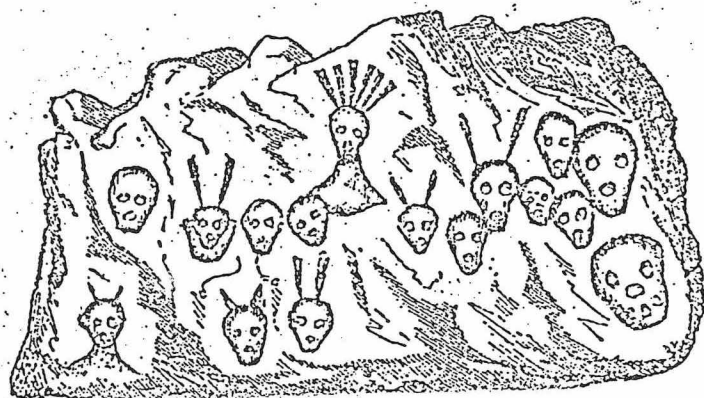


Other Publications by the Division for Historic Preservation on Vermont's Cultural Heritage:

The Preservation of Vermont's Archaeological Resources, by Peter A. Thomas and Lauren A. Kelley (n.d.).

An Archaeological View of Vermont's Past, by Peter A. Thomas and Lauren A. Kelley (n.d.).



Aboriginal Petroglyphs at Bellows Falls, Vermont, as depicted in Hall (1858:587).

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SEASONS OF PREHISTORY

4000 Years at the Winooski Site



by
Marjory W. Power and James B. Petersen

Division for Historic Preservation
Agency of Development and Community Affairs
State of Vermont
Montpelier, Vermont 05602
1984

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Cover: Spear fishing on the Winooski River, Winooski, Vermont (photo by Nathan T. Power; illustration by Laureen A. LaBar).

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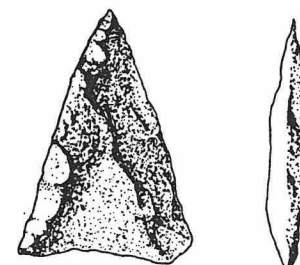
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Figure 1. 1978 Excavations at the Winooski Site. This 8-acre prehistoric Indian site on the Winooski River is located a short distance from the center of the business district in Winooski, Vermont.

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PROLOGUE

It was sometime in late summer that a single family band first came to this bend in the Winooski River some 5,000 years ago. Using the spot as a small camp, they came to harvest the ample butternuts that were available that season. Some of the nuts were roasted on the spot, others were gathered for use in the coming winter season. The family took other plant and animal foods at the site, and boiled some with hot rocks in perishable containers. They chipped stone tools around the fire, using raw materials that came from far beyond the valley. The group soon left, moving on upstream to their autumn hunting camps.

Another small group or two returned to the bend many years later for much the same reasons. Again, they camped here for a short time in late summer or early fall, harvesting butternuts and taking game near the site. They, too, finished stone tools around their hearths, using non-local raw materials; in the process, several were broken or left incomplete, including a projectile point with side notches that would have served as a spear tip. Their tool making and other activities were in preparation for a season of hunting in the uplands, and shortly they continued up-country to their hunting grounds.

The same pattern was repeated by still later groups, possibly composed of three or four families, only now they brought with them carefully made ceramic vessels for food and water storage and for cooking their meals. Butternuts were again the prize, gathered near the camp along with pigweed, fire cherries and bedstraw, while hunters pursued white tailed deer. They complemented their fare with occasional birds and fish, and one of their precious dogs. Their pottery vessels — manufactured, used and broken at the site — were decorated with a complex series of stamped elements produced with a notched stamping tool. In addition to their ceramic vessels, they brought with them stone for tool making, obtained from within the valley, projectile points with contracting stems, and non-local raw materials, including copper, acquired from their neighbors after passing through many hands. Chipped and ground stone tools were made, some broken in use or left incomplete around the hearths. As the autumn evenings turned colder, they warmed themselves around their hearths, and then they too continued up-river.

Most likely some 300 years passed before people returned to the bend in the river. This time they spent several months here in the late summer-early autumn season, with as many as 10 to 15 families living in a seasonal base camp adjacent to the river. They foraged intensively in the Intervale, securing large quantities of the long familiar butternuts, along with black walnuts, hickory nuts, hazelnuts, pigweed, blackberries, elderberries, snowberries and hog peanuts. In addition, they collected staghorn sumac, mustard, sassafras, bedstraw and several species of rushes, all used for food, medicinal or industrial purposes and disposed of in or around their hearths. Hunters took deer, prepared in special areas of the site, and beaver, muskrat and birds. Lake sturgeon, bullhead and other fish were taken from the river, some in quantity at the nearby falls. On occasion, one of their dogs, too, went into the pot.

A variety of tools were made, used and discarded, and many were undoubtedly carried away for later use. The chipped stone tools, still made primarily of non-local raw materials, were used for diverse tasks such as hunting and food preparation, working hides, bone, antler and wood, and manufacturing perishable fiber items. Characteristic corner notched projectile points and a few triangular points, all probably hafted on spears, were made and left at the site. Potters made ceramic vessels at several spots and decorated them with cord-wrapped sticks or carved tools to make combinations of dentate and wavy line decorations. These pots were used repeatedly until they, too, were left discarded or broken around the hearths.

Sometime later, people returned to this bend in the river for a final episode, and undertook similar activities at their late summer-autumn base camp. During this last occupation at the site, they may have emphasized fishing in their food quest. They continued to favor butternuts as a staple and, in addition to many of the plants traditionally collected, used rose, buckwheat and acorns, and added fox and turtle to their diet. By this time, tool makers made almost exclusive use of local raw materials for their stone tools, and the triangular projectile point was the exclusive form produced. Ceramic vessels, too, became standardized; the preferred tool for decoration was a cord wrapped stick.

Repeating the ancient cycle, the people left the site. But this time, and for reasons unknown, the cycle was broken some 1,000 years ago and they never returned.

SITE DISCOVERY AND HISTORY OF RESEARCH

The scenario presented in the Prologue is a reconstruction of prehistoric life in one small part of Vermont as revealed through archaeological investigations at the Winooski site. The site's name comes from its location on the river now known as the Winooski, a word derived from the Abenaki Indian *Winōskitēgw*, the "onion land river" (Day 1981a). It is easy to understand why groups of prehistoric hunters and gatherers were attracted to this particular spot on the east bank of the river, and why they returned to it time and time again during the site's long history. The site is situated on a high terrace on a bend in the river — a good vantage point — less than a mile downstream from the lower falls of the Winooski (Fig. 1). From the site, the river meanders through the Intervale (Fig. 2), a five-square mile area of alluvial floodplain, before it empties into Lake Champlain. Because the Intervale is subject to periodic flooding, it remains relatively undeveloped in the midst of the densely populated greater Burlington area. The diverse habitats at or near the site — river, wetlands, lake and surrounding uplands — support abundant and varied plant and animal populations today as they did in prehistoric times.

In contrast to the intensive nature of prehistoric land use, this terrace has been used historically in only peripheral ways — for intermittent agricultural purposes as early as the 19th century, and in recent times informally by the community for hiking, picnics, berry picking and other recreational activities. The existence of a prehistoric site in this location remained unknown, however, until 1972, when a member of the Vermont Archaeological Society (VAS) observed cultural materials eroding from the riverbank during spring flooding. The VAS then conducted limited test excavations during that summer and again in 1973, hoping to salvage information from what was believed to be the total site. After this initial work, subsequent investigations followed the course of many archaeological projects in the country today — they were conducted as part of cultural resource management (CRM) activities mandated by state and federal laws and concerned with identifying, managing and preserving historic and prehistoric resources. When it appeared likely that a large industrial building would be erected adjacent to the site as it was then known, these laws required archaeological testing in this sensitive area. Two archaeological surveys by personnel from the University of Vermont, in 1977, helped to establish that the site was significant enough to merit its inclusion in the National Register of Historic Places.

The cooperative effort that resulted from these findings involved the State Archaeologist and other Division for Historic Preservation personnel, the city of Winooski, the developer of the industrial plant, the federal government and the University. The goal was two-fold — first, to preserve as much of the site as possible, and second, to recover archaeological data from those areas of the site that would be affected by construction. The orientation of the plant was altered in order to avoid the major portion of the site, and under the auspices of the Archeological and Historic Preservation Act of 1974, a contract for data recovery was awarded to UVM's Department of Anthropology by the National Park Service, U.S. Department of the Interior.

