 1980, following his first edition 1969; Funk 1976:228-9). These same and other eastern authors (eg. Fitting et al 1966:135) use Late Paleoindian (or Late Paleo-Indian) in the similarly and occasionally interchangeably with Plano.

The Plains concept of a Paleoindian continuum, which has developed over the last 30 years or so, has been split into earlier and later portions when viewed from an eastern perspective. That view, perhaps, is due to the fact that influence of the Late Paleoindian continuum into the east is a phenomenon only of the Great Lakes, New England and the St. Lawrence area. The south (next paragraph) exhibits a different cultural sequence. The dichotomy of Paleoindian in the east, however, has been modified recently by recognition of a Paleoindian temporal sequence, which we shall also discuss below.

Throughout the south-central and south-eastern United States, a transitional form between fluted points and side-notched points, called the Dalton point, clearly fills the chronological and stylistic gap between fluted points and the Early Archaic (Goodyear 1982). The lithic industry associated with notched and basally thinned Dalton points is clearly related to preceding Paleoindian technology (endscrapers and other typical uniface tools), but with the addition of flaked stone axes. Across northern North America, Late Paleoindian is less clearly a stylistic intermediary between its predecessor cultures and successor cultures than is Dalton. There is no evidence of Dalton material in southern New England or the Maine-Maritimes region. The first southern cultural influence to reach Maine is marked by occasional Kirk or Hardaway-like corner or side-notched points post-dating 9500 B.P., which we recognize and treat as "Early Archaic."

Throughout the period of popularity of

fluted points, technological and stylistic innovations in point manufacture were geographically widely disseminated and adopted, for unknown reasons and by unknown mechanisms. For example, the earliest fluted points to appear on the Plains (Clovis) and in the Northeast (perhaps at the Shoop site in Pennsylvania, for example) were fluted without the aid of a nipple-base striking platform. The invention of a nipple-based striking platform spread nearly continent-wide (Folsom on the Plains, Parkhill in the Great Lakes, Bull Brook Phase in the Maine-Maritimes Region). This phenomenon of wide geographic dissemination of successive stylistic innovations continues over a large area (Plains, Great Lakes, New England-Maritimes) into the Late Paleoindian period. In the Great Lakes, the sequence of styles is: Gainey, Parkhill, Crowfield, Holcombe, Hi-Lo (review and references Spiess and Wilson 1987:47-52). Both Crowfield and Holcombe points appear in New England, notably at the Reagan site in Vermont (Ritchie 1953: Figure 89, numbers 6, 7, 11, 12, 84, and numbers 20, 21, 27, 28). On the northern high plains, the sequence of point styles is: Agate Basin, Hell Gap, Alberta, Cody Complex (including Eden and Scottsbluff points), and parallel/oblique flaked points beginning with the Frederick Complex (Frison 1978). These Plains (or Plano) style Late Paleoindian points are widespread across northern North America, from northeastern British Columbia (Wilson 1989), to the Northwest Territories (Stewart 1991), the upper Great Lakes (Mason 1981), Ontario (Stewart 1983), eastern Quebec (Dumais and Rousseau 1985, with references) Massachusetts and Nova Scotia (Davis 1988). A number of these point styles, particularly the Agate Basin and Eden/Scottsbluff, have clear stylistic parallels in the Late Paleoindian points from the upper Great Lakes and New England, including Maine (Doyle et al 1985).

It is clear that at least one set of cultural influences was moving west-to-east across what is now the northern United States and southern Canada, into the Northeast. There is also a local Maine-Maritimes regional development of a basally thinned, triangular Late Paleoindian point (Doyle et al. 1985: Figures

4 and 5; Keenlyside 1985) which deserves much greater research attention.

