SECOND DUGOUT RECOVERED FROM SHELBURNE POND

By Brian Alberghini

This past October a second dugout canoe was discovered in a swampy area on Shelburne Pond (see VAS Newsletter, May 1978). Les Foshay, while canoeing during a University of Vermont Environmental Studies project, noticed what he thought to be a large board floating in a weed bed. He and a companion turned the object over and discovered that it resembled a dugout. Placing it back in the weeds for safety, Les reported the find to Dr. Marjory Power of the University's Department of Anthropology. Dr. Power suggested that he contact Kevin Crisman and Brian Alberghini (UVM Anthropology students) for inspection of the find. Their examination of the artifact confirmed that it was indeed a portion of a dugout canoe.

Crisman and Alberghini arranged for the removal of the canoe from the pond to safekeeping in a barn owned by Mr. and Mrs. Sawyer Lee of South Burlington. It was later transported to a warehouse for slow drying in a humidified environment.

The existing portion of the canoe is roughly fifteen feet, four inches long, with a maximum preserved width of two feet, five inches. Much of one end of the artifact is

TOWARD A PRELIMINARY, PREDICTIVE MODEL: GOALS, PROBLEMS, THOUGHTS

By Giovanna Neudorfer State Archeologist

Prehistoric archeological sites in heavily vegetated regions differ from most other kinds of cultural and natural resources in that they tend to be hidden beneath the land surface. Unlike standing historic structures or rare and endangered floral and faunal species which are obviously there or not there, which can be observed and counted simply by visual inspection of the landscape, areas of prehistoric habitation or exploitation are most often obscured by hundreds or thousands of years of soil build-up, anywhere from a few inches to many feet depending on soil types and the effects of erosion and deposition. Archeological sites are thus particularly difficult to protect since it is difficult if not impossible to protect something unless you know its whereabouts. If it were not for plowed fields and the accompanying exposure of cultural materials, our inventory of prehistoric archeological sites would be slim indeed. Unfortunately, only a limited range of land is presently used for farming and only within particular parts of Vermont. That leaves a vast amount of acreage that has the potential for containing archeological sites but on which surface identification is precluded by virtue of soil and vegetation cover. This means, first, that we will never be able to identify every single prehistoric habitation or use area that may exist. This is not a problem because we can still achieve an understanding of past culture and behavior as long as we eventually know the full range of site types that do exist and the full range of environments in which they are located. Second, conversations about prehistoric archeological site location are of necessity interspersed with ambiguous language such as "there may be a site there" or "there is a potential for finding a site." This is a problem to all the federal and state agencies that are charged with protecting archeological sites from ad-
I DUGOUT AT SHELBRUNNE

intact, as well as approximately two-thirds of one side, perhaps up to the gunwale. The interior preserved depth is approximately eleven inches.

Thanks are extended to Les Foshay for his prompt reporting of the discovery, to Mr. and Mrs. Lee for the use of their barn, to Mr. Bill Kelley for warehouse space, and to the students of the University of Vermont Anthropology 196 class, who provided the muscle for transporting the canoe from the pond to the Lees’ barn. Thanks are also due William Bayreuther and Brian Robinson for their aid in recovering the canoe from the chilly pond.

The ages of this and the first dugout found at Shelburne Pond are still unknown. Radiocarbon dating of the first canoe soon may be possible, with the generous financial assistance of Dr. Ian Worley of the University’s Environmental Program.

Very little information has been compiled on the manufacture and use of dugout canoes in this area; no dugouts with definite prehistoric provenience have been documented in Vermont, although historic sources indicate that these type of craft have been employed by hunters in the twentieth century.

If you have any information on dugout canoes in Vermont, please contact the Department of Anthropology, Williams Hall, University of Vermont, Burlington, 05405 (656-3884). We would be particularly interested in data on the history of the dugouts which have been recovered from Shelburne Pond.