During the 13-week field season in 1978, work focused on an L-shaped corridor — approximately 10% of the whole site — that would be destroyed by the construction of a parking lot and a water line. Supplemental testing was also accomplished outside this corridor in various areas across the site. Analyses of these data and the information previously recovered by the VAS, interpretations and writing continued until 1983 (Beblowski 1981, Petersen 1980, Petersen and Power, 1981, Power 1979, Power, Cowan and Petersen 1980, Power and Petersen 1981), when the final report of investigations at the Winooski site was submitted to the National Park Service, five years, almost to the day, after field work began (Petersen and Power 1983a).

ARCHAEOLOGY IN VERMONT AND THE ROLE OF THE WINOOSKI SITE

Why did we dig the Winooski site? Why is this site significant to prehistoric studies in Vermont? At a general level, the excellent stratigraphy, or superimposed deposits at the site, uncommon among the presently known 1,100 prehistoric sites, document human activities that span two distinct prehistoric periods — the Archaic and Woodland — and almost 4,000 years. For specific answers, perhaps we should examine the Winooski site within the broad outline of what we know about Vermont's prehistory (Fig. 3).

The earliest inhabitants of what is now Vermont were Paleo-indians — small nomadic groups who hunted large game such as mastodon and musk oxen that were present at the end of the last glaciation. The hunter's chipped stone tool kit included one particular artifact — a fluted projectile point, hafted on a throwing spear — that was unique to this time period. Evidence for the Paleo-indian period in Vermont is presently limited to the Champlain Valley and consists of one site, a hunting camp, and a number of fluted point find locations. The Reagen site (Ritchie 1953) is on a high bluff overlooking the Missisquoi Valley. Originally, it was approximately two acres in size and may have been used more than once. Hearths, over 200 stone tools, including about 55 fluted and unfluted projectile points and a large number of stone waste flakes, document hunting and associated activities as well as stone tool manufacture. Also recovered were 15 non-utilitarian objects of talc and soapstone in various shapes, which are unusual in Paleo-indian sites. Some are drilled, at least two are ground, and all may have been used as pendants (Haviland and Power 1981:22-25).

Two studies (Vogelmann 1972, Loring 1980) examined the distribution of fluted point find spots. Several of these finds, as well as the Reagen site, were situated on beaches that represent the maximum extent of the Champlain Sea. The Sea itself was a product of glacial activity — the melting of the Laurentian glacial mass, depression of the earth's crust and a marine invasion; at its maximum extent, at approximately 10,000 B.C., the Sea's waters covered about 20,500 square miles (Haviland and Power 1981:21). It is therefore only after that date and the lowering of the Sea level that the Reagen site and fluted point find spots could have been inhabited. Certainly by 9,300 B.C., a number of find spots associated with the ancient beaches, and the Reagen site as well, would have been high enough to command a view of the territory, a site situation favored by Paleo-indians in general. A few find spots located well to the east of the Sea's maximum extent also suggest the possibility that some groups might have been hunting in Vermont as early as 10,000 B.C. (Haviland and Power 1981:29-31).

More information has been amassed about the way of life during the following period, the Archaic. This was a time when groups of hunters and gatherers exploited a variety of food resources as they were seasonally available in different environmental zones. Archaic tool kits included a wide array of chipped stone tools and an important technological innovation, the atlatl or spear thrower, which greatly improved a hunter's ability to throw a spear long distances. A new technique for manufacturing stone tools by pecking and grinding produced milling stones and pestles for processing foods and other materials as well as grooved axes, celts and gouges for heavy tasks such as tree cutting and the manufacture of dugout canoes.

The John's Bridge site on the lower Missisquoi River, excavated as a CRM project, has yielded the earliest Archaic materials known in Vermont; four radiocarbon dates obtained at the site cluster around 6,000 B.C. (Thomas and Robinson 1983). The site was apparently a hunting and fishing camp, occupied in the spring or fall. A previously unknown projectile point type in New England — Swanton corner notched — was identified as well. Later Archaic materials, characterized in part by another projectile point form — the side notched Otter Creek — probably represent a timespan of about 3,500 B.C. to 3,000 B.C. (Haviland and Power 1981:59-60). Other typical artifacts of this "Vergennes Archaic" manifestation are ground slate projectile points, heavy woodworking tools, atlatl weights and plummets. Many dozens of these Archaic period sites have been identified both in the Champlain Valley and in the Connecticut Valley. Perhaps the best known sites are the Ketcham's Island, or KI, site and the Otter Creek No. 2 site, both on Otter Creek. Both sites yielded evidence of burial practices. At KI (Ritchie 1968), a possible dwelling about 15' in diameter contained a burial



Figure 2. Infrared Aerial Photograph of the Winooski River Intervale. The Winooski Site is on the eastern perimeter of this broad floodplain (photo courtesy of the Remote Sensing Laboratory, University of Vermont).

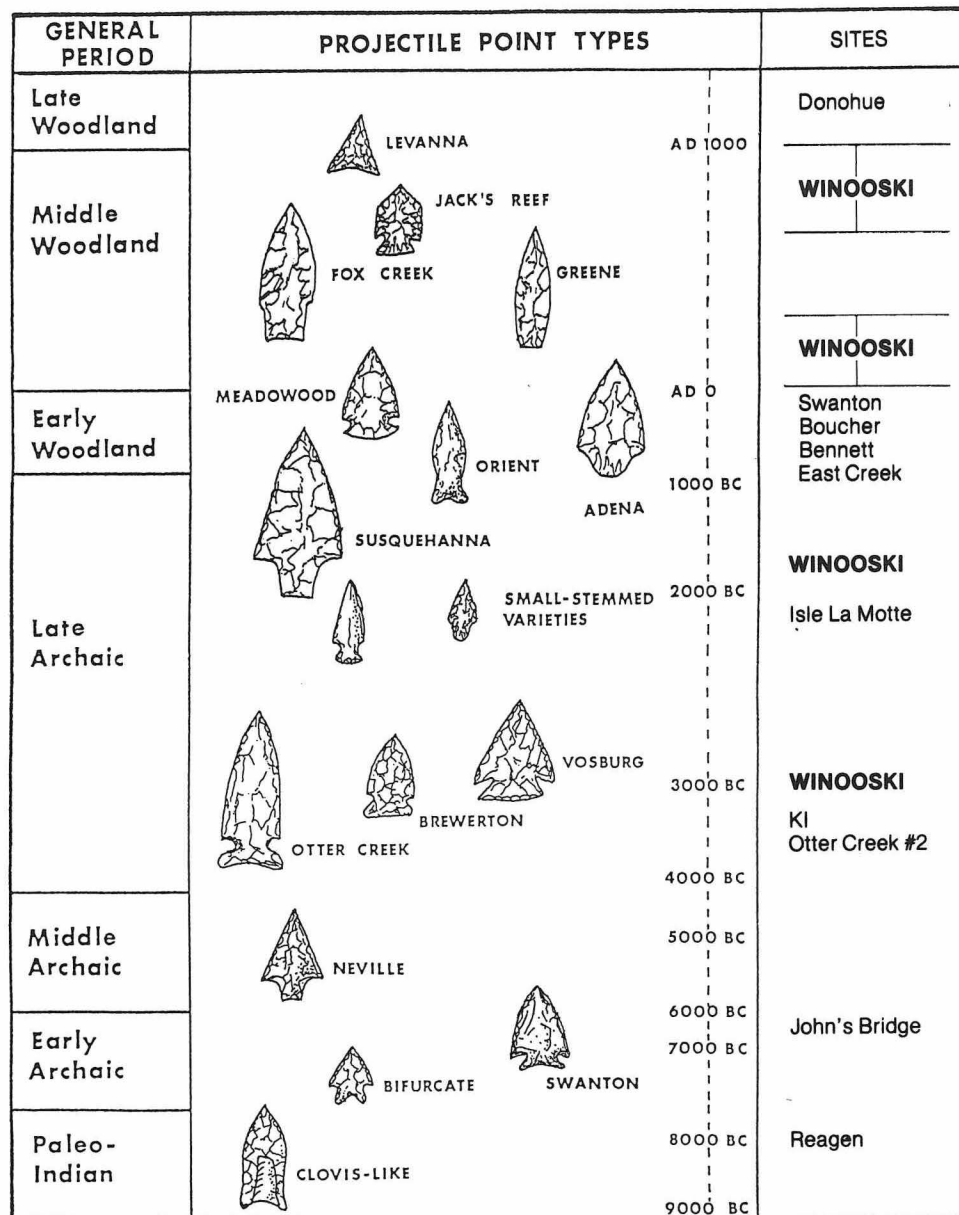


Figure 3. Time Line for Prehistoric Vermont. Archaeological periods, associated projectile point types and sites mentioned in the text.

stained with red ochre beneath the floor. At Otter Creek No. 2 (Richie 1979), six burials represented the remains of an infant, three children and two adults, one accompanied by a dog. The most elaborate example of Archaic burial ceremonialism, however, is seen on Isle La Motte, at the Glacial Kame Cemetery site (Ritchie 1955). This small cemetery contained four or five burials with grave goods typically found in the Great Lakes area — copper beads, discoidal shell beads, shell gorgets, perhaps used as pendants, and red ochre.