The millennium between 10,000 and 9000 B.P., which most likely is the age of most of the Late Paleoindian material in Maine, witnessed the final establishment of a closed mixed forest across Maine. A spruce-oak association was replaced with a pine-birch-oak association around Gould Pond near Bangor, for example; and the high rate of vegetation change that had characterized the preceding millennium was replaced by relative stability by 9000 B.P. (Jacobson et al 1987). At Mirror Lake, at 200 m elevation in the White Mountains, a fir-poplar-birch dominated forest characterized the millenium. Spruce had declined around 10,000 B.P., and pine did not increase dramatically until about 9,000 B.P. (Davis et al. 1980). Many small postglacial lakes were vegetated with aquatic plants, but had not yet begun significant infilling as bogs (Gajewski 1987). Relative sea level along the coast of the Gulf of Maine was much different than today, due primarily to isostatic (postglacial) depression and subsequent rebound of the land. Maximum postglacial rebound of the land had occurred about 10,500 B.P. (Oldale 1985). The land has submerged since, such that the coastline of about 9100 B.P. is now under 20 meters (65 feet) of water (Anonymous 1991). All Late Paleoindian sites that might have been oriented toward the coast or tidal estuaries are now underwater. Moreover, the Gulf of Maine was less tidal (lower tidal amplitude), with pockets of significantly warmer surface water inshore and in estuaries marked by high biological productivity in coastal upwelling (Schnitker and Jorgensen 1990) and a warm-temperate coastal fauna (McAlice 1981), probably including a significant oyster population.

Radiocarbon dates on Late Paleoindian occupations, or even isolated artifacts are rare in the northeast. Little has changed since the most recent review (Doyle et al. 1985:11-12). The only directly dated association from New England is the basal component at the Weirs Beach site, dated 9615 ± 225 B.P. (Bolian 1980:124). Doyle et al. conclude that Late Paleoindian occupations in Maine most likely

date to the millenium between 10,000 and 9000 B.P. A few more recent dates provide *termini ante quem* (dates before which), such as several dates averaging 8000 B.P. from a buried soil surface at the Blackman Stream site which overlies a Late Paleoindian point (Belcher and Sanger 1988).

Dates for the stylistically similar points from the Plains may be more instructive. Agate Basin levels at the Agate Basin site and elsewhere date between 9300 and 10,400 B.P. with large standard errors (Frison and Stanford 1982:178; Frison 1991:26). Multiple radiocarbon dates on Hell Gap assemblages from the Casper site date 10,014 B.P. on average (Frison 1974), with dates of around 9600 at the Sutter's Hill site (Frison 1991:26). The best dates on Alberta and Cody Complex occupations at the Horner site range from 9390 ± 75 to 10060 ± 220 B.P. (Frison and Todd 1987:98). Some other dates on the Cody Complex fall around 8750 to 8800 B.P. (Frison 1991). Unless there are some substantial time lags in transmission of stylistic ideas between the Plains and the Northeast, then a range of dates between 10,200 and 9000 B.P. seems logical for Late Paleoindian in Maine.

General research interest in Late Paleoindian in Maine has concentrated in three areas: 1) recognizing the diagnostic projectile point types and associated assemblages, 2) estimating their age (as discussed above), and 3) their geographic distribution (eg. Spiess et al. 1983, Doyle et al. 1985). No substantial advance on these questions, or other questions of adaptation and lifeway, can be made until some Late Paleoindian components are isolated and found in association with organic material. Finally, many northeastern archaeologists believe that Late Paleoindian cultural material is at least partly contemporary with material that is termed Early Archaic (Doyle et al 1985:13). The recent proliferation of radiocarbon dated levels older than 8000 B.P. from deeply stratified sites in Maine and northern New England has not been accompanied by recovery of any number of traditional "diagnostic" Early Archaic or Late Paleoindian artifacts. The research, therefore, is at the most basic level of attempting to build chro-

nology and define culture units.

IDENTIFICATION

During the early 1980's avocational archaeologist Richard Doyle, Jr. brought the presence of Late Paleoindian style points to the attention of several professional archaeologists (Spiess et al. 1983, Hamilton et al. 1984, Doyle et al. 1985). Two systematic collections-based surveys were the result.

Spiess et al. (1983) focussed on Early and Middle Archaic material, but did notice that lacustrine-oriented sites that yielded mostly Early and Middle Archaic material also contained a few diagnostic Late Paleoindian artifacts. This work reported six sites with Late Paleoindian material, and commented on the congruity between Late Paleoindian and Early Archaic use of lacustrine environments and possible chronological overlap. Doyle et al. (1985) subsequently prepared a full report of Late Paleoindian material from nine sites in Maine, careful typological description of several diagnostic point types, and comparison with other Late Paleoindian material in the Northeast. The sites they reported include four in the upper Kennebec drainage (Pittston Farm, 130.2b; Blackhawk Island, 130.12; Graveyard Point, 143.1; and Moose River, 117.17), one in the Penobscot drainage (East Branch, 106.23), one on Grand Lake in Washington County (94.10), and two at Sebago Lake (Leighton, 13.3; and Basin Island, 13.25). Until 1991, site 130.2b contained the only known single component Late Paleoindian locus in the state. There have not been further systematic surveys for Late Paleoindian material, so Doyle et al. (1985) becomes the starting point for further discussion of most topics related to Maine Late Paleoindian.