TOWARD A PREDICTIVE MODEL

Verse impacts and to developers and other individuals who would be pleased to protect sites. You cannot protect or avoid a site unless you know it’s there. Since it is impossible and not even desirable to test pits or work within the framework of a site location model based on unsystematically collected information, we are currently in the process of preparing a preliminary predictive model which will serve a number of purposes. First, it will serve as an overview, summarizing or synthesis, of the site data presently on hand and at the same time enable us to detail both general and specific deficiencies in our present information, such as biases of the survey record, as well as site size, cultural content, landowner information and current site condition and integrity.

Second, the preliminary predictive model will be essential in refining our ability to review potential impacts by federal, state, local and privately funded development projects on archaeological sites (see an overview of this process in VAS Newsletter, no. 26), thereby helping us to better preserve and protect the resource base. At the same time it will help us to better assess the need for archeological surveys in the course of federally funded, assisted or licensed projects. The preliminary predictive model will also outline directions for future research work, two certain directions being the desperate need to field check and subsurface test, when possible and desirable, known sites locations to procure environmental and cultural information not presently documented, and to identify presently unknown sites in areas of sensitivity.

It should be understood at the outset that presently existing information on site locations is exceedingly biased due to people’s tendencies to look for sites only in “likely” areas, where they believe sites should be located, and in previously plowed fields. For example, most of the known sites in Vermont tend to cluster around major water arteries, along main stems of rivers and lake shores, as well as in the Champlain Valley. These are environments and geographic areas in which people have tended to look. On the other hand, sites along minor tributaries, or in upland areas, comprise the tiniest minority of the inventory. Until much more work is done in these areas, we should assume that the dearth of sites in these environments is a function of just not having looked very hard. Anyone attempting to work within the framework of a site location model based on unsystematically collected information must thus remember that many environments have never yet been surveyed.

Another potential bias in the existing archaeological record is the effect of flooding and other fluvial (water-related) activities. A study in Pennsylvania (Turnbaugh 1978:593-607) has documented severe flood impacts on sites, both by erosion and deposition episodes, which readily contribute to a misinterpretation of the archaeological record. Islands in rivers, banks of major streams and low con-
fluence areas are heavily susceptible to flood damage so that evidence of prehistoric habitation or exploitation of these areas would in many instances not be preserved through time. The Pennsylvania study shows that the majority of sites investigated for that project were located on relatively high ground, such as old stream terraces. While this terrace location may reflect an active cultural preference by prehistoric peoples to occupy higher, drier terrain, it might, on the other hand, only reflect differential site preservation in which only the higher sites have been spared from the ravages of severe floods. Any attempts at developing predictive models of site location by looking at the existing archeological record must thus also take into consideration factors such as these that would influence the physical site evidence available for study.

In addition, the present level of documentation available for the vast majority of sites precludes us from anything but the grossest cultural generalizations. Information such as site size, intensity and density of cultural materials, length and season of occupancy, and site activities is virtually non-existent at this time. Many of the site survey forms, for example, contain information such as "corner-notched projectile points" which could place the site anywhere from the Middle Archaic Period (ca. 8000-6000 years ago) to the Middle Woodland Period (ca. A.D. 100-1000). Basically, therefore, any predictive model developed at this stage of documentation can only outline the broadest of generalizations, such as kinds of soils in which the sites tend to be found, elevation ranges, and other gross environmental and topographic generalizations.

The first step in developing the preliminary predictive model has been to tabulate all information from individual sites in the inventory in order to determine trends, or patterns, of site location, as well as to quantify other kinds of useful information. For each site, we thus tabulated drainage affiliation, distance from water, topographic information, elevation, soil type(s), location information, site condition, present land use and ownership, size, and available cultural and chronological information. Because the site files are organized by county, sites from each county were initially tabulated as a group for the sake of expediency. However, because prehistoric occupation is linked to drainage systems which transect county boundaries, the sites were subsequently reorganized by drainage affiliation in the process of sorting the tabulated data.