Both ceremonialism and apparent participation in long distance trade networks were expanded considerably in the subsequent Early Woodland period, beginning sometime after 1,000 B.C. The conventional marker for this period is the introduction of pottery. In common with some areas in the Northeast, information about the Early Woodland period comes mostly from cemeteries rather than habitation sites. Two of the four known cemeteries in Vermont were located near each other on the lower Missisquoi River — the Swanton site (Perkins 1873) and the Boucher site (Basa 1974, 1975). The remaining cemeteries, Bennett (Ritchie 1944) and East Creek (Gifford 1948, Loring, personal communication) were located farther south on Lake Champlain in Orwell. All showed lavish use of red ochre and contained elaborate and exotic grave goods. The sources of raw materials from which many of the objects were made represent a broad geographical spread, from the Ohio Valley to the Atlantic coast.

Prior to excavations at the Winooski site, the Middle Woodland period was poorly understood. Materials of this period were traditionally recognized by two projectile point forms — Jack's Reef and Levanna — and by ceramics, particularly conoidal based vessels that in the older literature of Vermont archaeology were called "Algonkian" pots. The nature of the Winooski site itself contributed to our understanding of this period. Sequential episodes of occupation and associated artifacts were radiocarbon dated, thus providing a data base for future studies at other Middle Woodland sites and for evaluating past studies and interpretations. Then, too, because this single site was in use for thousands of years, beginning in the Archaic period, it was possible to identify various forms of culture change that occurred during a very long period of hunting and gathering. Finally, the intensive nature of the occupation, particularly after A.D. 600, in combination with excellent preservation of organic remains, provided details of everyday prehistoric life that are rare in Vermont and the greater Northeast.

The Winooski site data along with the results of subsequent CRM projects (Thomas 1980) and other work indicate that Middle Woodland groups in the Champlain Valley exploited a variety of habitats, with larger settlements located on the lower reaches of major rivers and smaller sites found in a variety of settings such as inland ponds or along small tributary streams, a land use pattern suggestive of seasonal exploitation of different environments. The striking burial ceremonialism of Early Woodland peoples was apparently not emphasized by Middle Woodland groups, and by the end of the period, A.D. 1,000 participation in trade networks also ceased.

No single event marks the transition from Middle to Late Woodland times. Levanna projectile points, as far as we presently know still hafted on spears, were used throughout the period, while pottery gradually evolved from vessels with conoidal bases to globular vessels with collars and incised line decoration. The seasonal subsistence round continued, but with one innovation — the addition of horticultural products to the diverse diet. Evidence of corn is reported from the CRM-funded work at the Donohue site in the Intervale (Bumsted 1980) and ceramics recovered from both the Champlain Valley and the Connecticut Valley suggest a wider distribution pattern than was seen in the Middle Woodland period. Continuing investigations at sites on Shelburne Pond (Petersen 1983) may help to solve some of the problems associated with this last prehistoric period. It is hoped, too, that an Abenaki village occupied some time after the beginning of the Contact period, ca. A.D. 1609, will someday be discovered and excavated so that the gap between prehistory and history might be bridged.

ARTIFACTS AND FEATURES: AN ARCHAEOLOGICAL RECORD OF ACTIVITIES

Excavations at the Winooski site yielded prehistoric artifacts manufactured of stone, clay, bone and copper. Undoubtedly, many items of daily use such as clothing were made from organic materials; these have long decayed in the acidic soil. Basketry and cordage are examples of such perishables; luckily, they are documented here by negative impressions found on pottery sherds (Fig. 4).

The artifacts themselves, the context in which they were found, and their relationship to each other and to features — non-portable “artifacts” of life such as fire hearths — provided a great deal of information about activities at the site during its long history (Fig. 5). Of the 75 features identified, 59 were shallow, basin-shaped hearths containing concentrations of charcoal, oxidized earth, bone fragments and charred plant remains. Fire-cracked rock, ceramic sherds, fragments of stone tools and waste flakes were also found in or around the hearths. Most hearths were associated with food preparation — both processing and cooking. Other activities centered around these hearths represented tool manufacture and repair, bone and wood working and pottery making (Fig. 6). Additional features included concentrations of fire-cracked rock (Fig. 7) — oval-shaped features that contained charcoal, oxidized soil, small bone fragments, ceramics and river pebbles. Presumably, rocks were heated in a surface hearth and then dropped into a water-filled container such as a pottery vessel during meal preparation. The heated rocks brought the pot’s contents to a boil and fractured the rock in the process. Heavy concentrations of burned bone fragments may indicate rendering of fats and bone grease in fire-cracked rock features. Finally, several ceramic concentrations and “living floors” were identified.

In addition to activities inferred from individual features, broader “activity areas” were defined by clusters of artifacts and the presence of two or more adjacent features (Fig. 5). A close study of these areas identified both multiple and specialized activities in portions of the site.

Multiple activities occurred in area 1 — food processing and preparation, represented by bone and plant remains and by tools, and adjacent to these subsistence activities, stone tool manufacture and repair, bone and wood working, and at one time, pottery manufacturing. In area 2, the emphasis was on food preparation; tool manufacture and repair were secondary activities. Specialized areas for pottery making are represented in areas 3 and 4. Signifi-

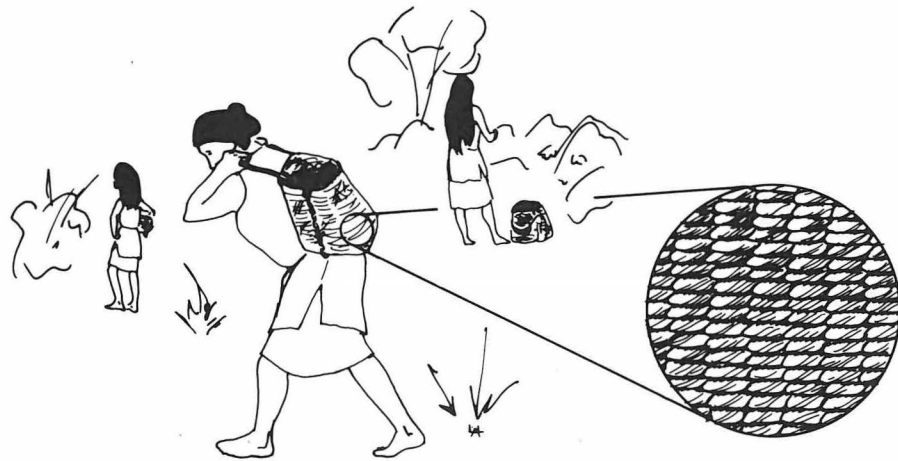


Figure 4. Basket-impressed Pottery Sherd. Perishable materials decay, but in this case an example of long-vanished twined basketry is preserved — impressed in wet clay by Winooski pottery makers.

