Sweat Lodges and Solidarity: The Archaeology of the Hubbert Site

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In 1990, Archaeological Services Inc. undertook salvage excavations at the Hubbert site, a mid- to late-fifteenth century Late Woodland period settlement located on the eastern margin of the Innisfil upland overlooking the broad valley of Lovers Creek. In the course of excavating 3,260 square metres of this one hectare settlement, two longhouses were completely exposed, while the end of a third house was documented as well. The most conspicuous features associated with the houses were their 17 semi-subterranean sweat lodges. This paper summarizes the findings of the excavations with respect to the settlement patterns, the various aspects of the material culture and subsistence practices of the site's occupants, and concludes with a summary and interpretation of these data.

Introduction

The Hubbert site (BbGw-9) is a plough-disturbed, unpalisaded late Middle Iroquoian settlement located on the eastern margin of the Innisfil upland overlooking the broad valley of Lovers Creek in Innisfil Township, Simcoe County. The site is one of many Late Woodland occupations documented within the Lovers Creek drainage (Figures 1 and 2). The extensively investigated mid- to late-fourteenth century Wiacek site (Lennox et al. 1986; Robertson et al. 1995), for example, is located only 1.1 km to the north of Hubbert.

The Hubbert site was discovered by Andrew F. Hunter in 1889 and recorded in his unpublished survey records as Innisfil Township site #105. Almost a century later, Frank Ridley described the site in his 1975 survey report for the Archaeological and Historical Sites Advisory Board (Ridley 1975). The following year, the site was further examined during a Historical Planning and Research Branch (Ministry of Culture and Recreation) survey, and a sample of 55 artifacts was collected from the surface of three peripheral middens (Hunter 1976). On the basis of the surface distribution and the material recovered, the site was estimated to be a 2.5 ha village dating to the Middleport period (A.D. 1250-1400) (Hunter 1976). Although the site was revisited during Gary Warrick and James Molnar's 1985 survey of Innisfil Township, it was then in pasture and no surface survey was possible (Warrick and Molnar 1986:26).

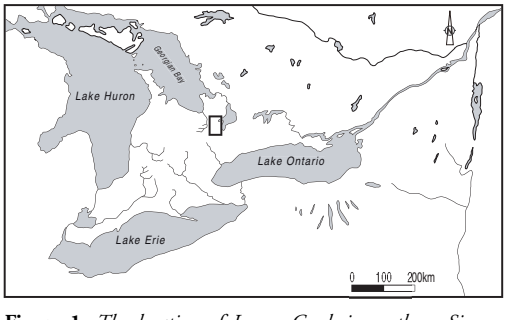


Figure 1. *The location of Lovers Creek in southern Simcoe County.*

Archaeological Services Inc. conducted salvage excavations on part of the site in the summer of 1990 in advance of construction of a proposed subdivision. Controlled surface collections undertaken on the subject and adjacent properties suggested that the site may occupy only one hectare. Since the property line transected the site area, only the eastern third of the site that was threatened by the proposed development was excavated.

Site Environment

Hubbert is located approximately six kilometres south of Kempenfelt Bay on the northern portion of the Innisfil upland (Chapman and Putnam 1984:183). To the east, the site over-

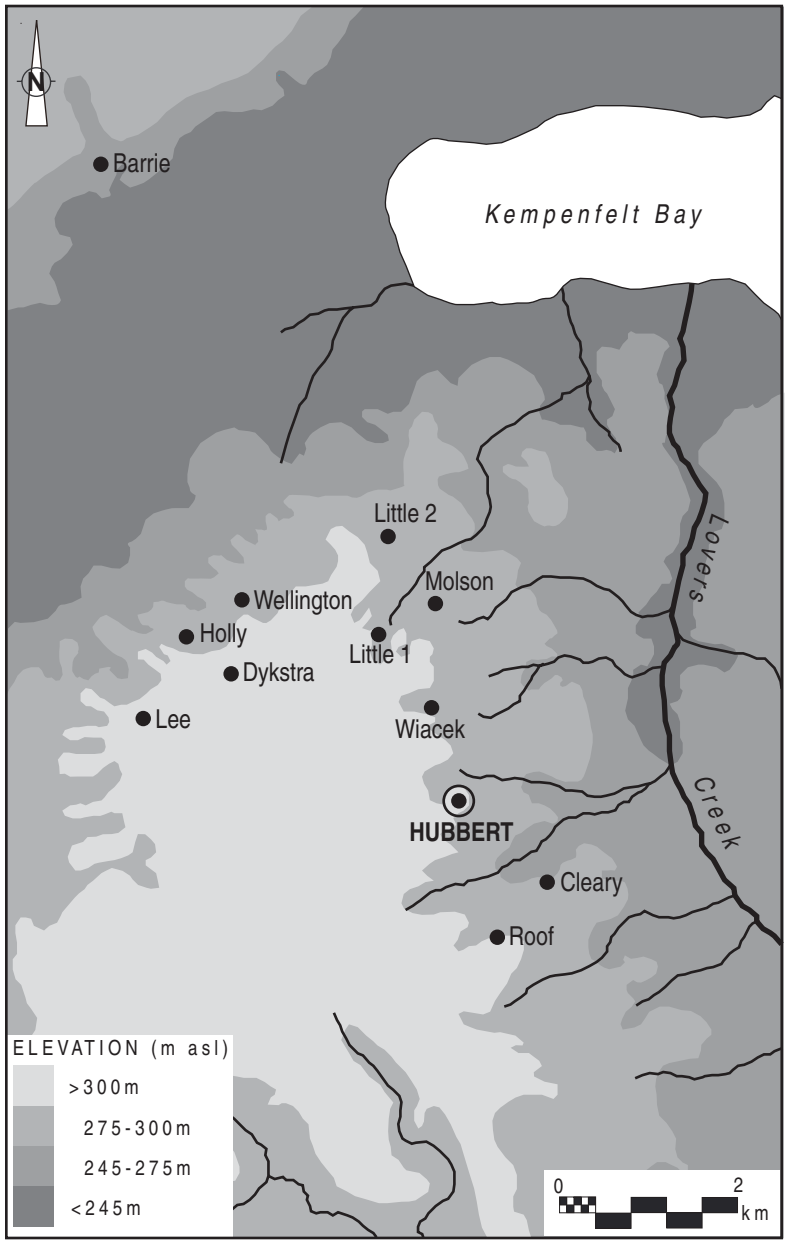


Figure 2. *Iroquoian settlement distribution along the margins of the Simcoe Uplands in the Lovers Creek watershed.*

looks the north-south trending valley of Lovers Creek, which divides the Innisfil upland into an east and west lobe. Immediately to the south of the site is a ravine giving rise to a tributary which flows east-northeast into Lovers Creek.

Separated from the main portion of the Simcoe uplands to the north by Kempenfelt Bay, the Innisfil upland comprises a broad, rolling till plateau that overlooks the steep-sided, flat-floored valleys of the Simcoe lowlands (Chapman and Putnam 1984:182-183). To the north of the site, these poorly drained lowlands of the Lake Simcoe basin are linked with the Minesing basin to the west through a narrow valley extending westward from Kempenfelt Bay. Both the Simcoe and Minesing basins were flood-

ed by glacial Lake Algonquin, resulting in the formation of numerous shoreline terraces along the upland margins (Burwasser and Cairns 1974; Chapman and Putnam 1984; Deane 1950).

The Quaternary deposits around Hubbert consist of sands and gravels that are of such permeability that streams are rare on the upland plateaus. Springs located on the upland slopes, however, feed permanent lowland streams (Chapman and Putnam 1984:183). In the vicinity of Hubbert, drainage is directed eastward by several small tributaries of Lovers Creek, which itself flows northward into Kempenfelt Bay.

Within a one kilometre radius of the site, the mapped soils are approximately 50 percent Tioga-Vasey, 25 percent Tioga, 20 percent Bondhead, and five percent Muck (Hoffman et al. 1962). Tioga-Vasey is a soil complex occurring on variable terrain. One of its components, Tioga, is a brunisolic grey-brown luvisol (BR.GBL) that develops on sandy outwash. Topography is gentle to steep and drainage is good to excessive. The Canada Land Inventory (CLI) rates Tioga as Class 3 for agriculture, with poor moisture retention and low fertility as the main limitations. Vasey is a BR.GBL which develops on sandy till. Topography is moderate to steep and drainage is good. The CLI rates Vasey as 60 percent Class 7 for agriculture, with severe topography as the main limitation, and 40 percent Class 4, with poor moisture retention and low fertility as the main limitations. Bondhead is a BR.GBL which develops on loam to sand till. Topography is moderate to steep and drainage is good. The CLI rates Bondhead as 80 percent Class 1 for agriculture and 20 percent Class 4, with severe topography as the main limitation. Muck is very poorly drained organic soil, which usually occurs in landscape depressions, and is not classified under the CLI system (ACECSS 1987; CLI 1972a:Map 31D; Hoffman et al. 1962).

The topography and well-drained sand and gravel soils of the uplands originally supported a hardwood forest dominated by maple and beech in association with white pine, yellow birch, basswood, and hemlock (Chapman and Putnam 1984:183). Although prone to drought and of relatively low fertility, most of these upland soils would have effectively supported Iroquoian maize horticulture (Warrick and Molnar 1986:21-22; Warrick 1988:3). The poor drainage of the surrounding lowlands, however, favoured species such as elm, black ash and soft maple. Substantial wetlands, such as the Minesing Swamp and the Allenby Marsh are also present throughout the lowland areas (Chapman and Putnam 1984:179-180).