Since these two professional surveys, diagnostic Late Paleoindian material has been discovered during work at sites with multiple components. A single midsection of a Late Paleoindian biface was found in the Schofield collection from site 123.6 at Mattawamkeag (Bourque et al 1985). Single Late Paleoindian points have been recovered from the Brockway site (90.3, a parallel flaked point base [Bartone et al. 1988]), and from site 53.38 in Waterville,

(a probable Agate Basin point distal fragment [Spiess et al. 1990]). Two possible Agate Basin-like bifaces were recovered by commercial fishermen during dragging operations from a landform at 60 meters depth near Green Island (Sanger 1988:88 for a description, cultural attribution here is Spiess' responsibility). A similar red chert biface was recovered from the eroded surface of site 122.17 on Millinocket Lake (Nelson et al. 1990).

Stratified contexts for Late Paleoindian material are rare in Maine. An excurvate-lanceolate point (following Doyle et al. 1985) or Agate Basin-like point made of chert was recovered, accompanied by 13 felsite flakes, from a stratum of silt and clay at 2.17 meters depth in the Blackman Stream site (74.19). This level is 1 meter below a buried land surface with multiple radiocarbon dates averaging 8000 B.P. (Belcher and Sanger 1988). Two other well-stratified sites, in the Milo area on the Piscataquis River, have yielded prehistoric occupation levels of Late Paleoindian age but no diagnostic artifacts. The basal level at the Brigham site (90.2c) has been radiocarbon dated 10,290±460 B.P., associated with an assemblage of quartz and felsite flakes. The basal Feature 40 at the Sharrow site has yielded calcined bone and debitage associated with multiple radiocarbon dates averaging 9000 B.P. (Petersen 1991). Site 7.7 on the Saco River has yielded two features which date 9350±90 B.P. or older (Cowie and Petersen 1990).

Curiously, a classic Late Paleoindian parallel-flaked lanceolate projectile point, analogous to the Plains Eden point (Doyle et al. 1985:32), was recovered from within a highly localized concentration of fluted points interpreted as a kill site (Gramly 1984) associated with the Vail site (Gramly 1982) on Azischoh Lake.

Finally, in 1991, two possible (sites 3.5 and 7.35) single component Late Paleoindian occupations were identified during power line right-of-way survey in southern Maine (Moshier et al. 1991). The sites are located on well-drained, sandy landforms overlooking small streams and marshes. Although neither site has yielded a diagnostic biface, the site 3.5 assemblage contains many small, parallel sided

biface trimming flakes in a mixture of chert, argillite, rhyolite and quartz debitage.

RESEARCH SIGNIFICANCE THEMES

Theme 1, Culture History.

This theme engenders two types of related research. The most basic is exploration of the details of succession of tool types and artifacts in the archaeological record. The related theme is the tracing of the ethnohistory, and ancestry, of specific Native American groups back into prehistory.

In order to explore culture history, archaeologists must have multiple examples of well dated archaeological components, each representing a limited period of time. This type of data base is entirely lacking for Late Paleoindian in Maine, and generally poor throughout the Northeast. The Weirs Beach, New Hampshire, Late Paleoindian component is the only one in northern New England with a "believable" radiocarbon date between 10,000 and 8,000 B.P. The Blackman Stream site in Maine has confirmed the presence of excurvate lanceolate points some time before 8000 B.P. Neither are there any stratified sites with two superimposed Late Paleoindian components, or with diagnostic artifacts in superimposed strata that demonstrably date to the Late Paleoindian or initial Early Archaic. We are, therefore, at present limited to typological analyses and external comparisons for temporal control.