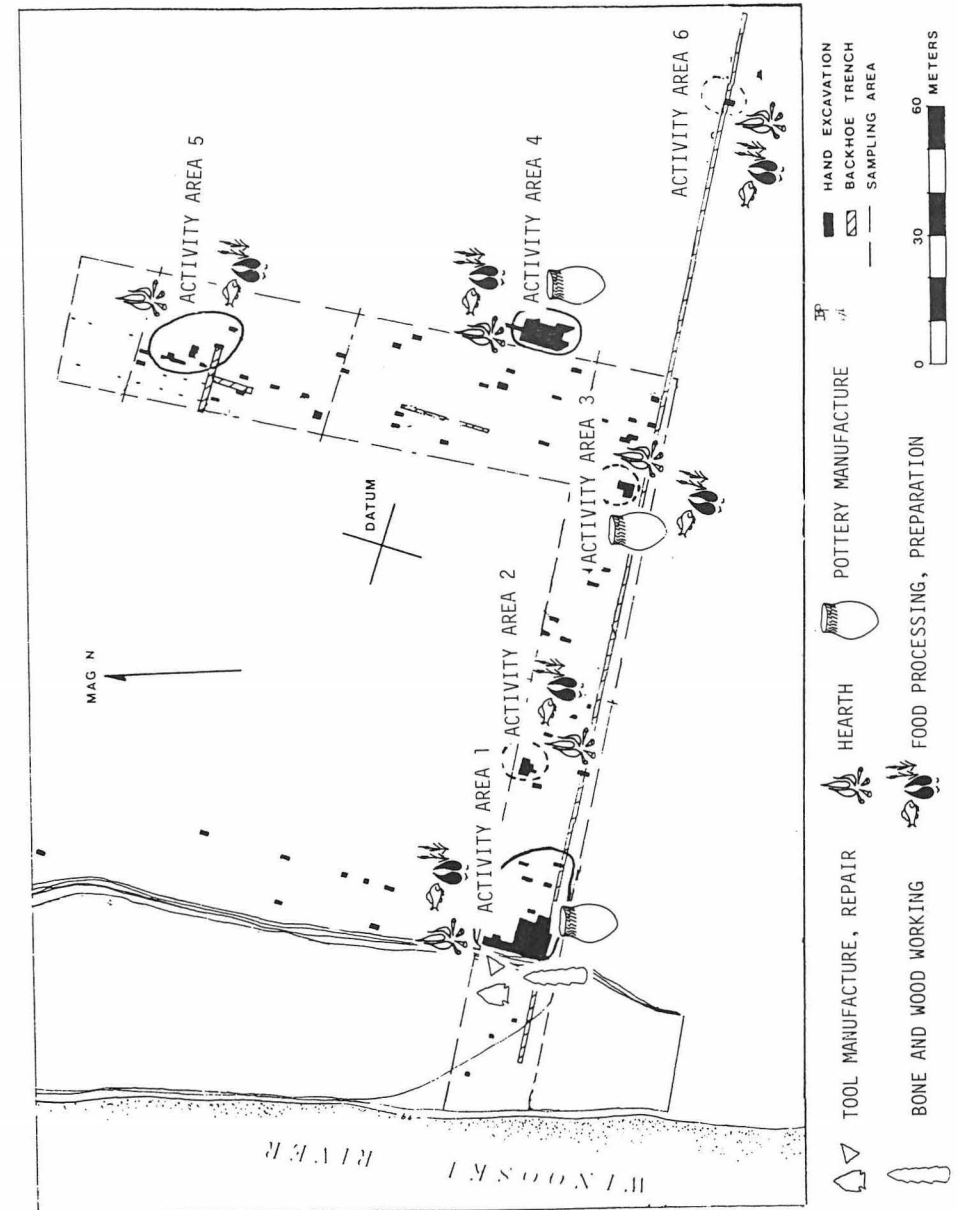


Figure 5. Activity Areas at the Winooski Site.



Figure 6. Pottery Manufacturing Area. Construction activities are halted briefly while crew members recover data exposed by bulldozers.



Figure 7. Fire-Cracked Rock Feature. Heavy concentration of bone fragments suggest that animal fats and bone greases were rendered in these features at the site.

cant concentrations of sherds, pottery fragments and clay “scraps” suggest that pottery was made and fire-hardened in these hearths, with only scant evidence of bone, wood and stone working. The function of both areas 5 and 6 appears to be almost wholly that of food preparation.

The artifact categories excavated at the site — ceramics, cordage and basketry, chipped and ground stone, metal and bone — represent a broad range of technologies. Use of bone, antler, bark, wood and hide can be inferred since tools used for working these materials were identified.

Pottery remains — 11,341 sherds — constitute the most common type of artifact encountered at the site (*Figs. 8, 9*). As a general rule, pottery was tempered with feldspar grit and made by a coiling process. Prior to firing, vessels were commonly decorated with a carved stamp, probably of bone, wood or stone. The earliest pottery vessels at the site, A.D. 1-300, were well made and uniform in size and style. They were cylindrical in shape with conoidal bases, between 10"-12" in height, and had a capacity of 1-2 gallons. They were decorated by stamping with a tool that produced a pattern resembling the edge of a scallop shell. This pseudo scallop shell form of decoration was carefully stamped over the entire vessel in a zoned pattern. Sometime around A.D. 600, we see major changes in the ceramic industry — vessel size was more varied, bases were slightly pointed to rounded, and styles and techniques of decoration were de-emphasized. Decorative stamping in various forms, including tooth-like (dentate) designs, continued but was usually confined to rims and necks. After A.D. 800, cord-wrapped sticks and circular punctuate stamping became popular.

There is considerable evidence to indicate that chipped stone tool making occurred at the site. However, based on the preponderance of tiny waste flakes, it appears that the initial stages of reducing large chunks of raw materials for eventual use in tool making took place off site. By examining the shape and wear patterns on the working edges of tools such as scrapers, it is possible to infer their tasks — cutting, chopping, scraping, boring, shaving, perforating, splitting — all related to the activities necessary for daily living.

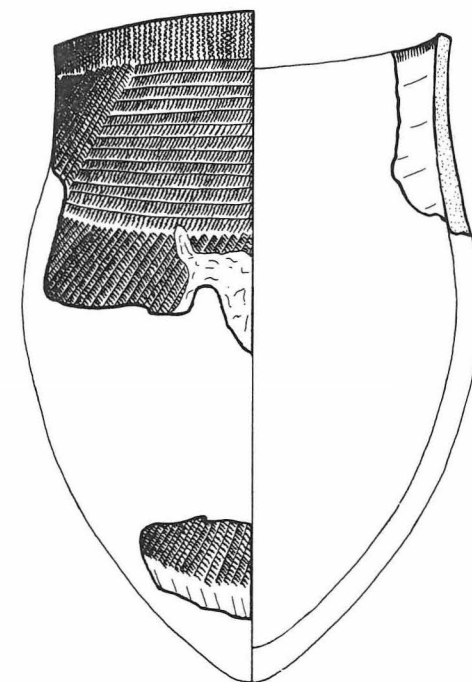


Figure 8. Reconstructed Pottery Vessel. The sherds shown in Figure 9 (top) were used to reconstruct this vessel, which was approximately 10" in height.

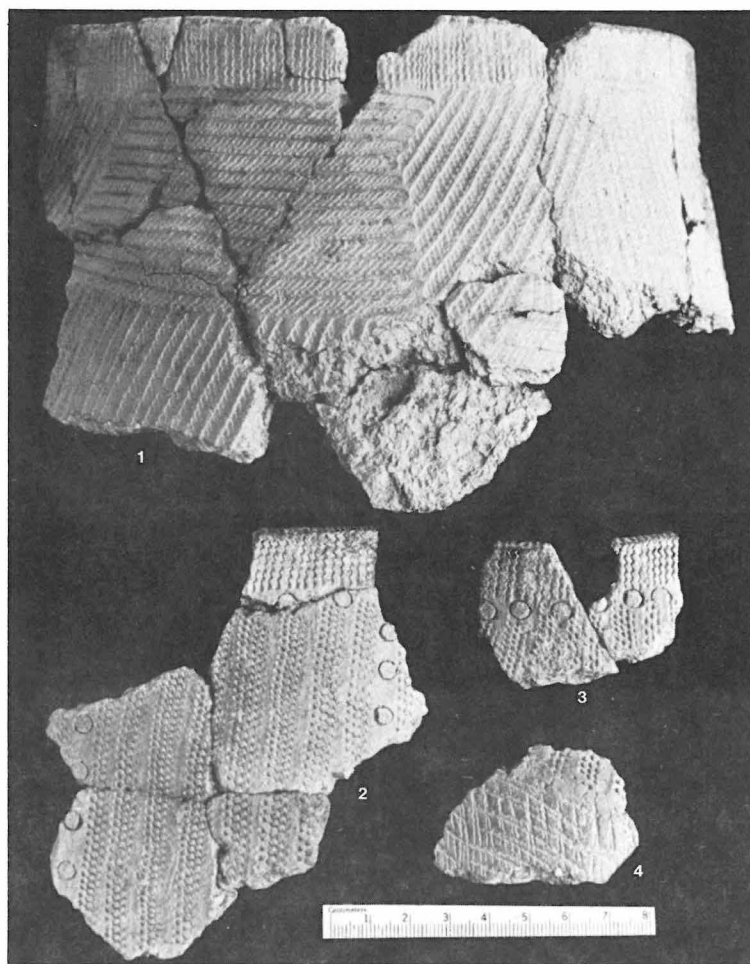


Figure 9. Fragmentary Pottery Vessels. This pseudo scallop shell style of decoration was popular with Winooski potters from A.D. 1-300.

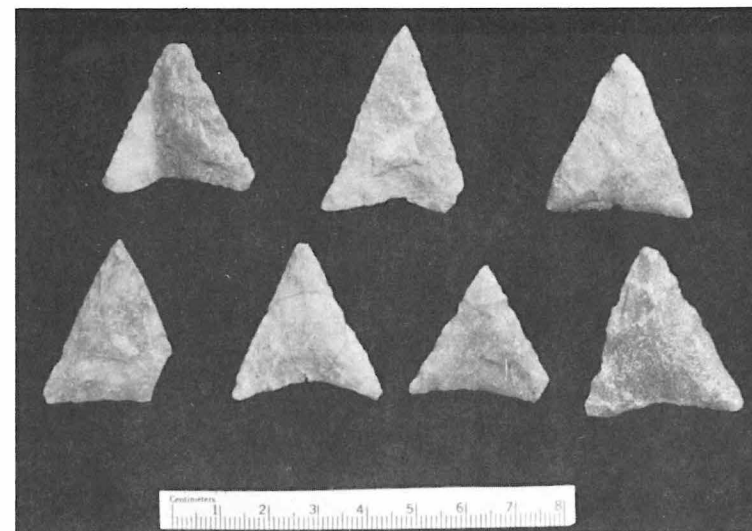


Figure 10. Levanna Projectile Points. These grey quartzite points were in vogue at the site after A.D. 800.