In their analysis of the paleoenvironment of the nearby, earlier Wiacek site, Lennox et al. (1986:151-158) concluded that the settlement was established in a climax hardwood forest and that the more varied makeup of the early nineteenth century forest was a result of land clearance on the part of the Wiacek villagers and subsequent forest succession. While the latter would most certainly have been a result of forest clearance for purposes of village construction and agriculture, it is more likely that variability in the structure and makeup of the local forest may have preceded settlement and may have actually attracted Late Woodland peoples to similar locations throughout the uplands of Simcoe County.

Wiacek, Hubbert, and all the other major Late Woodland settlements located along the eastern and northern edge of the west lobe of the Innisfil Uplands, are situated on a band of sandy outwash soils that flank the upland margins. In contrast, the centre of the upland is dominated by Bondhead soils formed on till. The CLI capability for forestry ratings range from 30 percent Class 1, primarily on the level terrain, to 70 percent Class 2, with limitations variously imposed by moisture deficiency or excess, low fertility, and physical restrictions of the root zone; overall the distribution of forestry classes is described as complex for this area (CLI 1972b:Map 31D). Although suggestive of differences between the interior versus margin of the uplands, this classification system may not adequately resolve the various physiographic constraints on forest growth because it is based on the economics of raising specific tree species such as red pine and hard maple. The capability for agriculture ratings may be more informative since they cover a broader spectrum of floristic parameters.

The Canada Land Inventory rates the soils of the interior uplands as Class 1 for agriculture and this area would have no doubt supported a mixed

hardwood forest, co-dominated by beech and maple (CLI 1972a:Map 31D). This seems to be confirmed by the early nineteenth century forest cover (Lennox et al. 1986:Figure 27). In contrast, the soils of the upland margins are rated Class 3 to 7 for agriculture, with moderately severe fertility and moisture deficiency limitations as well as moderate to severe slope. When the soils are mapped against historic vegetation, mixed hardwood forest corresponds well with Class 1 upland soils, while various combinations of mixed forest correspond with the more marginal soils of the upland margins. Moreover, Late Woodland settlements are distributed exclusively along the upland margins, not necessarily wherever the soils are marginal. This suggests that physiography rather than soil quality may have been a more important determinant of settlement location (cf. MacDonald 1992b, 2002).

Based on these trends, it is suggested that the forests of the upland margins were naturally more diverse in content and structure than those of the upland interior. This forest diversity on the upland margins would have been maintained by the topographic variability that produced a complex moisture regime. While many different species probably grew in the upland margin forest, few individual trees would have thrived or reached optimal stature. In addition, the upland margin forest may have been more prone to windfall due to increased exposure along the slope, and more prone to fire if the conifer component was sufficiently large. Whereas a fairly uniform closed canopy of maple and beech would have developed in the upland interior, it is unlikely that a closed canopy could have been maintained around the upland margin.

Maple and beech dominate the wood charcoal assemblages from both Hubbert and the nearby Wiacek site (Lennox et al. 1986; Robertson et al. 1995), and while this predominance likely reflects the overall importance of these species in the local forest, it does not necessarily follow that it was a homogeneous climax maple-beech forest peppered with subordinate species (cf. Lennox et al. 1986:152). Such a normative notion of forest structure may gloss over the truly complex structure and texture of the regional forests. Both the Hubbert and Wiacek charcoal assemblages suggest that fuel was collected from dry sites (white pine), dry-mesic sites (beech, ironwood), mesic sites (slippery elm, sugar maple, beech), wet-mesic sites (basswood), and wet sites (American elm, yellow birch, black ash, tamarack)—all of which were within close proximity. By locating their major settlements along the upland margins, Late Woodland agriculturalists could not only take advantage of well-drained natural openings in the forest, but more importantly, have ready access to spring water and the various resources of the stack of environmental zones that flanked the slopes and valley floor.

The presence of early and mid-successional species in the nineteenth century forest should not obscure the possibility that a complex and diverse mixed forest may have already existed along the upland margin. Colonization of abandoned agricultural clearings by early and mid-successional species would only have been possible if seed sources already existed in the adjacent forest. For example, although the wood charcoal assemblage suggests that oak was not locally common, acorns were recovered as well as butternuts and hickory nuts. Forest clearance by Late Woodland agriculturalists would have reset the successional clock and may have allowed for colonization by oak, as noted by nineteenth century surveyors (cf. Lennox et al. 1986:152-158). Moreover, the significant frequency of ash in the charcoal assemblage at Hubbert reinforces the notion that the forest of the upland margin had a more mid-successional character than that of the interior. It is also possible, however, given the comparative frequencies of maple and ash recovered from Hubbert and Wiacek, that the rise in ash, a pioneering tree, and decline in maple, a climax tree, may indicate forest succession in the abandoned cornfields of the Wiacek villagers.

Settlement Patterns

The results of a preliminary controlled surface collection, together with the constraints imposed by the local topography, form the basis for an estimate of the site's extent at about one hectare. The surface survey also resulted in the identification of

a midden (Midden A) at the southern break-in-slope defining the occupation area. This midden was excavated by means of 20 one-by-one metre units trowelled and screened in natural levels. Throughout the remainder of the site, the plough zone, comprising approximately 30 cm of topsoil, was removed by Gradall to reveal the subsoil. The subsurface settlement features thus exposed were delineated more precisely by shovel shining and by trowelling. An area of approximately 3,260 m^2 was exposed in this manner.

The 1990 excavations (Figure 3) documented three longhouses, of which two were completely excavated. The larger structure is designated House 1, the smaller one is House 2, and a partially exposed structure is designated as House 3, although its character and extent were not fully defined as it extended beyond the limits of the proposed subdivision. Within these houses, 169 subsurface, cultural features were documented. The most remarkable aspect of the Hubbert houses is the number of associated semi-subterranean structures. While the attributes of these semi-subterranean structures—interpreted as sweat lodges—are detailed within the context of the house descriptions, more extensive consideration of the significance of these features is provided towards the conclusion of this paper.

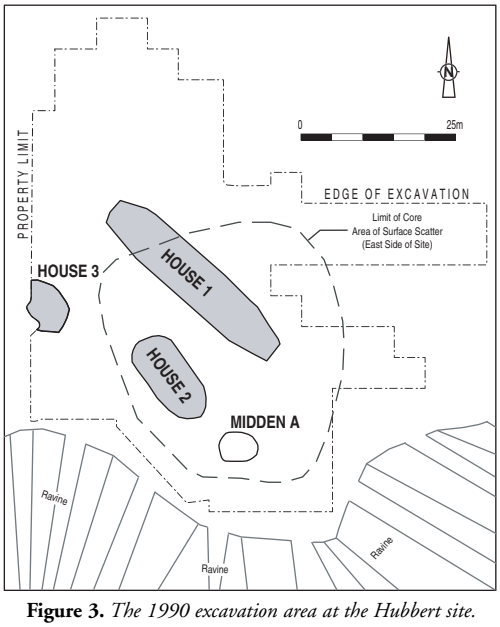


Figure 3. *The 1990 excavation area at the Hubbert site.*

Both general observations and detailed descriptions, including metric attributes, are reported for each house. The definitions for structural characteristics, such as "central corridors" and "taper ends," were adopted from Dodd (1984:238-249). Interior domestic activity areas—centred upon hearths or otherwise—are identified on the basis of clustering of features and posts. While it is possible that many of these activity areas represent the existence of familial "apartments" along each side of the central corridor, possibly separated from one another by partition walls (Kapches 1993:150-152, 1994), there is little conclusive evidence in the archaeological record of the Hubbert houses to support this hypothesis. In the absence of clearly defined lines of post moulds extending laterally from the house walls—which have been documented only on rare occasions (Kapches 1993:150)—it must be assumed that any such features formed part of the house's superstructure rather than its substructure (i.e., those elements that are identifiable as post moulds, post pits, and "slash pits"). Thus the assertion that such partition walls did exist to define spatially discrete apartments within Iroquoian longhouses, while certainly plausible, remains conjectural rather than demonstrable. In the present study, therefore, the concept of the apartment has not been utilized for either descriptive or interpretive purposes. Summary statistics and metric attributes for each house are provided in Table 1.

Outside the houses, one midden, 22 pits, and many post moulds provided evidence of outdoor activity (Figure 4). Several linear alignments of posts may have served as fences or windbreaks.

House 1 (Figures 4 and 5)

House 1 measured 35.8 m in length and 7.4 m in width. From the points where the ends began to taper, the main house segment was 22.75 m long. The northwest end was six metres long, and was slightly asymmetrical, with the southern side more rounded, the northern side angled at roughly 160 degrees, and an end wall approximately 3.5 m long. It contained an ash pit, another small pit, and a few scattered post moulds. The southeast end was seven metres

	House 1	House 2	House 3
Length (m)	35.8	15.8	indeterminate
Width (m)	7.4	7.1	indeterminate
Orientation (°East of North)	312°	324°	~300 - 305°
Wall Posts			
Number	479	243	74
Density (per m)	6.14	6.39	4.63
Mean Diameter (cm)	7.15	7.46	7.28
Range (cm)	3-28	4-42	5-15
Standard Deviation	2.07	2.88	1.92
Interior Posts			
Number	2209	705	51
Mean Diameter (cm)	6.8	6.52	7.33
Range (cm)	2-31	2-24	5-22
Standard Deviation	3.24	3.06	2.65
Features			
Hearths	5 (3)	1	—
Ash Pits	32	10	—
Pits	64	12	4
Semi-subterranean Sweat Lodges	9	6	2
Other	4	3	—
Totals	**114**	**32**	**6**

Table 1. *Hubbert site house attribute summary.*

long, with both sides angled at roughly 160 degrees and an end wall approximately two metres long. It contained three pits and a few scattered post moulds. Compared with the main house segment, both ends were devoid of evidence of occupational activity.