While the tabulating itself is a relatively rote, although time-consuming, process (all but five counties have been completed), the analysis and interpretation of the tabulated data gets complicated, particularly if we are looking for meaningful generalizations about human behavior and site location. While it is easy enough to identify the present-day soil type within which a site is located (from Soil Conservation Service Soil Survey books) and the present-day drainage capability, wetness factor, dominant tree species, and wildlife habitat potential for that soil type, it gets immediately complicated by the fact that environment and climate have drastically changed through time, as have water courses and lake levels, so that the present day ecology, including the soil characteristics, of a particular area does not reflect what was happening in the same spot 9000 or even 5000 years ago. Because changes in climate and vegetation were accompanied by changes in plant and animal resources available for human consumption, different subsistence and site location strategies were used in different time periods. This means, for example, that sites of different age are not comparable to each other and need to be evaluated separately. Unfortunately, the level of data available on many sites at this time makes this kind of analysis difficult.

Evaluating site locations at their present state of cultural and chronological documentation is thus a complex process which requires constant recognition of and attempts to control the extremely dynamic variables of time and environment. And at the same time as we are trying to understand and interpret site locations within a broad time frame of thousands of years, it is also necessary to remember that these same sites represent seasonal foci of activity within real life prehistoric annual cycles as well. For example, certain environments may have been suitable for fall or spring camps 8000 years ago whereas 5000 years ago they may have been suitable only for late summer or winter habitation.

Because prehistoric site areas, comprising primarily the unperishable remains of culture, constitute fragmentary, incomplete, evidence of past lifeways and offer the only scraps of information still available to us about past cultural systems, and because the proper study of these sites is contingent upon a thorough understanding of past environmental and topographic changes, it will take years before we can adequately understand the lifeways of prehistoric peoples—their patterns of obtaining food and other necessities, their patterns of settlement in different seasons of the year and in different periods of time, and their continual adaptation to changing climate, vegetation and food resources.

All a preliminary predictive model can do at this time is to make some generalizations, raise many questions, point to data deficiencies, and serve as a framework for future research.

References Cited

This past year was a busy one for UVM Contract Archaeologist Peter Thomas and his staff, who conducted research aimed at assessing the archaeological resources within the proposed impact areas of 19 construction and planning projects throughout Vermont.

Much of the effort was concentrated on so-called "Phase I" (initial identification) surveys of proposed highway projects. These Phase I assessments are designed to define potential areas of archaeological sensitivity and to determine the existence of immediately identifiable prehistoric and historic sites within the limits of project impact. Evidence of prehistoric sites was encountered in four of the ten proposed highway corridors investigated; these sites are situated in Brandon, Swanton, Middlebury, Pownal and Bennington.

Phase II "Intensive Site Evaluations" were undertaken at the Brandon and Swanton sites.

The Society is pleased to announce the re-election of Joe Popecki to its Board of Trustees, and welcomes new Trustees Muriel Farrington and Lauren Kelley. The complete Board for 1980 is listed below.

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Burlington, VT 05405
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Burlington, VT 05405
office phone: 656-3884

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home phone: 964-4438

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Burlington, VT 05405
office phone: 656-3884

Dr. Peter A. Thomas
Anthropology Department
Williams Hall UVM
Burlington, VT 05405
office phone: 656-2947

Ms. Giovanna Neudorfer
State Archaeologist
Division for Historic Preservation
Pavilion Building
Montpelier, VT 05602
office phone: 828-3226
This additional field testing is designed to gather the data necessary for estimation of a site's size, content, structure, age, function, and archaeological "significance". Once this information is collected, it is evaluated in order to determine the site's eligibility for nomination to the National Register of Historic Places. A site's "significance" is directly determined by the data currently available on it, its physical integrity, the research problems which might be addressed by its further study, and its potential to clarify or fill gaps in the known archaeological record.