Figure 11. Jack's Reef Projectile Points. Made of chert, such points were manufactured between A.D. 600-800.

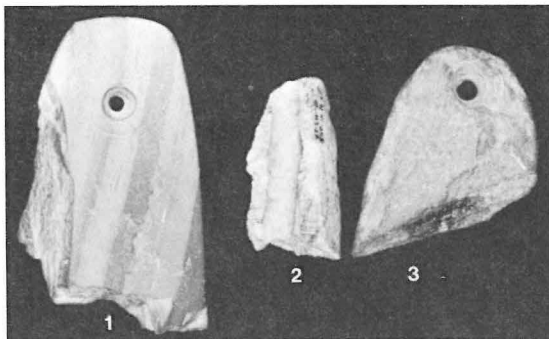


Figure 12. Ground Stone Artifacts. Pendants, probably used for personal ornamentation, include 1) drilled rectangular fragment of black and green banded shale; 2) drilled ovate fragment of grey sandstone. Fragment of smoking pipe (2), manufactured of feldspar.

Among the finely finished stone artifacts, the most common projectile point type at the site is the triangular Levanna point (*Fig. 10*); 55 specimens were manufactured from grey quartzite and 15 of chert. A second type, the Jack's Reef point (*Fig. 11*) is represented by 18 specimens, all made of chert. Also recovered were one or two examples each of other point forms including pentagonal, side notched, corner notched, contracted stem, lanceolate and long, narrow triangular points.

Stone tools produced by grinding and pecking techniques were not common at the site (*Fig. 12*), perhaps because these laboriously made objects were handled with some care and taken along when the group moved on. In fact, only three celts were recovered; two of sandstone had highly polished bits for cutting and chopping tasks; the third, of greenstone, was unfinished and unused. Several flat, rounded cobbles with centered concave pits were probably used as nutting or anvil stones. A similar oval cobble of red quartzite with heavy battering on its edges indicates multiple uses — as a hammerstone, equally useful for chipping stone or cracking nuts and animal bones, or as an anvil. Several tabular stones with sides polished from use may have been used to abrade wood or bone.

The only artifacts found that represent items of personal ornamentation were two broken pendants (*Fig. 12*) and two small copper beads. A feldspar pipe fragment, probably part of a platform pipe (*Fig. 12*) documents smoking activities. Although bone working was probably an important part of daily life, acidic soils destroyed the end products of this activity with the exception of a single barbed bone point. Undoubtedly, this point was hafted for use on a fish spear.

That these people manufactured and used cordage and basketry is known only from negative impressions of these perishables left on pottery sherds. Several types of cordage were wrapped around sticks or paddles and then impressed in the wet clay prior to firing the vessels. This decorative technique would help bind the clay coils as well. Several types of twined basketry were similarly left impressed on pottery sherds; the twined items represented on one sherd may represent a mat.

All of the tools recovered at the Winooski site are typically used by people engaged in a hunting-gathering-fishing way of life. Also typical of such societies is the use of the hearth as a focal point for a wide variety of domestic activities.

MAKING A LIVING — HUNTING, GATHERING AND FISHING AND THE SEASONAL ROUND

Valuable clues for reconstructing the Winooski peoples' diet and the seasonal nature of their occupations are provided by their hunting-gathering-fishing tool kit (*Fig. 13*) and by the actual remains of plants and animals collected or procured at the site. Relatively large amounts of organic remains were preserved in the acidic soil because they were burned. Fragments of calcined bone and charred seeds and nutshells were primarily recovered from hearths through a laborious process known as flotation: Soils or hearth contents were separated and screened in water, permitting recovery and analysis of organic and non-organic remains so small that they would ordinarily be lost in conventional, on-site dry screening. Some potential uses of these plants (*Fig. 14*) are suggested by ethnographic accounts of the Western Abenaki and other historically known Indians (Black 1980, Day 1978, Haviland and Power 1981, Seymour 1969, Vogel 1970, Yarnell 1964).

At least 18 different plants were in use at the site, since all were recovered from cultural features. By far, most numerous were butternuts, found in 44 hearths and in all other features that contained plant remains. Butternuts are highly nutritious, readily available at the site and plentiful — bumper crops occur every two or three years. While butternuts were obviously an important food resource to these hunter-gatherers, small amounts of black walnut, hickory, acorn and hazelnut remains provide evidence that other nuts were not ignored. They also may have eaten pigweed or lamb's quarters, rose, hog peanut, and a variety of berries — blackberry or raspberry, fire cherry, and common elderberry — remains of which were found in smaller numbers. While all of these plants were probably important as food resources, some are also known to have multiple uses: butternuts, black walnuts, acorns and hazelnuts for dyes, and portions of the plants — excepting pigweed — for native medicines. Of minor importance as sources of food but primarily collected for medicinal purposes were snowberry, sassafras and buckwheat and probably staghorn sumac, bedstraw and mustard. It was the women, undoubtedly, who collected the bulk of these resources from the lowlands along the river and the wooded portions of the Intervale floodplain. Although various habitats were exploited during gathering activities, all would have been close to the site.

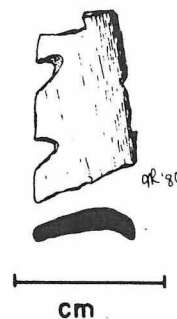
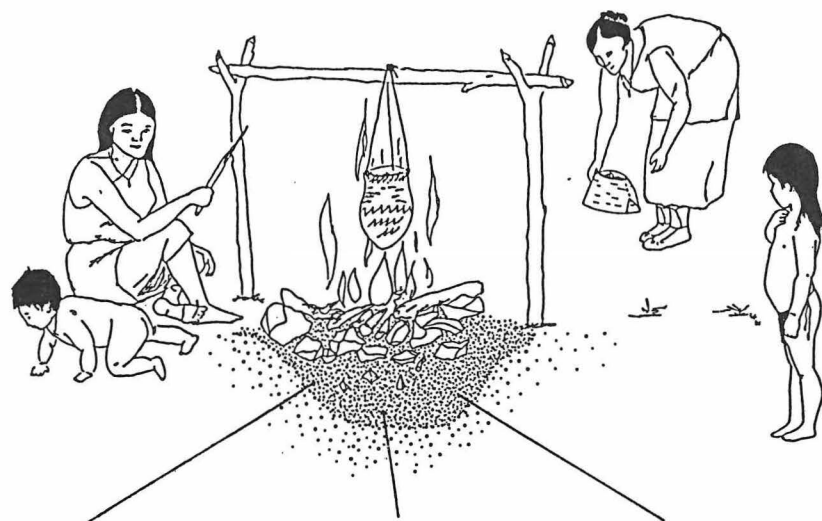


Figure 13. Bone Point Fragment. This bone point was probably used for spearing fish, much like a harpoon point.



FOODS

BUTTERNUT
BLACK WALNUT
HICKORY
OAK
HAZELNUT
PIGWEED (LAMB'S QUARTERS)
FIRE CHERRY
BLACKBERRY/RASPBERRY
ROSE
STAGHORN SUMAC
HOG PEANUT
SNOWBERRY
COMMON ELDERBERRY
BUCKWHEAT

MEDICINAL USE

BUTTERNUT
BLACK WALNUT
HICKORY
OAK
HAZELNUT
FIRE CHERRY
BLACKBERRY/RASPBERRY
ROSE
STAGHORN SUMAC
MUSTARD
HOG PEANUT
SNOWBERRY
COMMON ELDERBERRY
SASSAFRAS
BUCKWHEAT
BEDSTRAW

DYESTUFFS

BUTTERNUT
BLACK WALNUT
OAK
HAZELNUT
STAGHORN SUMAC
BEDSTRAW

Figure 14. Potential Uses of Plant Species Identified at the Winooski Site. Delicate plant remains, preserved in carbonized form, were recovered from hearths.

Large amounts of bone remains were recovered, but their highly fragmented condition precluded species identification; often they could be identified only by faunal classes — mammals, fish, birds and reptiles. Not surprisingly, white tailed deer constituted the bulk of the identifiable mammal remains. Also recovered were examples of woodchuck and beaver, likely eaten on-site, as well as chipmunk, muskrat, and red or grey fox. Two dogs were represented among the mammals; from the condition of the bones, it appears that they were consumed. All of these animals could have provided important sources of raw materials — bone and teeth, such as beaver incisors, for tools; and skins and hides for clothing, shelter and other purposes. Birds were taken, but none of the bones could be identified by species. Turtle carapace was recovered from two features.