The exterior house walls were formed by a slightly staggered single to double row of irregularly spaced posts. The variability in the pattern of post placement in the walls may be a reflection of structural maintenance. Possible doorways, ranging from approximately 0.6 m to 1.8 m in width, may be present at four points along the north side wall, as well as at either end of the structure, although the southeast end is poorly documented. There was no indication that the house had been either lengthened or shortened during its occupation.

Within the house, a dual series of larger support posts (approximately 20 cm in diameter) occurred at roughly two metre intervals along the house and approximately two metres from the exterior walls. As most posts exceeding ten centimetres diameter were situated randomly within the central corridor, additional support for the roof may have been provided by centrally and strategically placed members. While the presence of bunks, constructed between the main lateral support superstructure and the exterior walls, may be suggested by higher concentrations of feature and post activity throughout the central corridor, the presence of semi-subterranean sweat lodges (SSLs) within the bunk line, together with the likelihood that some were phased out while others were reconstructed or built later in the tenancy of the house, suggests that the bunks were modified through time to meet changing needs of the household.

Of the 2,209 interior posts documented, most were less than ten centimetres in diameter. Most of these were confined to the middle of the central corridor in five or six large, ring-shaped clusters measuring roughly 2.0-2.5 m in diameter. As these clusters did not surround hearths, they would appear to be ground-level sweat lodges (cf. MacDonald 1988; Tyyska 1972). Although often referred to as sweat baths, the term sweat lodge is preferred. Bathing is only one component of the sweating ritual and the term sweat lodge has gained currency among modern aboriginal practitioners.

The house contained 114 subsurface cultural features. Five centrally located hearth features were recorded in three areas. Features 171 and 172, located in the southeastern end of the house, were both shallow patches of fired soil, which likely represent the basal portion of a single, plough-truncated fireplace. Similarly, in the northwest end of the house, Features 20 and 79 were adjacent patches of fired soil with associat-

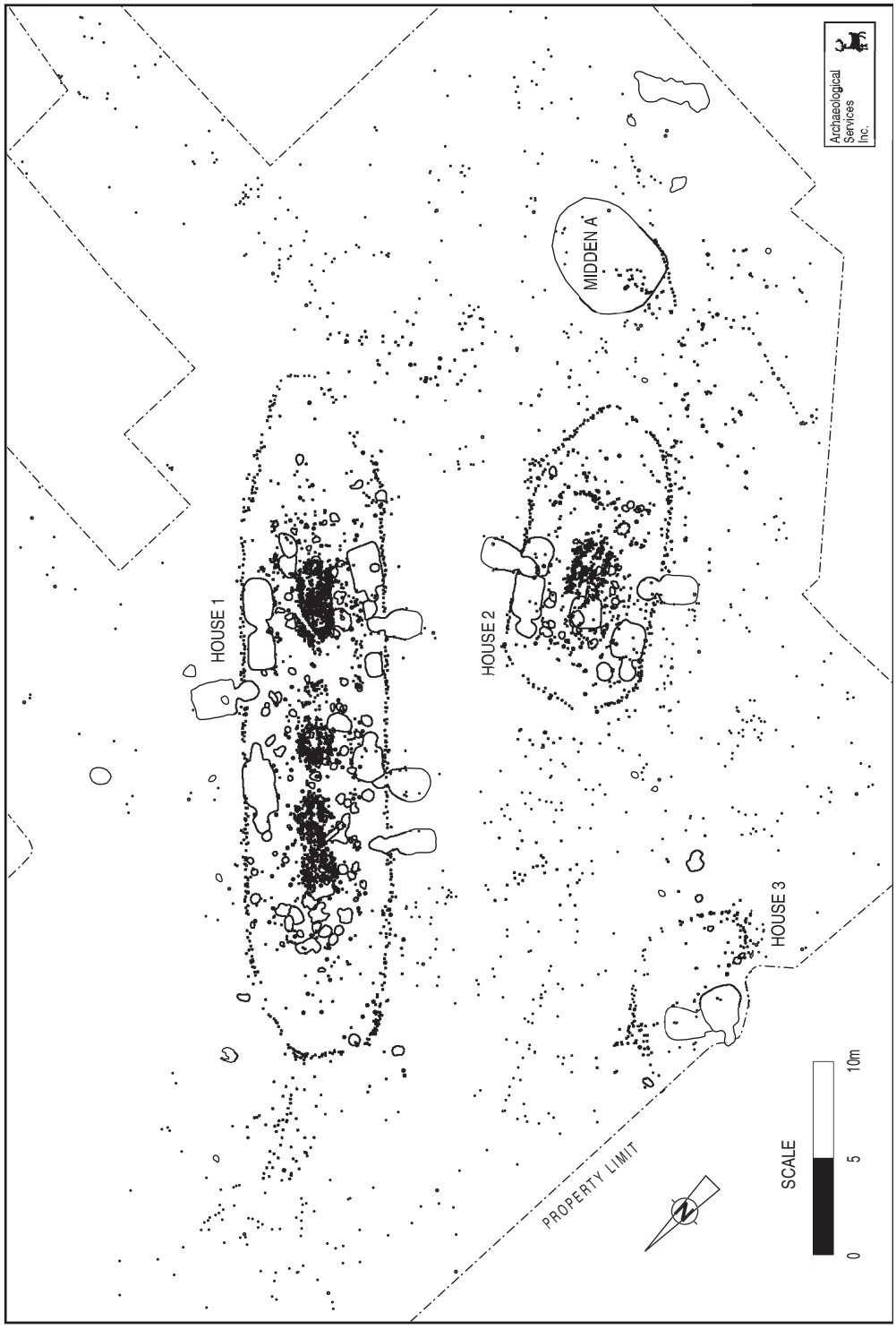


Figure 4. *The settlement patterns uncovered during the 1990 excavations at the Hubbert site.*

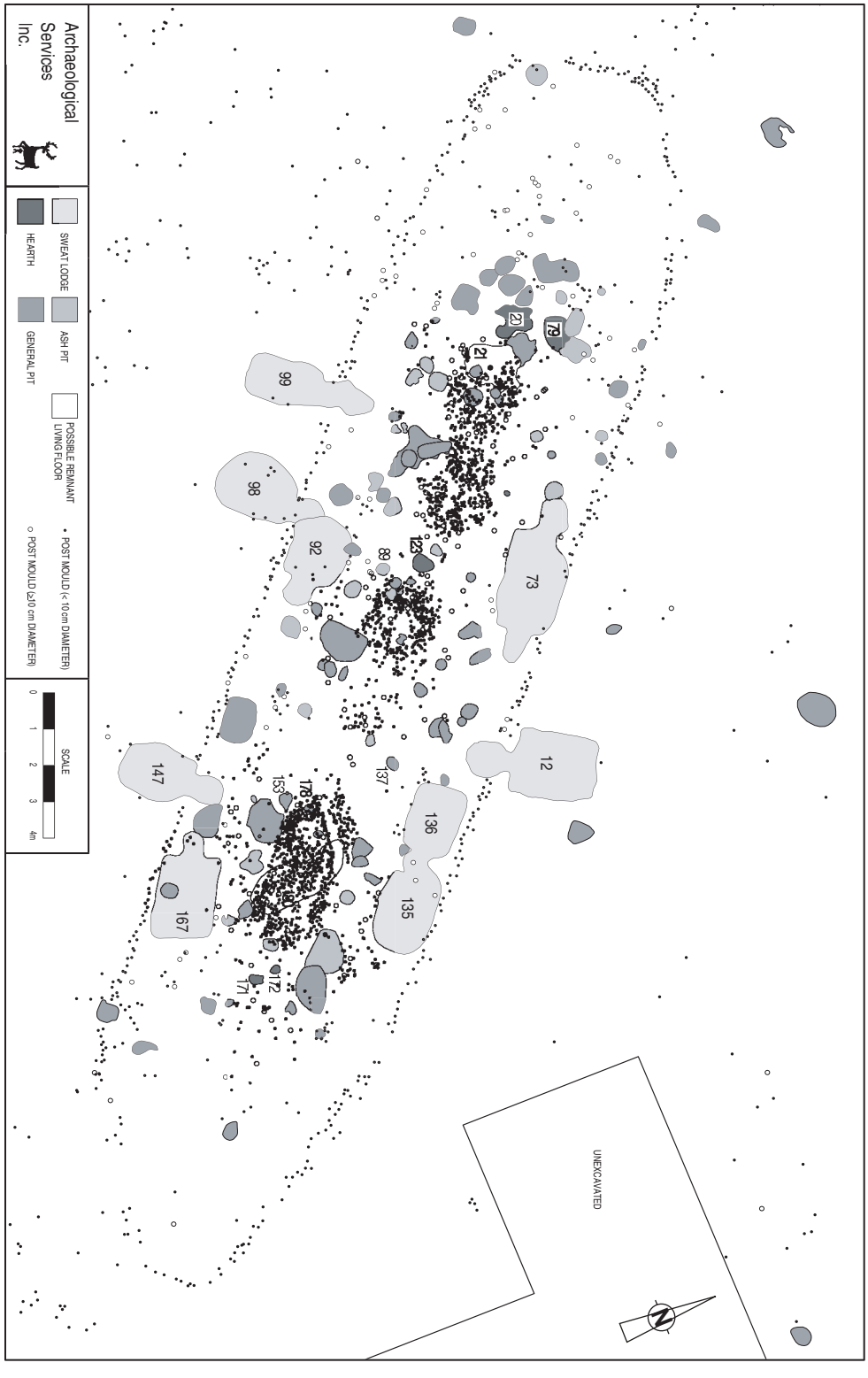


Figure 5. *House 1 at the Hubbert site. Only features mentioned in text are identified.*

ed ash pits that appear to relate to a single fireplace location. Feature 21—a thin complex of ash, charcoal, fired soil, organic soil and numerous post moulds—may have been a remnant living floor and was likely also part of this hearth complex. Feature 123 was a small, relatively discrete hearth situated in the centre of the house.