The preceding fluted point Paleoindian period is not the undifferentiated, continent wide cultural manifestation it once appeared to be. Broadly regionalized fluted point styles can be recognized after initial spread of the Clovis (*sensu stricto*, not meaning all fluted points) type. In the Great Lakes States terminal fluted point styles include Crowfield-like points, and are followed by a series generally smaller, poorly fluted or basally thinned points similar to the series from the Holcombe site. In the Great Lakes, Holcombe-like points are succeeded by slightly stemmed Hi-Lo points. In Maine and the Maritimes Provinces they are succeeded by poorly fluted or just basally-thinned triangles (eg. Doyle et al 1985:24, Keenlyside 1985). Thus, one tradition

(a sequence of gradual style changes) in Maine included a regionally-derived, of ten generally nondescript triangular style.

In the mid-Atlantic states and mid-south, terminal fluted point styles were succeeded by slightly stemmed (or eared), basally thinned Dalton points (between 10,500 and 9,900 B.P., Goodyear 1982). Dalton points are succeeded by basally stemmed and notched points, generally classified as "Early Archaic", before 9500 B.P. A few examples of these early Early Archaic points do appear in Maine (Spiess et al 1983). Some of these points are made on local lithics (generally felsite), but many are made on exotic lithics. They represent both imported objects and imported ideas, and thus are a "second" cultural influence on the Late Paleoindian period in Maine. We have, of course, not yet demonstrated contemporaneity between these Early Archaic objects in Maine and an otherwise "Late Paleoindian" assemblage, but the out-of-state analogous point styles appear to be contemporary.

There is a third tradition or cultural influence on the Late Paleoindian period in Maine. Many archaeologists acknowledge the contemporaneity or dual influence of Early Archaic and a generalized Late Paleoindian cultural tradition in northern New England; here we are making the point that there is a third cultural tradition involved, also called Late Paleoindian, ultimately derived from the northern Plains. The sequence and chronology of northern Plains Late Paleoindian point styles is relatively clear, at least compared with the Northeast. Points very similar in style to northern Plains Late Paleoindian styles appear at least twice, if not thrice, in the northern New England Late Paleoindian. These stylistic parallels relate to the Agate Basin and/or Hell Gap styles (one, or two separate sequential influences) dating within a few centuries of 10,000 B.P. (present as the excurvate lanceolate point of Doyle et al. 1985), and an Alberta/Cody I complex Eden point (Frison and Todd 1987:214-217) style dating between 9,800 and 8800 B.P. (*ibid*:98, 104-105) (present as the parallel based lanceolate point of Doyle et al. 1985). Scottsbluff and Eden points virtually identical to those

that appear in Wyoming also have been found in Wisconsin (Mason 1981:118-122), which provides a geographically intermediate point along a route from the northern Plains, through the Great Lakes states, to northern New England and the Maritimes Provinces.

Whatever the cultural dynamics and population levels of the time, there was enough cultural "space" in Maine for a locally derived and two imported series of stylistic ideas on how to manufacture stone points. One source of ideas was a west-east flow from the Plains across the Great Lakes and into the Northeast. Another source apparently was a south-north flow from the mid-Atlantic or mid-south; we just happen to designate it "Early Archaic" because of the notched points involved and a convention in naming.

Theme 2: Settlement Pattern.

The settlement pattern theme includes the study of geographic variability or spatial patterning on a continuum of scale. At the largest scale, we investigate the presence of a particular culture in large areas of the state. At a smaller scale, we correlate the presence of occupations with certain geographic attributes, such as landforms or nearest water type. At the smallest scale, we investigate internal site patterning, including activity areas, patterns that might indicate domestic structures, and so forth.

Diagnostic Late Paleoindian points, at least those that can be identified as northern Plains stylistic parallels, occur in all corners of the state: Grand Lake in Washington County; Sebago Lake in southwestern Maine; and Aziscohos, Moosehead, Chesuncook, and Millinocket Lakes in northern Maine as well as in adjacent southern New England and the St. Lawrence River. The locally-derived triangular point tradition is recognized at Seboomook Lake north of Moosehead (Doyle et al. 1985), and in the Maritime Provinces adjacent to the north (Keenlyside 1985). We must consider the sample of the triangular points incomplete because these basally thinned triangular points are much more difficult to differentiate from later triangular points than are the northern Plains analogue styles from the mass of Maine

prehistoric materials.

There are no Late Paleoindian sites that have yet yielded meaningful intrasite patterning data that can be used to study the finest scale of settlement pattern: activity areas within a site (although site 3.5 holds the potential for yielding the first such data). Therefore, the rest of this discussion of settlement patterns focusses upon correlations with landform attributes.