Fish remains mostly consisted of vertebrae or spine elements, and only two species were recognizable: Brown bullhead or horned pout, a small fish usually weighing less than a half-pound, and the large lake sturgeon, averaging 20-50 pounds in weight and 3-4 feet in length. According to the ethnographic literature (Cleland 1966:171), sturgeon was usually taken with spears or harpoons.

While both floral and faunal remains provided information on their seasonal use, the floral data are the most specific indicators. All plants recovered from the site ripen locally in the summer and autumn, mainly from mid-July to October; peak ripening periods of all identified species coincide during the months of August and September. If plant resources were stored, the period during which these plants were used for food and other purposes would of course be extended. Faunal data are less exact — periods of peak utilization could range over much of the year. Lake sturgeon is the most specific indicator, readily available in the spring during spawning, and less abundant throughout the later months. Most of the other faunal species represented at the site, with the exception of deer, would be most easily obtained in the warm months.

Throughout the long span of this site's use, the combination of floral and faunal remains indicates a repeated pattern of late summer/autumn occupations. While varying in their content, all activity areas and occupational episodes indicate similar if not identical periods of seasonal use.

TRADE AND INTERACTION

Lithics — specifically, chipped stone tools and waste flakes produced during the tool manufacturing process — enabled us to examine possible “trade” activities at the Winooski site. Aided by comparative lithic collections and other information, thousands of lithic items were sorted into local and exotic categories; in most cases, the geographic source of this raw material was identified, at least by bedrock location (Fig. 15). The results of the analysis indicated that a dramatic change in stone utilization occurred at the site around A.D. 800 (Petersen and Power 1983b).

The use of non-local stone material characterized the two Archaic occupations, dated at 3000 B.C. and 1900 B.C. Of all the waste flakes recovered from the earlier Archaic episode, 92% were of non-local grey chert; 96% from the later Archaic occupation were of the same non-local material. Although not plentiful in the A.D. 1-300 occupational episode, the chipped stone tools and waste flakes from this period were also predominantly non-local in origin, including, again, grey chert as well as grey mottled chert from today's New York state. These cherts made up 75% of the tools and 61% of the flakes. A high proportion of non-local raw material was again evident in the A.D. 600-800 occupation; in activity area 1, 85% of the tools and 63% of the flakes were non-local. Varying proportions occur in other activity areas, but all document the continued importance of cherts from west of Lake Champlain, jasper from perhaps as far south as Pennsylvania, and rhyolite and felsite from east of the Connecticut River. Further, grey chalcedony possibly originating in Quebec and pink chalcedony perhaps from Ohio were found. The dramatic shift in stone material use is evident in the final occupational episode, A.D. 800-1000 — only 17% of the tools and 6% of the flakes came from outside the Champlain Valley. During the entire prehistoric span of occupation at the Winooski site, the long-term preference for non-local stone material clearly changed, beginning about A.D. 800.

It is unlikely that Winooski tool makers traveled directly to the distant stone sources; further, this non-local stone was not a necessity since functional tools could be made from locally available materials, as indeed they were. By choice, therefore, Winooski tool makers appear to have participated in some form of trade or exchange system to secure these types of materials. In some historically known band societies, a system of gift exchange operates between neighboring groups — an overlapping, “down-the-line” system (Renfrew 1975:41-43) that can ultimately involve a large geographic area. Such a system maintains social and/or economic ties between neighboring groups. In this model, too, certain lithic raw materials might represent prestige goods within a broader exchange of critical resources. If Winooski tool makers were involved in this type of exchange, and considering that it had to be reciprocal, then what raw materials or finished goods were contributed by Winooski peoples? Perhaps perishable goods that are not part of the archaeological record.

Whatever the precise nature of the exchange system, the shift to local stone resources marks its breakdown. Why this long-term system changed is unknown, but a tentative explanation might be offered. Perhaps the change reflects a cultural and ethnic boundary established between local Vermont populations and those to the west. Approximately the same boundary is known in the historic period between Iroquoians of the Mohawk drainage and further west, and Western Abenakis of Vermont and northern New England (Day 1971, 1978, 1981b). This hypothesis needs to be tested in future work.

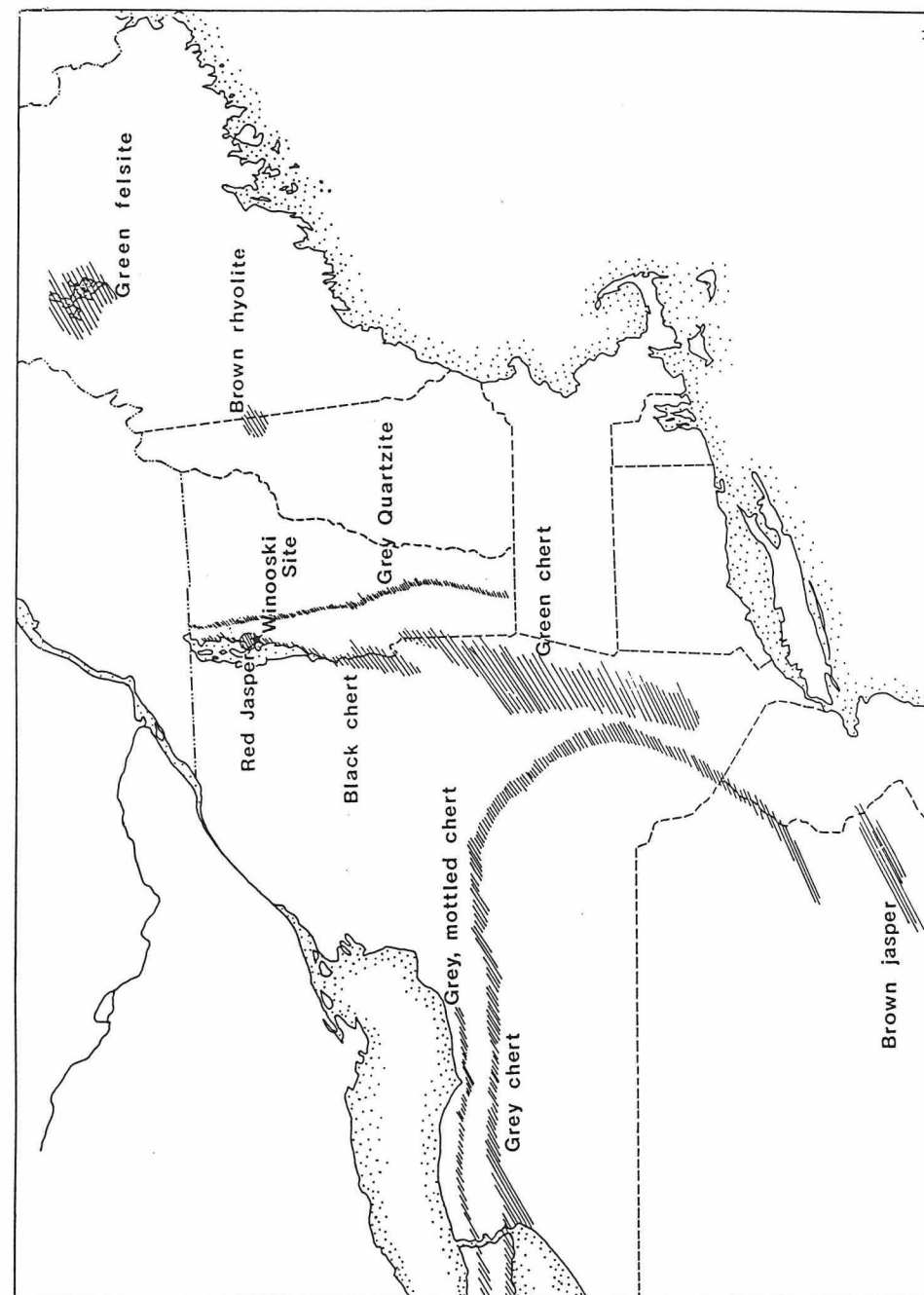


Figure 15. Lithic Raw Material Sources (General Bedrock Locations).

CHANGE AND CONTINUITY

Because the Winooski site was occupied at various periods during a very long timespan, both culture change and continuities in the peoples' way of life can be observed. Several approaches were used to determine the site's chronology. Deciphering the site's stratigraphy or superimposed deposits was critical. Fourteen layers of soil and flood deposits had to be correlated with five cultural levels or occupational episodes, work greatly aided by the efforts of a geomorphologist (Beblowski 1981). Securing a series of radiocarbon dates, obtained from charcoal and charred butternut samples from hearths, was equally important. Absolute dates were thus assigned to each of the cultural levels (*Fig. 16*). The dense deposits of habitation debris close to the river clarified details of events during the later Woodland occupations, and studies of projectile point and pottery typologies also proved useful in reconstructing the site's chronology.