Thirty-two ash pits were distributed throughout the house, some near to hearths but most distributed randomly along the margins of the central corridor. The relatively large number of ash pits suggests numerous hearth cleaning events, likely indicating cold-season occupation. The ash pits ranged in length from 15 to 90 cm (mean=42.7±17.0), in width from 15 to 76 cm (mean=34.5±14.4), and in depth from 3 to 28 cm (mean=14.4±6.2). Feature 89, an ash pit situated in the central corridor near the centre of the house, contained significant numbers of plant remains, including the highest quantity of maize on the site (Monckton 1996).

Sixty-four undifferentiated pits were also distributed along the margins of the central corridor. The pits were quite variable in size, no doubt reflecting variations in function. They ranged in length from 22 to 176 cm (mean=52.7±30.0), in width from 16 to 96 cm (mean=39.1±20.2), and in depth from 3 to 168 cm (mean=22.5±21.9).

The remains of nine SSL structures were recorded in association with House 1. Five were within the bunk lines, oriented parallel to the long axis of the house (Features 73, 92, 135, 136, and 167), and four were appended to the house walls, with their ramped entrances projecting into the house interior (Features 12, 98, 99, and 147). The use of these features as sweat lodges for various ritual purposes has been well documented elsewhere (MacDonald 1988, 1992a; Smith 1976). As with SSLs documented on other sites in southern Ontario (e.g., Dodd and Riddell 1993; Ramsden et al. 1998a; Robertson et al. 1995; Robertson and Williamson 2001; Sutton 1999), the Hubbert examples have certain basic structural characteristics and patterns of placement within and without the longhouses.

Feature 99 was appended to the south wall (Figures 5 and 6). Measuring approximately 3.6 by 1.6 m and 52 cm deep, the bottom of this rather narrow feature was rimmed by 50 post moulds ranging in diameter from 5 to 16 cm (mean=8.24±2.8). This remarkable profusion of fairly large posts does not appear to be attributed to the exterior location of the sweat lodge, because other appended SSLs at the site do not seem to have been so robustly built. Instead, it seems likely that this structure was renovated one or more times. The fill exhibited the classic attributes of such features, including a ten-centimetre thick basal living floor, a 40-cm thick primary fill layer, and a central surface lens of darker soil approximately 20 cm thick.

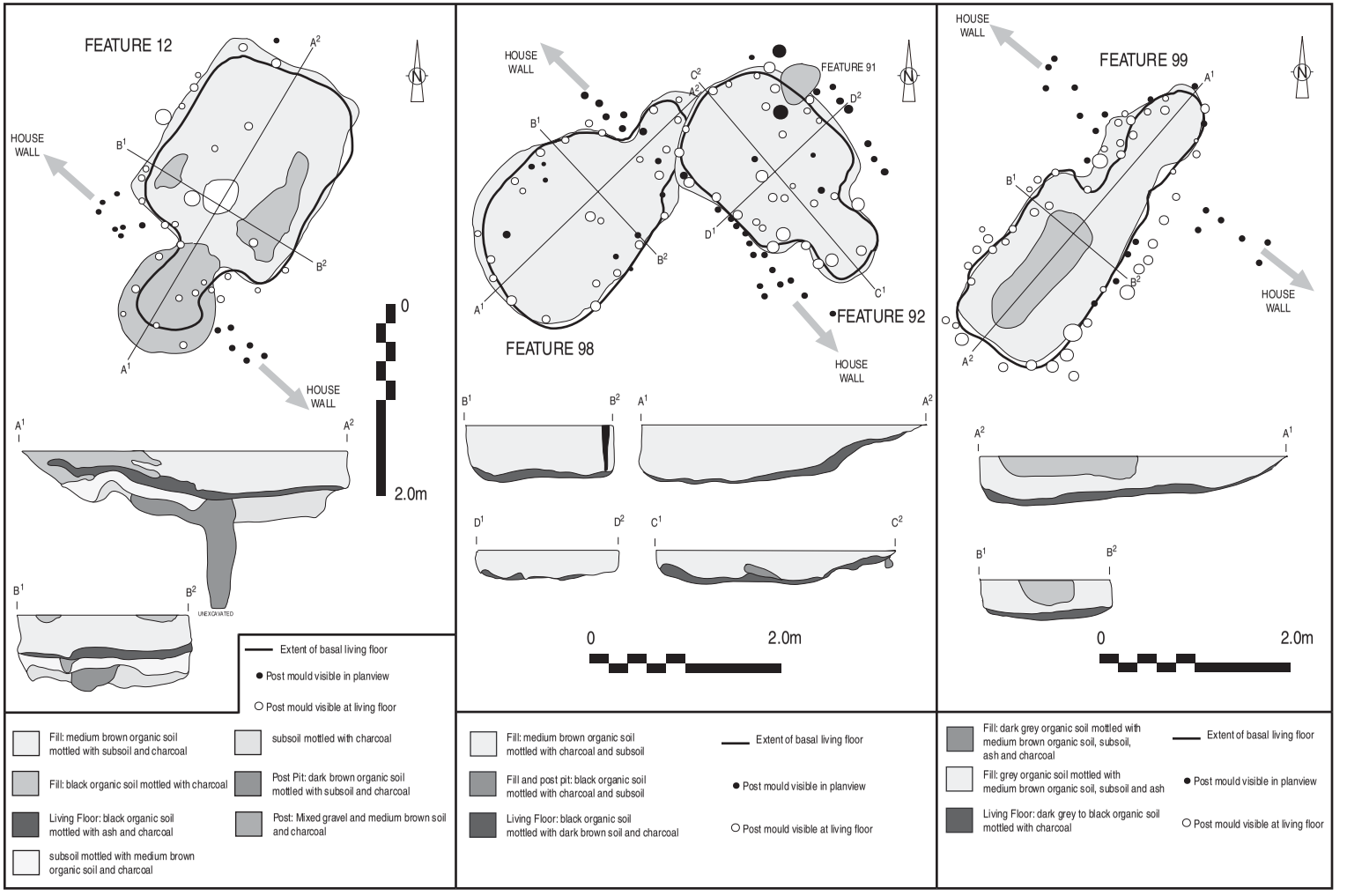
Feature 98 was also appended to the south wall, east of Feature 99 (Figures 5 and 6). The ramp entranceway had been partially truncated by an interior sweat lodge (Feature 92). Measuring approximately 3.0 by 1.7 m and 63 cm deep, the bottom of the feature was rimmed with 23 post moulds. Three others occurred in the centre of the structure. The posts ranged in diameter from six to ten centimetres (mean=7.4±1.1). The fill consisted of a basal living floor five to ten centimetres thick and a primary fill layer over 50 cm thick.

Feature 92 was located within the south bunk line with the ramp entrance oriented southeast, parallel to the long axis of the house (Figures 5 and 6). The southwest corner of the feature partially truncated the ramp entrance of Feature 98, and there was a small intrusive pit in the northwest corner. Feature 92 measured about 2.6 m by 1.6 m and was 36 cm deep. Thirty-four post moulds were recorded around the floor of the feature, 27 of them around the margin and seven in the interior. The posts ranged in diameter from 5 to 12 cm (mean=8.4 ± 2.3). The fill consisted of an approximately five-centimetre thick basal living floor and a primary fill layer which was over 30 cm thick.

Feature 147 was appended to the south wall towards the southeast end of the house (Figures 5 and 7). The feature measured about 2.8 by 1.4 m and was 58 cm deep. Twenty-three post moulds were recorded on the pit floor, 19 of them around the margin and four in the interior. The fill consisted of an approximately ten-centimetre thick basal living floor and a three-layered primary fill component, which was about 50 cm thick.

Feature 167 was located within the south bunk line with the ramp entrance oriented northwest,

Figure 6. *Plans and profiles of SSL features 12, 92, 98, and 99 in House 1 at the Hubbert site.*



parallel to the long axis of the house (Figures 5 and 7). A shallow basin pit intruded upon the sweat lodge near the house wall. Its relationship to another shallow pit that lay between the ramp entranceways of Features 167 and 147, was not clear. Feature 167 measured 2.9 by 1.6 m and was 23 cm deep. Twenty-three post moulds were recorded around the interior perimeter of the feature, ranging from 5 to 11 cm (mean=8.6±1.9) in diameter. The fill consisted of a basal fill layer approximately five centimetres thick and a primary fill layer about 18 cm thick that incorporated one secondary lens.