If a site is judged significant, the agency whose proposed project may adversely affect it is furnished with specific recommendations for avoiding or mitigating the potential impact. Avoidance of adverse impact is sometimes possible if the project plans are still in their formative stages; in this case the project may be redesigned in such a manner that its area of impact does not include the location of the site. When avoidance is impossible due to engineering or other constraints, a "Phase III" mitigation plan may be formulated which allows archaeologists to complete data recovery from a representative portion of the site which would otherwise be lost.

The Phase II assessment of the Brandon site (Vt-Ru-58), directed by M. Pamela Bumsted, revealed that it contained a tight cluster of chert waste flakes, a Late Archaic, chipped slate biface, and a concentration, or "feature," of fire-spalled quartzite cobbles which appear to have been produced in an aboriginal sweat lodge. The level of documentation at this site was sufficiently rigorous that no further investigation of it is planned; the Agency of Transportation will be able to modify its proposed alignment to avoid the portion of the feature which was not excavated.

The Phase I and II investigations of the site in Swanton (Vt-Fr-69), supervised by Marie Bourassa, produced some significant results. Two chert and one quartzite projectile points were recovered. They bear a morphological similarity to the "Brewerton Corner-Notched" type, but are apparently culturally unrelated. Other artifacts documented from this site include projectile point preforms, biface fragments, perforators or drills, a core, scrapers, utilized flakes, and over 7,000 unmodified waste flakes (primarily chert).

Two pit features were identified at Vt-Fr-69; these contained a very small quantity of calcined (burned) mammal bone, which was too fragmentary to permit species identification, and scattered charcoal, some of which was submitted for radiocarbon dating.

On the basis of the artifactual data, Vt-Fr-69 was initially assumed to represent a single-component hunting or fishing site which was utilized by a small group of Amerindians approximately 5,000 years ago. The fact that it had yielded only Brewerton Corner-Notched-like projectile points, and none of the other Laurentian Archaic point types was cause for celebration; to our knowledge, no other investigated Northeastern site contained this point form as an exclusive type.

There was no questioning the fact that this site was unique, but its singular nature did not become fully apparent until the results of the radiocarbon age determinations were available. The two charcoal samples, one from each feature, were dated at 7760±225 and 7405±225 radiocarbon years before present. If these samples have not been subject to contamination by "older" carbon (and we have no reason to believe that they were), this site was occupied roughly 2,500 years before the earliest-known "Brewerton" site. Given the apparent great antiquity of Vt-Fr-69, and the fact that it may still contain invaluable data on human life in the Middle Archaic Period, the Agency of Transportation has been asked to fund further data recovery. This additional fieldwork is expected to take place some time in 1980.

**Bennington Area Was Site of Much Historic and Archaeological Research Effort in 1979.**

Phase I fieldwork by Brian Robinson and crew related to the relocation of Route 7 in Middlebury resulted in the identification of 14 aboriginal sites, 10 of which were within the limits of proposed construction. The temporal affiliations of sites yielding diagnostic artifacts ranged from Late Archaic to Middle/Late Woodland. Phase II assessment of some of these sites will probably be conducted after the Agency of Transportation decides which alignment it wishes to proceed with to construction. (For a discussion of the methods employed during this survey, and their implications for fieldwork elsewhere, see Brian's "Plowed Fields in Middlebury" in next issue.)

A great deal of historic and archaeological research has been done in the past year on the greater Bennington area. Data collected during extensive background research by Gina Campoli and Prudence Doherty were utilized in a report which detailed the known and predicted archaeological sensitivity of the Bennington region. This publication was intended for use as a planning document by the Agency of Transportation or any other agencies contemplating land alteration projects in the area. It was prepared during the initial stage of a Phase I assessment for a highway project involving the upgrading and/or relocation of portions of U.S. Route 7 and Vermont Route 9 in Pownal and Bennington. Subsequent fieldwork in the project areas was supervised by Marie Bourassa and William Bayreuther; this reconnaissance survey yielded further documentation for known historic sites, identified additional historic resources, and undertook surface and subsurface sampling for prehistoric sites.