The combined data indicate that at least five episodes of occupation occurred at the site. The earliest were the two Archaic occupations, dated at 3000 B.C. and 1900 B.C. There is no evidence that Early Woodland peoples lived here; rather, bands returned once again during the early part of the Middle Woodland period, A.D. 1-300. After another seeming hiatus, a more intensive period of occupation dates to A.D. 600-800, followed by a final episode, A.D. 800-1000. This is the site's story as we know it today, although the possibility exists that other episodes of use may remain hidden beneath the unexcavated parts of the site.

One form of culture change that is recognized within this sequence is a gradual increase in the size of settlements during the site's history, from small Archaic camps to, after A.D. 600, large base camp or village settlements. Chipped stone and ceramic technologies also underwent major changes. Winooski tool makers flaked a variety of projectile point types until approximately A.D. 800; after that date, standardized Levanna triangles became the dominant form (*Fig. 17*). The long evolution of ceramics, beginning with the earliest pseudo scallop shell pottery made in the Middle Woodland period, shows that while decorative styles were uniform from A.D. 1-300, variety in both decoration and shape occurred in the following occupational episode, ultimately to become, like projectile points, standardized sometime after A.D. 800. While some details changed, however, basic methods did not: Pots were coiled, tempered with feldspar grit and decorated by stamping techniques throughout the duration of pottery making at the site.

Far more dramatic was the emphasis on non-local versus local stone materials for tool making prior to A.D. 800. Undoubtedly the two copper beads recovered from household refuse in the A.D. 1-300 occupation were also part of the regional exchange system; these beads represent the latest known prehistoric use of copper in the Champlain Valley. The abrupt withdrawal of the group from a long-established exchange system — or the collapse of the system itself — may reflect changing social and/or economic relationships between Winooski peoples and groups outside the Champlain Valley.

Four thousand years of human activities at the Winooski site involved many changes, yet a sense of continuity prevails here. The site's intensive prehistoric use and extensive archaeological studies have provided an uncommon perspective of this continuity — of bands returning season after season to harvest butternuts, to hunt and to follow their ancient pattern at the river's bend.

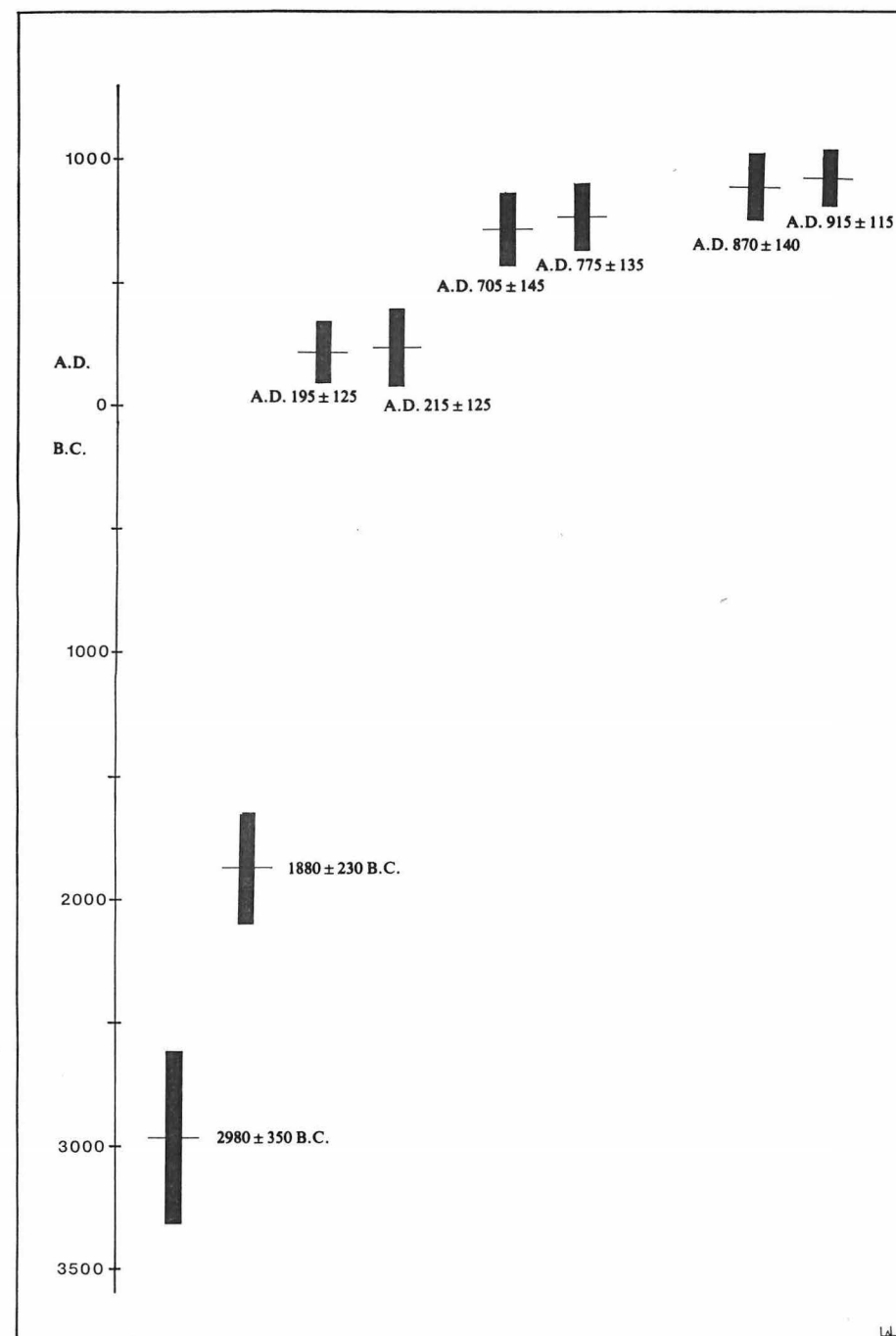


Figure 16. Radiocarbon Dates at the Winooski Site. Horizontal lines indicate the dates; vertical bars represent a plus-minus factor that increases the probability of accuracy.

WINOSKİK AND THE WINOOSKI SITE — AN ETHNOGRAPHIC SKETCH

At the time of Champlain's 1609 journey down the Lake that bears his name, there were two aboriginal groups who spoke Eastern Algonquian languages living in what is now Vermont (*Fig. 18*). The Mahicans, whose home territory was the upper Hudson drainage, occupied the southwestern portion of the state; the Western Abenakis, whose language is distinguished from that of Eastern Abenakis on the basis of phonology, grammar and lexicon (Day 1978:148; Haviland and Power 1981:3-6), occupied the rest of Vermont. Western Abenakis included the Missisquoi band and other bands located on the major rivers in western Vermont, the Cowasucks of the upper Connecticut River, the Sokokis of the middle Connecticut River and the Penacooks and Winnepesaukee of the upper Merrimack River. At the time of earliest Indian-European contact, generally designated as 1609 in Vermont, each of the major Abenaki bands was associated with a sizeable village — usually situated on bluffs close to water and nearby bottomlands suitable for corn agriculture. The earliest known villages were palisaded for defense purposes (Day 1978:149, 153). Population estimates for the the villages vary; a Sokoki village in the middle Connecticut Valley may have included 500 people (Thomas 1979), while about 300 may have occupied the Missisquoi village, according to a mid-18th century reference (Day 1981b). Another major Western Abenaki village was Winoskik, literally "at wild onion land," on the lower Winooski river. These village locations (*Fig. 18*) are significant since each served as a focal point in its band's seasonal subsistence cycle (Haviland and Power 1981:149-152).

When the Winooski site was first discovered, there was some speculation that this was the village of Winoskik. This has proved not to be true, and, in fact, the exact location of Winoskik remains unknown. Nevertheless, the prehistoric lifeways reconstructed from excavations at the Winooski site parallel the Western Abenaki way of life as reconstructed for the 17th century (Day 1978, Haviland and Power 1981). The following is our generalized understanding of this life style resulting from ethnohistoric and other studies.