Feature 73 was located within the north bunk line (Figures 5 and 8). It was intruded upon by an ash pit. It is one of only a few known examples of SSLs with multiple ramp entranceways—the others being documented at the fifteenth century Norton site in London (Cooper and Robertson 1993:37-40) and at the fifteenth century Dunsmore site on Willow Creek, 11 km to the north of Hubbert (Robertson and Williamson 2001). In the case of Feature 73, the entrances do not appear to have been used at the same time. The feature measured 4.6 by 1.7 m and was 105 cm deep. Thirty-four post moulds were recorded on the pit floor, 30 on the perimeter and four inside. The posts ranged in diameter from 5 to 17 cm (mean=8.4±3.1). The fill consisted of three main layers as well as a number of secondary lenses. The black, charcoal-mottled basal living floor was underlain by a layer of dark brown, charcoal-mottled soil about ten centimetres thick. Although the relationship between these deposits is not entirely clear, there is provisional evidence that the brown mottled layer is an earlier living floor and that the eastern ramp superseded the western ramp. First, there is a definite sill at the base of the eastern ramp, as if this entranceway cut through the back wall of a slightly deeper pit. Second, the black living floor is significantly thicker in the west ramp and is overlain by two secondary lenses, possibly indicating that fill had been swept into the disused entrance.

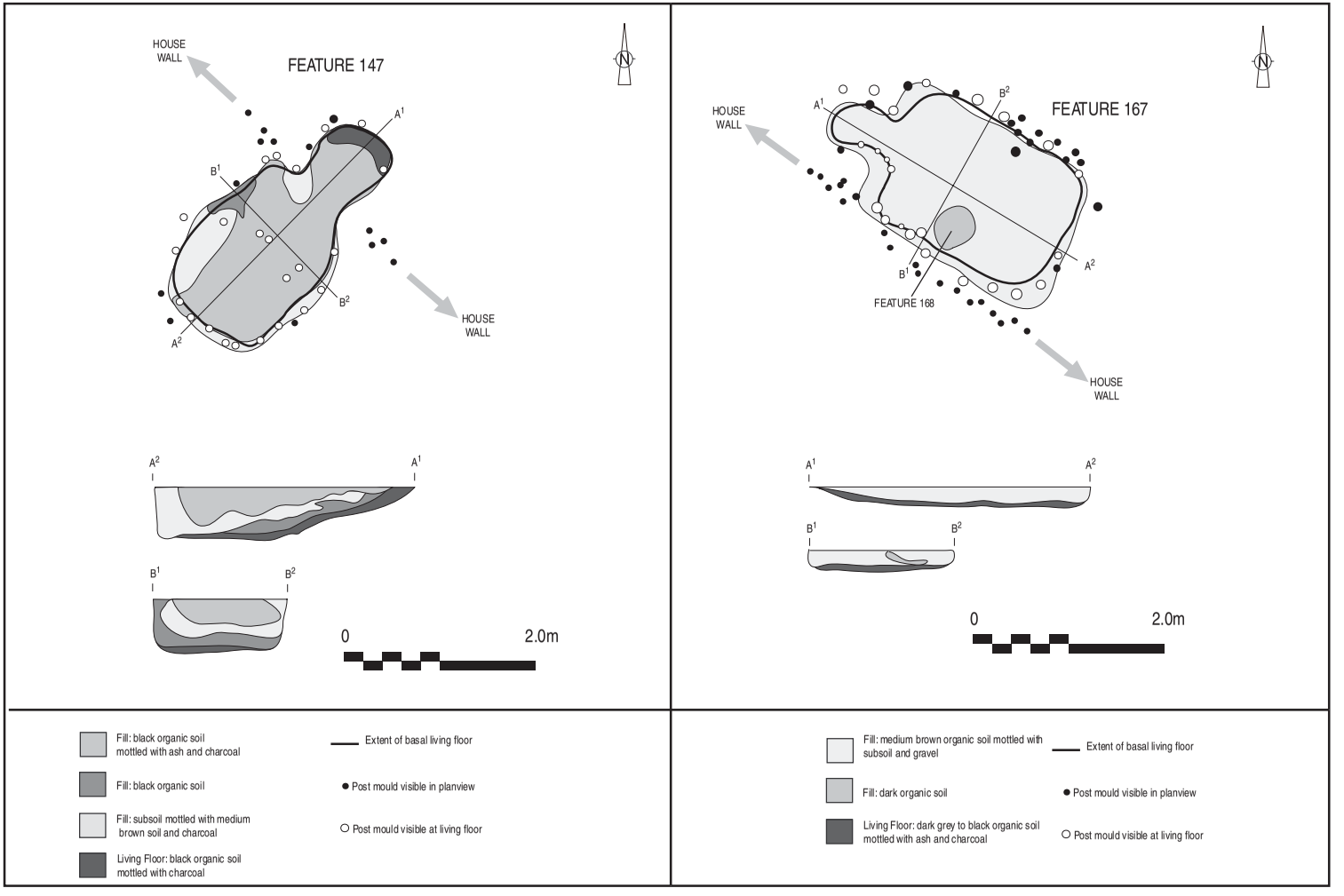
Feature 12 was appended to the north wall of House 1 (Figures 5 and 6). It measured approximately 3.5 by 1.7 m and was 77 cm deep. Twenty-nine post moulds were recorded on the pit floor, 25 on the perimeter and four inside. No posts were found in one quadrant due to the presence of patches of heavy gravel in the subsoil. The post diameters ranged from 5 to 16 cm (mean=6.7±2.0). The fill consisted of five main layers as well as several secondary lenses. The living floor, which was typical, and primary fill layers were underlain by two relatively thick (5-20 cm) layers of light soil that was mottled with charcoal. As this feature was an exterior sweat lodge, these lower strata may relate to erosional infilling that occurred before the final use of the structure. Also underlying the living floor was a large, deep, central support post.

Feature 135 was situated within the north bunk line with its ramp entrance oriented to the northwest, parallel to the long axis of the house (Figures 5 and 9). It measured approximately 2.7 by 1.6 m and was 26 cm deep. The ramp truncated the entrance of sweat lodge Feature 136. Thirty-three post moulds was recorded on the pit floor, 27 around the perimeter and six within the interior. They ranged in diameter from 5 to 12 cm (mean=7.5±1.6). The fill consisted of a five- to ten-centimetre thick basal fill layer, and a 15- to 20-cm thick primary fill layer.

Feature 136 was situated adjacent to Feature 135 within the north bunk line with its ramp entrance oriented to the southeast, parallel to the long axis of the house (Figures 5 and 9). With its ramp partially obliterated by Feature 135, it measured 2.5 by 1.4 m and was 44 cm deep. Thirty-four post moulds were recorded on the pit floor, 29 around the perimeter and five in the interior. They ranged in diameter from 5 to 12 cm (mean=7.9±2.7). The fill consisted of a basal fill layer five to ten centimetres thick, a primary fill layer over 35 cm thick, and a central surface lens of dark organic soil 30 cm thick.

In certain respects, the floor plan of House 1 reflects the well-documented Iroquoian longhouse pattern of evenly spaced central hearths, with associated ash pits and other pits, comprising the focus of identifiable, if not discrete, living areas. Three hearth areas were documented along the central corridor of House 1. Since there was about six metres between the Feature 20/79 hearth complex and the Feature 123 hearth, and about 12 m between Feature 123 and the Feature 171/172 hearth complex, there exists the possi-

Figure 7. *Plans and profiles of SSL features 147 and 167 in House 1 at the Hubbert site.*



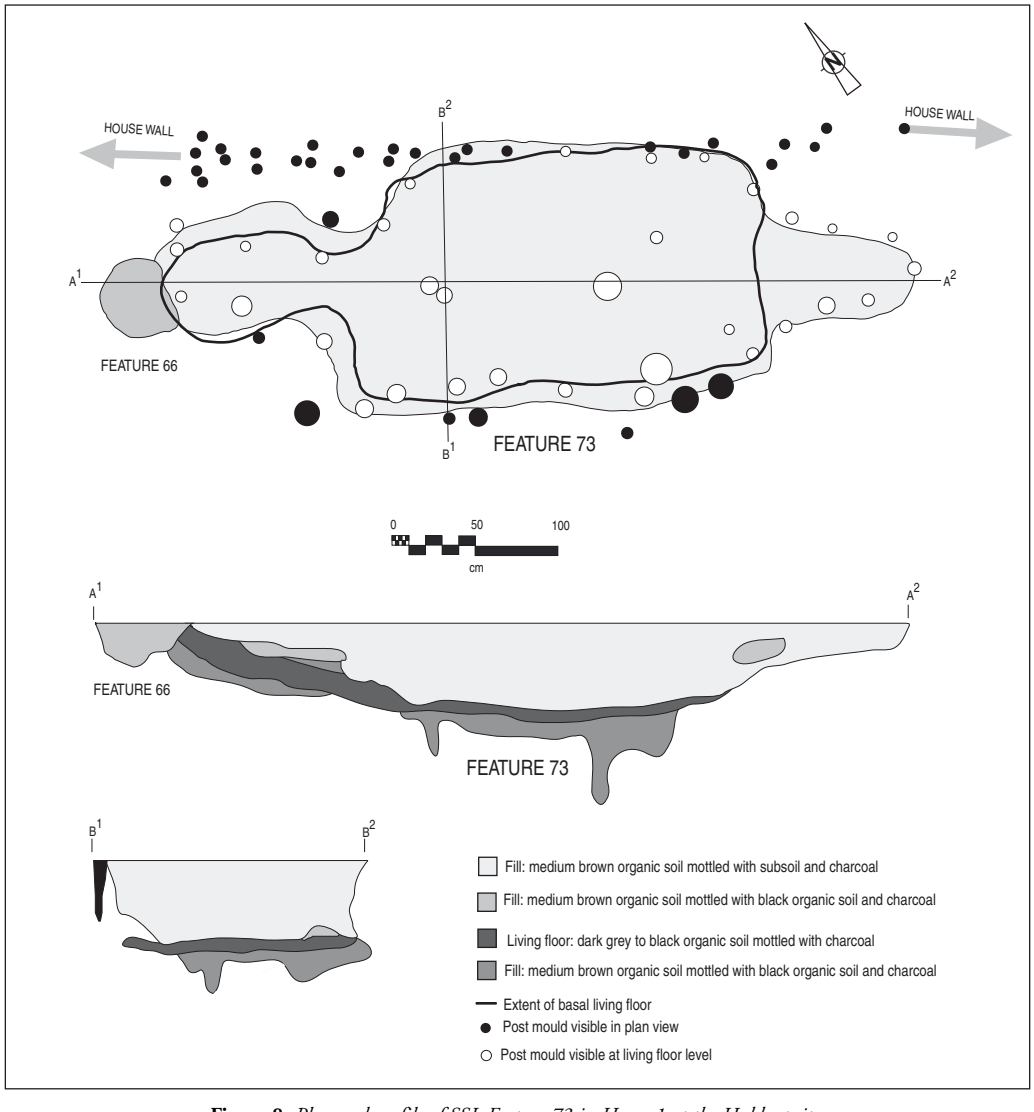


Figure 8. *Plan and profile of SSL Feature 73 in House 1 at the Hubbert site.*

bility that an additional hearth or hearths, situated between the latter two fireplaces, had been eradicated by plough action. The existence of charcoal and ash in many of the post moulds in this area, as well as ash and charcoal in Feature 178, and ash, charcoal and fired soil in Feature 153, may support this hypothesis.