The Pownal-Bennington project areas were stratified into six physiographic zones which were outlined in an environmental resource/
aboriginal exploitation zone model proposed in the assessment's initial report. This model suggested that prehistoric sites would be larger and more numerous in particular environmental zones which displayed diverse subsistence resources. Subsequent field sampling of the various zones over a six-week period, while necessarily limited in scope, revealed a site distribution pattern congruent with that predicted in the model. Five aboriginal sites were encountered within the proposed construction corridors, as were eight potentially significant historic sites. Possible Phase II investigations here, as in Middlebury, are dependent on final project design decisions by the Agency of Transportation.

A Phase I study for a Vermont Route 30 upgrade/relocation project in Wells yielded no evidence of prehistoric sites in the areas of potential impact, but Levi Pratt, a local artifact collector, furnished information on 16 aboriginal sites elsewhere in the town. Most of these sites are located adjacent to Lake St. Catherine and its outlet stream, suggesting a significant Late Archaic and Middle/Late Woodland preference for lacustrine-related subsistence resources in this area.

LA PLATTE RIVER DRAINAGE DATA COLLECTED AND SYNTHESIZED FOR USDA SOIL CONSERVATION SERVICE.

Archival and collector data (primarily derived from Gordon Nielsen) on the La Platte River drainage were collected and synthesized by Peter Thomas for the USDA Soil Conservation Service. This information revealed that a north-south aboriginal trail system may have crossed the river's watershed, connecting Shilburne and Bristol Ponds. Although much further investigation would be required for confirmation of this hypothesis, it is suggested that small, Late Archaic and Woodland Period sites in this area may have been employed as waystations along this route. Such additional research may be forthcoming, as SCS has plans for implementing land conservation measures in the watershed.

A Phase I and II survey directed by William Bayreuther was performed in the impact areas of the Burlington Electric Department's proposed Chace Mill Hydroelectric Project on the Winooski River. Three prehistoric sites were encountered during the Phase I sampling along terrace sections on the Burlington shore of the river; two of these were eliminated from consideration by project redesign, while the third was the subject of Phase II work.

This third site, Vt-Ch-127, was utilized during the Early and Middle Woodland Periods on a sporadic basis. Artifacts recovered include a Meadowood, a Fox Creek and a Levanna projectile point, lithic flakes (some utilized and retouched), biface fragments, a trianguloid "hafted" scraper, and aboriginal ceramic sherds exhibiting dentate, punctate, incised and cord-impressed decorative treatments. The site's lack of hearths and pit features, its small horizontal dimensions, and relatively limited range and low density of artifactual debris suggest that it functioned as what Peter Thomas has termed a "secondary" site - a locus of activity for occupants of a larger, nearby "base" site. As Vt-Ch-127 is situated immediately downstream from the Winooski Falls, it may have been utilized intermittently as a processing station for fish captured at or below the Falls. Another possible function would have been as a location for the collection of vegetal foods such as acorns. Both the Winooski and McNeil Generating Plant sites (Vt-Ch-46 and Vt-Ch-93, respectively) are likely home-bases for the short-term, Middle Woodland Period visitors to Vt-Ch-127.

After extensive sampling it was determined that the cultural components at Vt-Ch-127 had been heavily disturbed by historic plowing. For this reason, it was concluded that further excavation would be unlikely to yield significant data, and, because of this fact, the site was not eligible for inclusion on the National Register of Historic Places.

BURLINGTON'S ETHAN ALLEN FARMHOUSE SUBJECT OF SAMPLING INVESTIGATION.

Martha Pinello supervised a limited program of subsurface sampling at the Ethan Allen Farmhouse in Burlington under a grant from the Vermont Division for Historic Preservation to the Winooski Valley Park District. The sampling was conducted to: 1) determine the extent of any landscaping adjacent to the house, 2) provide data pertaining to any architectural features related to the construction and modification of the house and outbuildings, and 3) recover and identify a representative sample of artifactual material associated with the farm complex.