After a long winter in residence at their major village, the band broke up into small groups and headed for the uplands to the families' hunting territories for the deer and moose season. Only the ill and aged were left behind in the village, cared for by a few individuals. Tributary streams of major rivers defined hunting territories, serving as the territory's center, rather than its edge. Travel over snow was facilitated by snowshoes, and toboggans were used to move game or to carry supplies. A hunter's gear consisted of a bow, arrows, knife and spears. Hunters were often accompanied by dogs, who held animals at bay or warned of their presence. Clothing for both sexes, designed for the harsh winters, included two sets of moccasins and foot wrappers of fur, a coat with separate sleeves, and leggings; women also wore a knee-length skirt and a blouse that reached to mid-thigh. Beaver fur robes were used in bitterly cold weather (Day 1978:153-154, Haviland and Power 1981:155, 157).

As early as spring approached, hunters and their families returned to the village, where women and children tapped maple trees for sap, which they processed into syrup and possibly sugar. Later, women collected early plants such as greens and ground nuts. Spring runs of salmon, shad or alewives resulted in major harvests of these important foods through the use of weirs and traps, or they were speared — all men's work. Men also took large numbers of migrating passenger pigeons and other fowl. The spring round ended with planting, usually in May, of corn, beans and squash in cleared fields near the village. Tobacco was grown in separate gardens and was tended by men (Day 1978:153, Haviland and Power 1981:159).

The summer months were spent in the villages, but some individuals would occasionally travel by canoe to ponds or lakes to escape insects and/or for fishing purposes. Men fished and sometimes hunted throughout the warm months, and in late summer, women collected medicinal plants when these were believed to be at the peak of their power. These plants were then dried and stored. Various ripening berries were gathered, and some green corn and beans were picked and eaten. Women harvested the main crops in September and dried and stored corn for winter consumption. Of the nut crops harvested by women, butternut was preferred. Nuts, too, were often stored for winter use (Day 1978:153; Haviland and Power 1981:159-161).

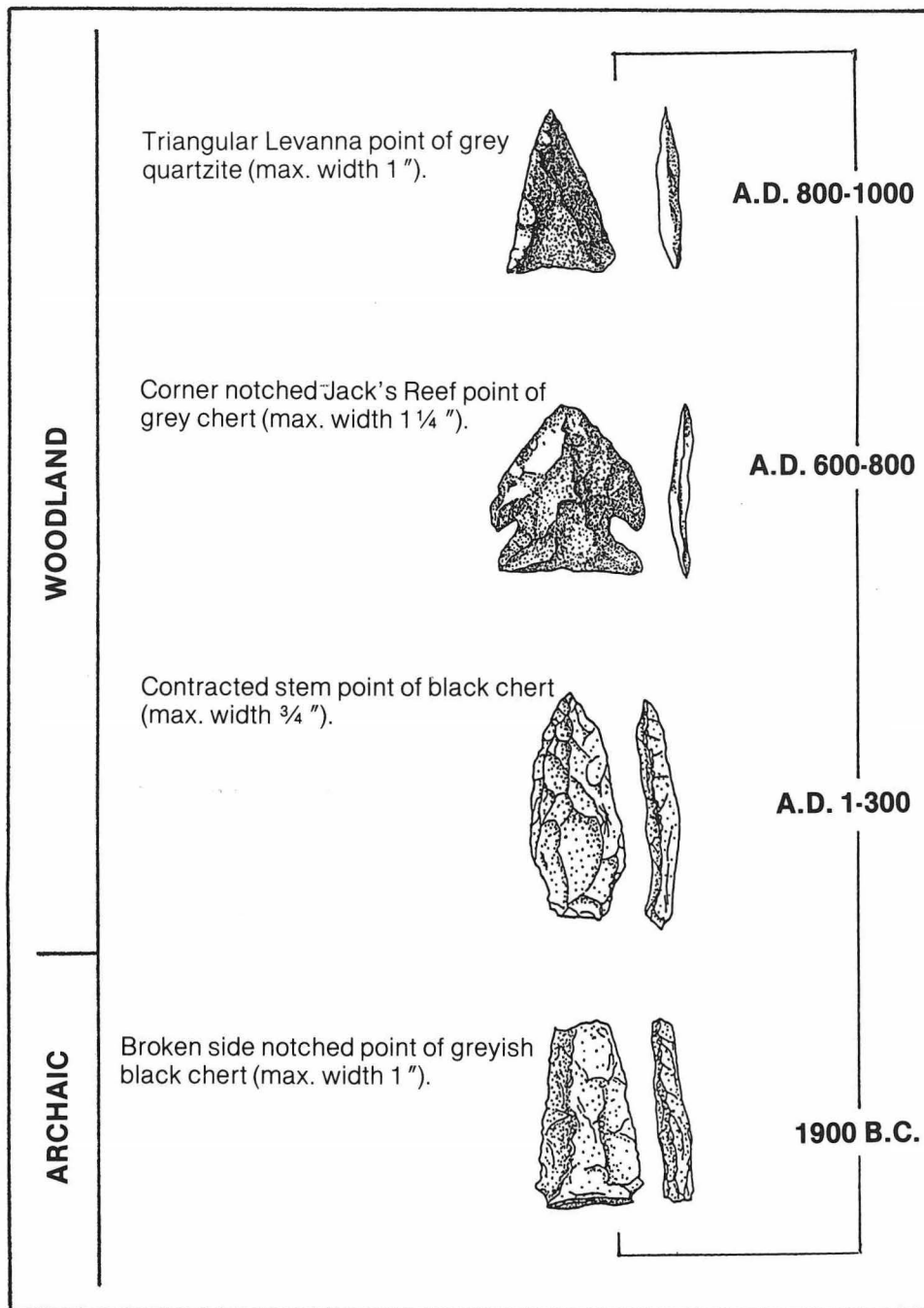


Figure 17. Changing Projectile Point Styles at the Winooski Site, ca. 1900 B.C.-A.D. 1000 (see also Figure 3).

In the fall, after catching and smoking eels for future use in the cold months, and following the short seasonal migration of the passenger pigeon, the villagers split into small family groups and returned once again to their upland hunting territories. The deer and moose rutting season was a productive time for securing these animals and fur-bearers such as beaver, muskrat and otter were trapped for their prime pelts or for food. Bears were also taken after they had denned for the winter. Finally, as the coldest part of the season closed in, the families returned to the village, to feast and to wait for the first signs of spring and the beginning of yet another season in the annual cycle (Day 1978:154; Haviland and Power 1981:161-164).

Although the Winooski site is not the village of Winooskik, this site may represent a non-agricultural precursor of the historically known villages that were so important in the bands' subsistence cycle. Archaeological investigations show that a long-term hunting-gathering-fishing seasonal round was followed by prehistoric bands at the site, a cyclical pattern that had its origins in the Archaic period, nearly five thousand years before the first arrival of Europeans in the Champlain Valley.

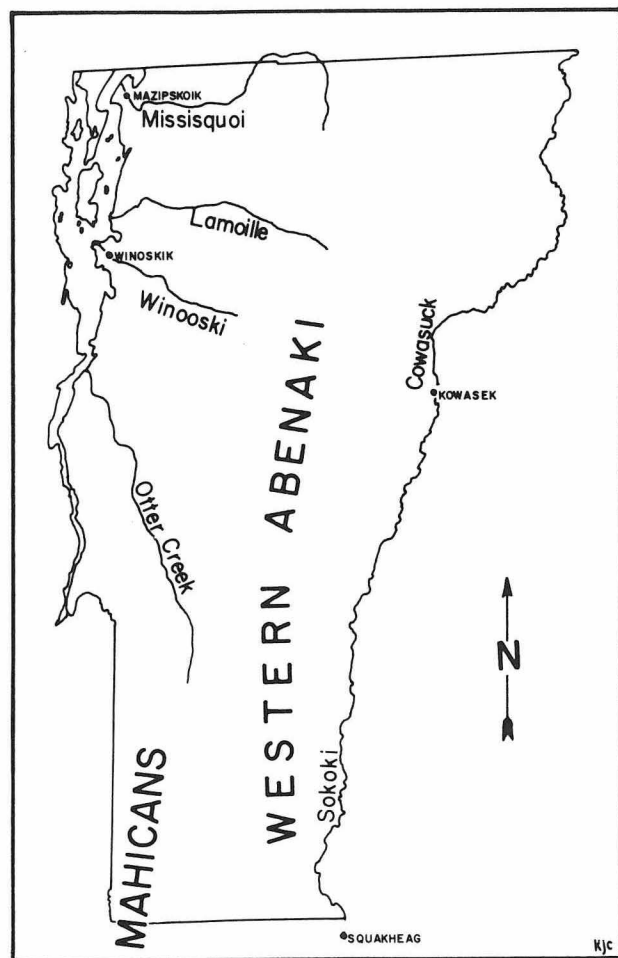


Figure 18. Known Abenaki Bands and Villages in Vermont, ca. A.D. 1600. (Reprinted from *The Original Vermonsters* by W.A. Haviland and M.W. Power by permission of University Press of New England. Copyright 1981 by the Trustees of the University of Vermont).

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