The ubiquity of ash pits and the high density of features in general suggest that House 1 was occupied year round, including cold seasons, when cleaning hearths and refuse disposal would have been accomplished more comfortably and conveniently by using interior pits rather than an exterior midden (cf. Williamson 1983). The house ends, which were noticeably devoid of both post moulds and pits, would have provided ample space for the storage of food and firewood. There is some evidence for lightly built partitions separating the storage cubicles from the main segment of the house. The outside walls are very straight, with a variable pattern of staggered and/or paired posts, and they taper to fairly uniform ends. Although the density of posts varies along the wall, likely reflecting a certain amount of repair, there is no

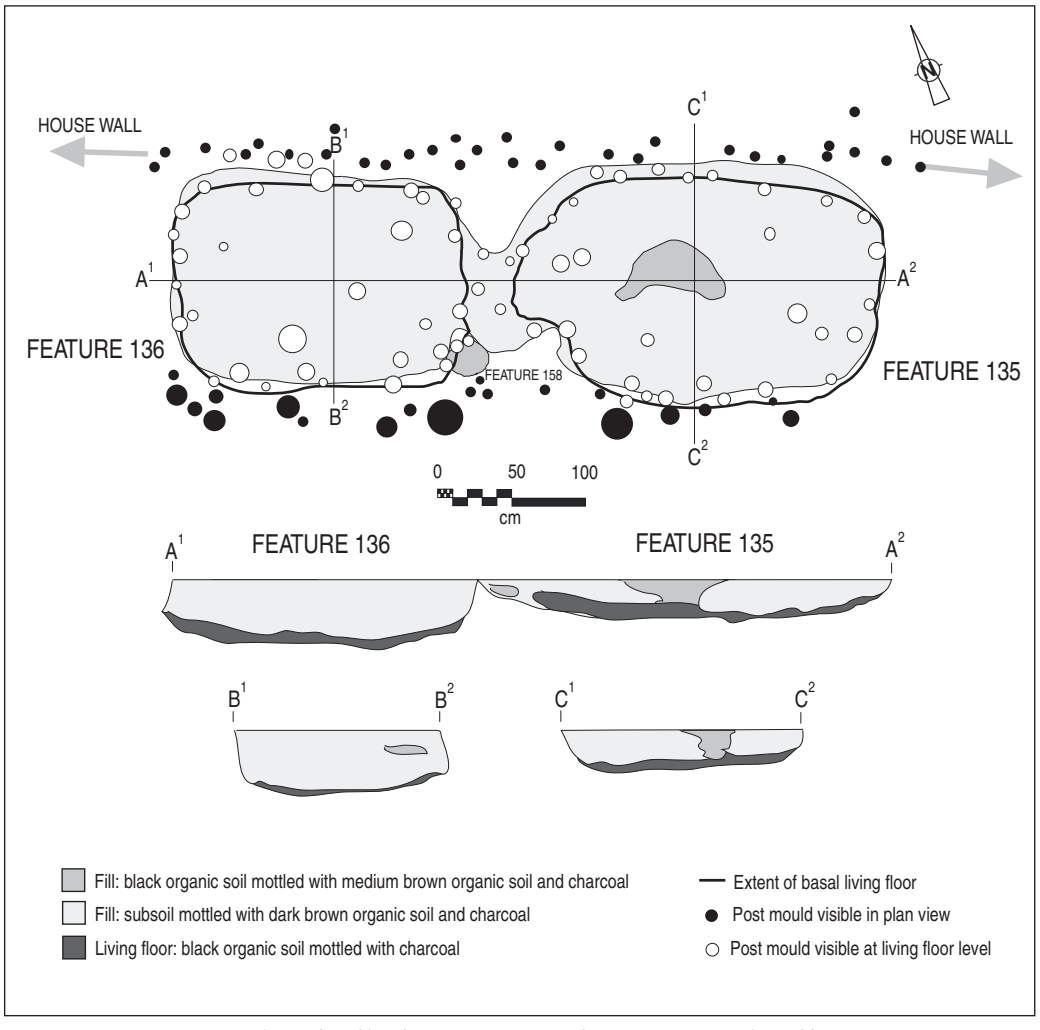


Figure 9. *Plan and profiles of SSL Features 135 and 136 in House 1 at the Hubbert site.*

evidence of major refurbishment, expansion, or contraction. In all these respects, House 1 is fairly consistent with other documented Iroquoian dwellings of this time. At the same time, however, House 1 exhibits an abundance of sweat lodges heretofore unprecedented in Iroquoian archaeology. At least 14 such structures are associated with the house, nine of the semi-subterranean type and at least five of the ground-level type.

House 2 (Figures 4 and 10)

Situated approximately eight metres south of House 1, House 2 was 15.8 m long, and 7.1 m wide. Between the points where the ends begin to taper, the main house segment was about 8.5 m long. The south end, which tapers at 140 to 145 degrees and contains a scatter of posts moulds, was five metres long and ovate in shape. A linear series of post moulds perpendicular to the long axis of the house represents an interior partition. The north end was about 2.3 m long and rounded slightly so as to be nearly square. This end also appears to have had an interior partition although it is poorly defined. Both partitioned end cubicles were devoid of features.

The exterior walls were formed by a relatively uniform, staggered row of single or paired posts with a mean density of 6.4 posts per metre. Gaps

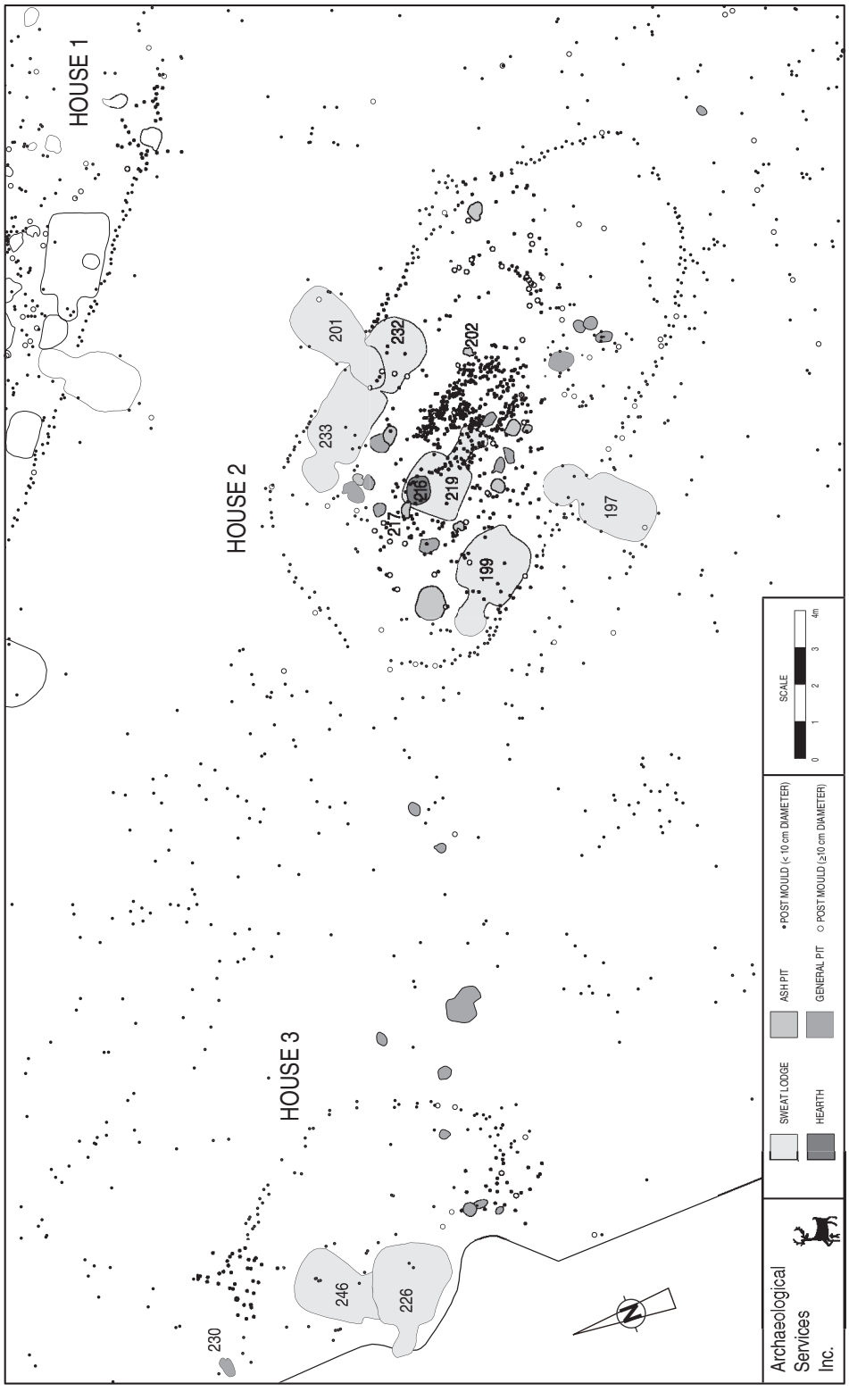


Figure 10. *Houses 2 and 3 at the Hubbert site. Only features mentioned in text are identified.*

of 0.7 m to 1.2 m in width, in both ends of the house, were probable doorways.