The results of the sampling indicated that the greater portion of the lawn area around the house had been heavily disturbed by earthmoving equipment used to remove the north porch and re-contour the yard. Refuse disposal patterns at the site suggested the sequence of, and tentative dates for, additions to the farmhouse. The disturbance of the soils surrounding the house had largely obliterated surficial evidence of outbuilding foundations, although these might be found intact at greater depths.

Artifacts dating from the late eighteenth century to the present were recovered from a builder's trench, a large garbage pit, and below the lawn around the house. It has not been possible to relate any distinct subsurface features or individual artifacts to the occupation of the farm by the Ethan Allen family. However, the recovery of debris which is datable to the early nineteenth century may allow tentative predictions as to the economic status and habits of the farmstead's occupants at that time. A concerted group effort currently being undertaken by historians, archi-
We have recently received the results of radiocarbon age determinations of organic samples recovered from Vt-Ch-94, an aboriginal site which was investigated during a Phase I and II survey directed by M. Pamela Bumsted in 1978. Vt-Ch-94 was discovered during the archaeological assessment of a highway project on the Winooski River Intervale in Burlington; it provided the first documented evidence of prehistoric horticulture in Vermont. The recovery of carbonized corn, grape, and butternut shell fragments from hearths indicated a late summer to early winter period of occupation at the site. The association of these remains with Levanna-type projectile points and diagnostic ceramics pointed to occupation during the Late Woodland Period.

Two of the radiocarbon samples, from separate hearths, were composed of butternut shell; they were dated at 250-115 and 510-125 radiocarbon years before present. "Correcting" for predictable inaccuracies observed in radiocarbon dates (by means of data derived from dendrochronological research), the former sample probably dates from between A.D. 1455 and 1675/1790, with the latter between A.D. 1315 and 1450. The third date was determined from a sample of wood charcoal from another hearth, below a stratigraphic level which contained carbonized corn kernels. This sample yielded a date of 2930±115 years B.P. Application of the correction factor results in a probable date range for this sample of between 1270 and 1050 B.C.

On the basis of these dates, at least two separate occupations, or series of occupations, are indicated. The site was certainly inhabited by Late Woodland Amerindians practicing horticulture, and apparently also by an earlier group in the Terminal Archaic or Early Woodland Period.

TRUSTEES ALTERNATE BOARD AND WORK SESSIONS

Trustees have developed a new meeting plan aimed at taking the pressure off many of its members who travel a considerable distance to the monthly meetings.

The January 3 (1980) meeting was the first "work session" of the executive committee, most of whom are located in the Burlington area. Acting as a planning and development committee, the smaller group will meet every other month, but will take action (requiring a vote) only at the full Board meetings.

At the December 6 meeting, the committee considered a variety of topics, preparing the groundwork and the arguments for issues that will be brought to the full board at the February meeting. These include: the scope and future of the seminar series; the publishing program (should it include popular and scholarly?); how to give more members an opportunity to "dig"; and, the nature and location of the Spring meeting.

The development committee's meetings are,
as always, open to any member of the VAS who wishes to sit in. They are normally scheduled for the first Thursday of each month, at 7 PM in the Anthropology Department Lab, Williams Science Hall, University of Vermont.

Things to look for: the appearance of Jim Petersen's long awaited monograph, *Middle Woodland Ceramics of the Winooski Site, AD 1-1,000*. This first in the VAS's new monograph series will be mailed at no charge to the Society's members. The next issue will have some news about the location and program of the Spring meeting, as well as Brian Robinson's paper, "Plowed Fields in Middlebury."

Don't forget to renew your membership before you get. The dues year is the calendar year and the membership form is on page 7 of this issue.

DUES ARE DUE!
SEE PAGE 7

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