Spiess et al. (1983) found that Late Paleoindian points occur on sites with diagnostic Early Archaic, and often much more intense Middle Archaic, occupations on lakes. These lacustrine occupations often concentrate near lake inlets and outlets, and along thoroughfares (short interlacustrine river flowages) between lakes. In 1983 Spiess et al. speculated, but could not be definitive, about Early Holocene use of Maine's major rivers. The discovery of several sites with deeply stratified Late Paleoindian occupations along our major rivers in the last decade has demonstrated Late Paleoindian use of the major rivers, often at sites with later Early and Middle Archaic occupations as well. In fact, the interior archaeological record seemingly indicates a high correlation in site location between Late Paleoindian, Early Archaic, and Middle Archaic occupations. Late Paleoindian settlement, and therefore economic adaptation, was at least in part focussed on lakes and rivers as has been most subsequent settlement in Maine (although with variations in theme). There is a clear contrast with the fluted-point Paleoindian settlement pattern that focussed on well-drained sandy terrain away from river and lakes (Spiess and Wilson 1985). A similar shift to stream and pond borders, and away from non-waterway-oriented sandy locations, has been noticed for the Paleoindian to Late Paleoindian and Early Archaic in portions of the upper Great Lakes (Jackson 1990:136).

What I believe are probable Late Paleoindian pieces from 60 meters water depth off Green Island (Sanger 1988) indicate an lower-estuarine-river or marine-coastal component to the Late Paleoindian settlement pattern, also. Again, this pattern parallels the Early and Middle Archaic pattern along the coast

(Spiess et al 1983). Triangular Late Paleoindian points in the Maritime Provinces are known from Prince Edward Island (Keenlyside 1985) and the Magdalen Islands in the Gulf of St. Lawrence (McCaffrey 1986). In the latter case at least, it is likely that a sea mammal (perhaps walrus) hunting economy was involved, and competent boat transportation to deal with the open waters of the Gulf was a prerequisite. The one Late Paleoindian triangular point for Maine comes from an interior lake inlet/outlet/thoroughfare location again similar to Early and Middle Archaic material.

The Northeast parallel sided (Eden-like) point from the Vail killing ground #1 site is an intriguing hint that Late Paleoindian settlement pattern is more than just the initiation of the Early and Middle Archaic settlement pattern (whatever that was). The discovery of site 3.5 in Sanford (southwestern Maine) during 1991, however, has complicated the question of Late Paleoindian settlement patterns. The site is on a distinctly sandy, well drained valley-side landform overlooking the swampy headwaters of a small drainage. This location is remarkably reminiscent of the Michaud site location (Spiess and Wilson 1987). Perhaps it was the swamp that attracted people to this location, analogous to a postulated Early Holocene wetlands-oriented settlement pattern postulated for southern New England (Nicholas 1988). Alternatively, some aspect of the Late Paleoindian settlement pattern was intermediate between the preceding fluted point Paleoindian use of well-drained sandy soils away from water, and the succeeding Early and Middle Archaic use of lakes and rivers.

Theme 3: Subsistence Patterns

There are no faunal or floral remains that are associated with a Late Paleoindian component in Maine, nor at any site in the Northeast that we are aware. Speculation about subsistence patterns, therefore, must be based entirely upon observed settlement pattern. A focus on lacustrine resources seems indicated by the lake inlet/outlet/thoroughfare settlement focus which characterizes Late Paleoindian, Early and Middle Archaic periods. Later la-

custrine settlement patterns are more dispersed around the lakeshore. Perhaps the Late Paleoindian, Early and Middle Archaic lacustrine settlement was more dependent upon resources available at lake inlets and outlets, such as seasonal shallow-water spawning lake fish harvested with nets or weirs. Habitation along the banks of large and medium rivers could indicate use of anadromous fish runs. The nature of coastal zone use in the Gulf of Maine is at present, unknown.

Theme 4: Mortuary Practices

There are no known Late Paleoindian mortuary sites from Maine. However, if we look outside of Maine and outside New England, we can predict what attributes they might have when found. The Crowfield site in southern Ontario consists of two concentrations of (more than one hundred) stone tools that had been cremated prior to interment (Deller and Ellis 1984). Although no bone or red ocher was associated, the authors interpret the features as probable interments. Two Late Paleoindian (Cody Complex) cremation interments (the Renier and Pope sites) containing calcined bone and many burned stone tools represent definitive evidence of Late Paleoindian cremation mortuary behavior in Wisconsin (Mason 1981:117-120). Thus, Late Paleoindian mortuary behavior in Maine may have included secondary interment of cremated human remains and the burned fragments of many functional but well-made stone tools.