Unlike House 1, there was no dual series of large interior posts along the central corridor, although the larger (approximately 20-cm diameter) posts were restricted to the corridor area, creating a box-like infrastructure for the house. As the majority of all posts exceeding ten centimetres in diameter was situated somewhat randomly within the central corridor, it may be that additional support for the roof was provided by centrally and strategically placed members. While the presence of bunks may be suggested by higher concentrations of feature and post activity throughout the central corridor, the placement of SSLs within the bunk line indicates that their layout likely changed through time.

A total of 705 interior post moulds was recorded, a large number of which occurred in a ring-shaped cluster, approximately three metres in diameter, in the centre of the house. Since this cluster does not surround a hearth, it likely represents a ground-level sweat lodge.

House 2 contained 32 cultural features, most of which were distributed in a loose cluster around the single fireplace (Feature 216). This hearth was a shallow deposit of fired soil, ash, and charcoal situated in the centre of the house. It was intrusive into Feature 219, a SSL.

Most of the ten ash pits were located along the margins of the central corridor, although one was immediately adjacent to the hearth and another was next to the south partition wall. As in House 1, the high frequency of this feature type would seem to indicate cold-season occupation. The ash pits ranged in length from 27 to 90 cm (mean=42.1±17.9), in width from 23 to 85 cm (mean=36.2±17.4), and in depth from 4 to 25 cm (mean=13.3±6.3). Twelve other pits were also located along the margins of the central corridor, including a cluster of four on the west side of the south partition wall. They ranged in length from 36 to 71 cm (mean=48.8±11.5), in width from 26 to 58 cm (mean=35.3±8.5), and in depth from 7 to 48 cm (mean=23.6±12.3). Six SSLs were recorded in association with House 2.

House 2 is a comparatively small dwelling, although in certain respects it resembles House 1. The density of ash pits and other pits suggests that House 2 was occupied year round. The single recorded hearth, situated towards the north end of the house, suggests a relatively small household consisting of only a few nuclear families. The form of the house ends—one rather short and the other more typical—may be attributed to the reduced storage needs of a small household. A series of posts in the south end appears to be a partition, separating the main corridor from the storage cubicle, while the existence of a similar partition in the other end is less clear. The outside walls are relatively straight, with a variable pattern of staggered and/or paired posts that vary in density, likely as a result of post replacement. Aside from routine maintenance, there is no evidence of major refurbishment or addition to the house.

Perhaps the most obvious characteristic that House 2 shares with House 1 is the profusion of sweat lodges, including six of the semi-subterranean type and one of the ground-level type. One of the SSLs (Feature 219) was in the central corridor and three were within the bunk lines (Features 199, 232, and 233). All four of these interior SSLs were oriented parallel to the long axis of the house. Two others were appended to the house walls, with their ramped entranceways projecting into the house (Features 197 and 201). Also similar to House 1 is the notable degree of cross-house symmetry in the position and number of SSLs. The overlapping of Features 201, 232, and 233, on the east side, indicates that only one of these is likely to have existed at any one time, while the two on the west side could have been used at the same time. The central SSL, Feature 219, could have been contemporary with any of the others, although there is reason to believe that it was not.

Feature 197 was appended to the west wall (Figures 10 and 11). It measured approximately 3.2 by 1.5 m and 66 cm deep. Thirty post moulds were recorded on the pit floor, 24 around the margin and six in the interior. These posts ranged from 6 to 11 cm in diameter (mean=8.0±1.3). The layering of the fill represents a clear sequence of depositional events. The lowest stratum comprised the typical basal living floor of dark organ-

ic soil mottled with charcoal. Above this, confined to the back of the structure, was a pile of medium brown soil mottled with light brown soil and charcoal about 25 cm high and 100 cm wide. To this pile had been added at least six discrete layers of soil ranging in thickness from 5 to 12 cm. Ash and charcoal were prominent components of each of these deposits. One of these layers may correlate with a deposit that overlies the living floor in the ramp. Finally, there was a primary fill layer up to 60 cm deep that filled the remainder of the pit. This stratigraphy is consistent with the hypothesis that, subsequent to de-commissioning of the sweat lodge, the pit was used as a convenient repository for household refuse.

Feature 199 was located within the west bunk line with its ramp entranceway oriented to the north (Figures 10 and 11). Measuring approximately 3.1 by 1.7 m and 58 cm deep, the feature floor contained 47 post moulds ranging in diameter from 4 to 15 cm (mean=8.0±2.2). The fill consisted of a basal living floor, up to five centimetres thick, and a primary fill layer, over 50 cm thick, which contained two smaller lenses.

Feature 219 was located in the central corridor of the house with the ramp oriented to the south (Figures 10 and 11). Measuring approximately 2.6 by 1.6 m and 66 cm deep, the pit floor contained 19 post moulds ranging in diameter from 5 to 12 cm (mean=8.3±2.1). The fill consisted of a basal living floor up to ten centimetres thick and a primary fill deposit up to 60 cm thick. The primary fill consisted of three sloping layers, which suggests that infilling had begun by piling soil up against the rear wall and then proceeded toward the entranceway.

Feature 232 was located in the bunk line, roughly in the centre of the east wall (Figures 10 and 12). The majority of the ramp end had been obliterated by later construction of two SSLs (Features 201 and 233). The remaining portion measured approximately 1.9 by 1.6 m and was 20 cm deep. Twenty-two interior post moulds were clearly part of this structure. These ranged from 5 to 13 cm in diameter (mean=8.0±2.5). The fill consisted of a faint living floor about six centimetres thick and a primary fill layer up to 18 cm thick.

Feature 233 was located in the east bunk line immediately north of, and intersecting, Feature 232 (Figures 10 and 12). SSL Feature 201 intruded upon its rear wall. Measuring approximately 3.2 by 1.6 m and 44 cm deep, the floor of Feature 223 contained 39 post moulds, 13 inside and 26 around the perimeter. The post mould diameters ranged from 5 to 22 cm (mean=8.9±3.9). The fill consisted of a basal living floor approximately five centimetres thick and a primary fill layer up to 40 cm thick, which contained two small secondary lenses.

Feature 201 was appended to the east wall of House 2 with its ramp entranceway intersecting interior SSL Features 232 and 233 (Figures 10 and 12). Measuring approximately 3.3 by 1.5 m and 50 cm deep, the feature floor contained 32 post moulds, eight inside and 24 around the perimeter. The post moulds ranged in diameter from 5 to 12 cm (mean=8.2±1.9). The fill consisted of a basal fill layer over ten centimetres thick overlain by a series of primary fill layers. The sloping of the layers suggests that infilling began with two distinct deposits extending down the ramp to about the centre of the pit. The rear of the pit was then filled. A central layer at the top may indicate later infilling to level the surface after compaction.