Theme 5: Transportation, Travel, Trade and Commerce

In the absence of a site with organic preservation, and using an archaeological record based entirely upon diagnostic lithic materials, we must explore this topic based upon where the stone objects were found (site location) and where they originated (lithic outcrop or availability in glacial drift). In the settlement pattern theme above, we have already commented that Late Paleoindian sites are found in locations near lake inlets, outlets and thoroughfares and in alluvial deposits along rivers that also yield much of the Early and Middle Archaic material known in Maine. It is proba-

ble that the birchbark canoe was perfected during the Susquehanna Tradition or later (see Susquehanna and Ceramic Period Contexts), and that Early and Middle Archaic transportation was based upon heavier, less maneuverable watercraft, probably dugout canoes. Above we have commented that Late Paleoindian site locations have shifted toward a focus on waterways and away from the water-independent fluted-point Paleoindian settlement pattern. We hypothesize, therefore, that the use of dugout canoes or some similar heavy watercraft was widely adopted during the Late Paleoindian period.

The fluted point Paleoindian tool kit in Maine is dominated by use of high quality cherts, silicified glassy tuff (Neponset "rhyolite"), crystal quartz, agate, and jasper, all brightly colored and highly silicified material. In contrast, Late Paleoindian Plains-analogue points are primarily made of argillite (a silicified mudstone or siltstone with larger grain size and duller luster than most "chert"), cherts of relatively dull lustre and color, and Kineo rhyolite (Doyle et al 1985). If the entire lithic assemblage from site 3.5 is Late Paleoindian in age, then polycrystalline (white, opaque to semitranslucent or "bull") quartz can be added to the lithic materials list. The triangular point from Seboomook Lake is Saugus rhyolite (Doyle et al. 1985), a material from eastern Massachusetts used in small amounts by fluted point Paleoindians also. The wide-ranging system (whatever it was) for lithic procurement during fluted point Paleoindian occupation was replaced by a different system or standard.

Little work has been done on argillite characterization in Maine. However, the northern Maine Ordovician geological beds that yield higher-grade cherts (such as Munsungun chert) are interbedded with less highly silicified mudstones and slates (eg. Pollock 1987). A light-brown argillite (or poorly silicified chert) outcrop, site 165.1, which showed evidence of prehistoric quarrying, has been located in northern Maine (Nicholas 1981). It is probable that intensive survey work at quarry sites in northern Maine will locate late Paleoindian-age activity areas.

Theme 6: Social and Political Organization

No Late Paleoindian site has yet been excavated that has yielded internal patterning of activity areas or possible structures, although site 3.5 has the potential to yield such data. At most, because of this lack of data, we can simply contrast the Late Paleoindian archaeological record with the fluted point Paleoindian record. The latter has yielded several sites in New England containing large numbers of discrete loci in evident short-term occupations (Spiess 1984, Spiess and Wilson 1987). No such Late Paleoindian sites are known.

Theme 7, Laboratory and Field Techniques

No laboratory or field studies specifically oriented toward Late Paleoindian sites have yet been developed. However, the primarily Late Paleoindian reliance on argillites and dull-lustre cherts suggests geological characterization of these materials through thin section and other techniques, followed by an attempt to locate and study outcrops and quarries.

Theme 8, Anthropological Archaeology

No information available.

Theme 9: Human Biology

There are no Late Paleoindian human remains known from Maine, or from the Northeast as a whole.

Theme 10: Environmental Studies

The basal alluvial deposits in deeply stratified sites such as the Blackman Stream and Brigham sites contain Late Paleoindian age material. Sedimentological studies at these sites might produce more information about river dynamics and drainage systems of the time. Extensive excavation in these deposits may yield collections of charcoal which will indicate something about local forest composition.

Theme 11: Non-Mortuary Religious Practices

The poor archaeological record limits the possibility of investigating this topic. However, eight talc (sic, ?soapstone) pendants report-

cd from the Reagan site in Vermont (Ritchie 1953) might be relevant. At least one (*ibid*: Figure 89:14) is decorated with linear designs.

Theme 12: Cultural Boundaries

Is the concept of cultural boundary as manifested in material culture at all relevant during this time period? Are we dealing with a succession of small groups using Maine in very light population densities? Did they (in turn, or episodically) derive their material culture from a local terminal Paleoindian tradition, influences from the northern Plains transmitted through the Great Lakes, and from the southeast? Or was there a local population that adopted several prevailing standards of manufacturing stone tools and other material culture, or borrowed ideas from multiple sources? We should note that the succeeding Early and Middle Archaic period is characterized by rare use of lithic material to make diagnostic points, at least for most of the period over most of the State (Robinson et al. 1992). Cultural events during the Late Paleoindian period must have been fundamental to developing that adaptation.

EVALUATION

Currently research in the Late Paleoindian period is at a basic survey level: attempts to locate and identify sites where Late Paleoindian materials remain in primary context and/or attempts to identify single-component Late Paleoindian sites. Until these efforts are successful multiple times, we will not know the range of lithic material culture that can be associated with the Late Paleoindian. All other research questions are dependent first upon success in basic survey.

National Register Eligibility Criteria.

The following criteria delineate the minimum requirements for National Register listing of Late Paleoindian sites:

1. The site will be identified as Late Paleoindian by the presence of at least one morphologically diagnostic artifact; and

2. there must be evidence that the site was utilized either for habitation or for "specialized" activity, including tool maintenance and production, kill and butchery of an animal, etc. Findspots of isolated tools are not eligible unless there is unequivocal evidence that the locality was more than the location of random discard or loss of a tool.

3. The site need not display un-eroded or undisturbed primary archaeological context. However, the site will lack contamination of the lithic assemblage by later habitation, or the materials of later habitation must be easily segregated on the basis of raw material, and/or vertical and/or horizontal separation.

Mortuary components clearly identifiable to the period are eligible under the same criteria. Moreover, any site with a Late Paleoindian component that is demonstrably able to make an extraordinary contribution to any of the Research Significance Themes presented above is significant.

PROTECTION

All Late Paleoindian coastal site locations are now under the waters of the Gulf of Maine due to coastal subsidence and eustatic sea level rise of 50 to 60 meters. It is conceivable that single component lithic scatters have survived erosion and remain accessible on the bottom of the Gulf in places where they have not been buried by soft sediment. Should such sites exist, it is impractical to protect them from the disturbances caused by inshore commercial fishing (principally dragging). Systematic data recovery by diving is the favored response.

Many interior lakeshore sites have Late Paleoindian components. These are often eroded, and the diagnostic stone artifacts mixed with later material. Therefore, few of these sites are eligible solely because of their Late Paleoindian components. Because water level is controlled artificially on most Maine

lakes, the sites are periodically (seasonally during low water, or once in several decades as dams are repaired) accessible to artifact collectors. Inventory of private artifact collections is the major practical method of data recovery in most cases, although a few sites may be especially suited to physical and legal protection.

Many eligible Late Paleoindian components in Maine are located in deeply (2 to 3 meters) stratified alluvial silts and sands along major and medium-sized rivers. The primary threat to these sites is ongoing erosion of the margins of impoundments created by hydroelectric dams. Most of these localities will be inventoried in the next two decades or so as part of hydroelectric licensing studies. Physical protection of these sites by erosion control methods has proven prohibitively costly when that option has been investigated. The protection method of choice, therefore, includes data recovery from a portion of the site that may erode during the term of the license, accompanied by National Register listing and legal

protection, and site monitoring for the remaining portion of the site.

Some Late Paleoindian sites are located on well-drained, sandy soils in shallowly buried contexts. These soils are subject to deflation once they are devegetated, and the prehistoric stone debitage and tools may be easily visible against the sandy matrix if the thin organic horizon on the soil is disturbed by vehicular traffic. Once found and reported to the professional community, the best protection for such sites is extreme security of site location information. Since the stratigraphic situation of such sites is usually uncomplicated, and the high research potential of any relatively intact Late Paleoindian site is at risk to unauthorized collectors, controlled data recovery is the prudent course whenever possible. If excavation of the total site is not possible, a combination of monitoring, collecting prehistoric material exposed on the surface, National Register nomination and other legal protection, and physical protection is appropriate.

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