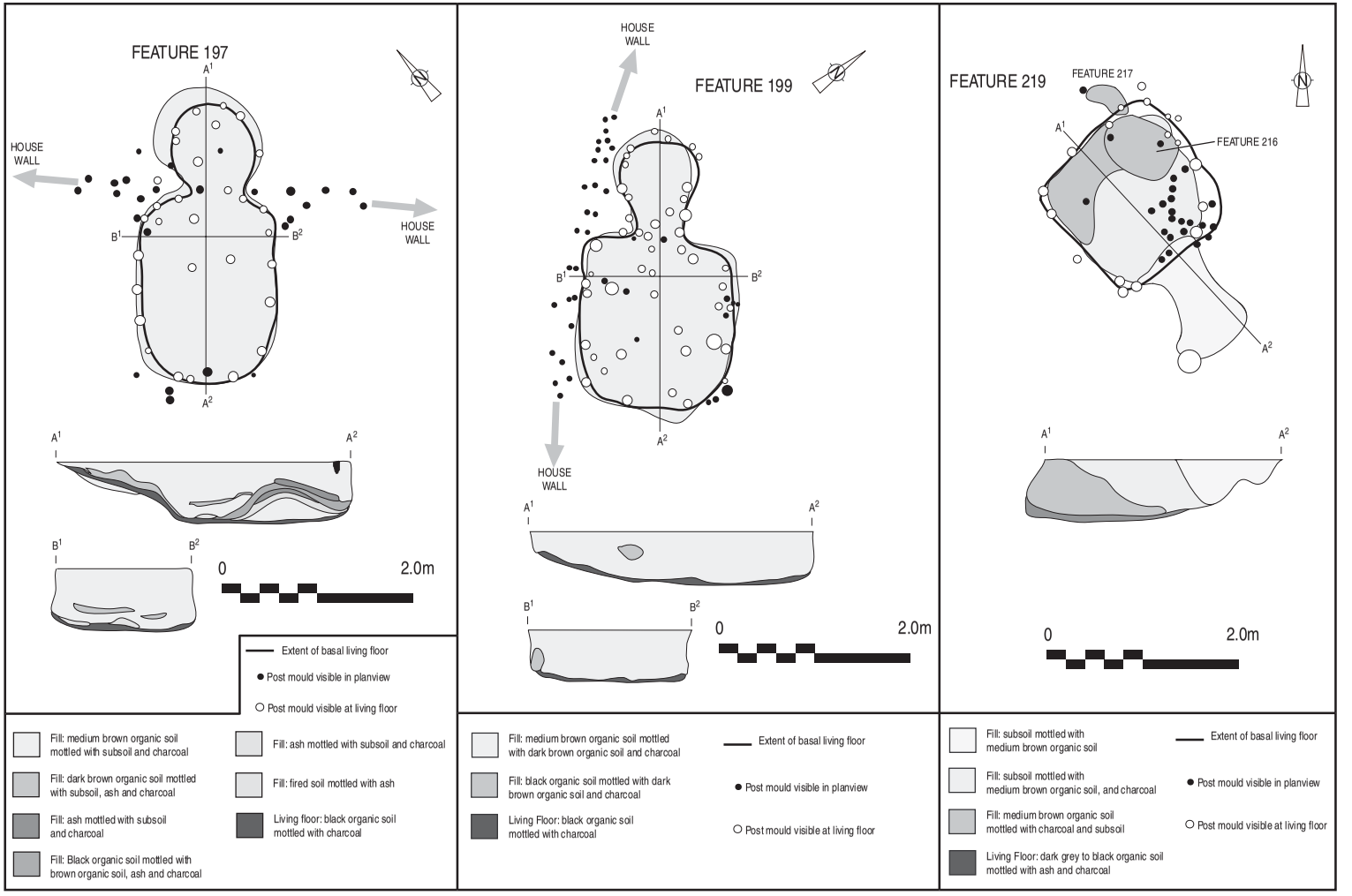
House 3 (Figures 4 and 10)

House 3 was located 12 metres northwest of House 2. Only about seven metres of the house length were exposed as the structure extended westward beyond the limits of the property. The end appears to be tapered with an end wall about four metres long. In addition to two SSLs, the house end contained four small pits.

The exterior house walls were formed by a staggered single-to double-row of irregularly spaced posts, with a mean density of 4.6 posts per metre. A metre-wide gap in the end wall may represent a doorway.

A single 20-cm diameter interior post, located approximately two metres from the outside wall, was the only exposed support member. The other interior post moulds were randomly distributed. With such a small portion of the house revealed, it is difficult to discern its internal structure, particularly as house ends generally differ in layout from

Figure 11. *Plans and profiles of SSL features 197, 199, and 219 in House 2 at the Hubbert site.*



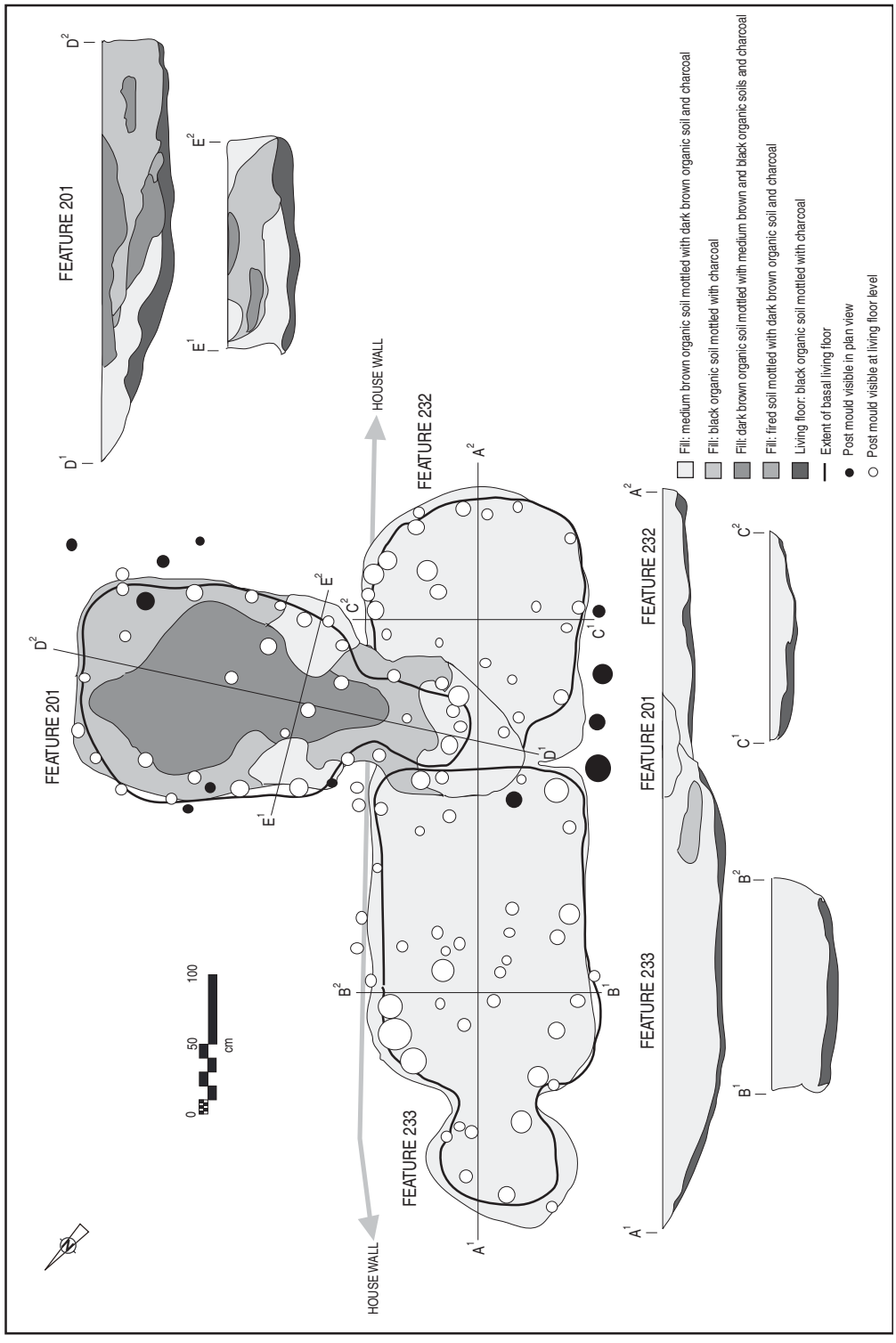


Figure 12. *Plan and profiles of SSL Features 201, 232, and 233 in House 2 at the Hubbert site.*

the main segments. The placement of the SSLs suggests that, as in Houses 1 and 2, there may have been fewer locational constraints in the relatively empty house ends than in the main segment.

The exposed portion of House 3 contained six cultural features, including two SSLs and four nondescript pits. Of the two SSLs, one (Feature 226) was probably located in the centre of the house end with the ramp oriented parallel to the long axis of the house. The other (Feature 246), also in the central corridor, was in an unusual position with its ramp oriented perpendicular to the long axis of the house.

Feature 226, measuring 3.1 by 2.0 m and 67 cm deep, intruded upon the entranceway of Feature 246 (Figures 10 and 13). Twenty-two post moulds were recorded on the pit floor, four in the interior and 18 around the perimeter. They ranged in diameter from 5 cm to 16 cm (mean=7.6±2.3). The pit fill consisted of a ten-centimetre thick basal living floor and a primary fill layer, with secondary lenses, over 60 cm thick.

Feature 246 was truncated by Feature 226 (Figures 10 and 13). The remaining length was approximately 2.4 m, the width was 1.8 m and it was 49 cm deep. Eighteen post moulds were recorded on the pit floor, two inside and 16 around the perimeter. They ranged from 6 cm to 13 cm in diameter (mean=7.9±1.9). The pit fill consisted of a roughly 10-cm thick basal layer and a primary fill layer, with secondary lenses, over 40 cm thick.

Little can be said about House 3, given its limited exposure during the 1990 excavations. Its wide end compares closely with the northeast end of House 1. The presence of SSLs in what seems to be the storage cubicle, however, is quite different from Houses 1 and 2. Moreover, both SSLs are centrally positioned, unlike those in Houses 1 and 2, which, except for Feature 219, are laterally positioned. This may indicate that internal space was not a concern, or that this concern was met by placing the sweat lodges in the storage cubicle.

Midden A, Exterior Features and Posts (Figure 4)

A total of 22 features was recorded outside of the houses in three main areas. The largest exterior feature, designated Midden A, was located five metres southeast of House 2 and 14 m south of House 1 (Figure 4). Filling a natural depression, this partially undisturbed refuse deposit was excavated by means of 20 one-metre-square units trowelled and screened in natural levels. The uppermost stratum consisted of plough zone, 20 to 45 cm thick, in which plough scars could be identified. Below this was an undisturbed cultural deposit, up to 30 cm thick, consisting of medium grey soil mottled with light brown soil, charcoal, medium brown soil and containing rocks. The lowest stratum was an undisturbed, dark grey soil mottled with light brown soil and ash that was up to ten centimetres thick. Five other features were located near Midden A, of which the largest was a shallow refuse-filled depression containing ceramics, bone, and chert debitage. Between Houses 2 and 3 were five small pits, three of which were devoid of artifacts. Also associated with House 3 was Feature 230 (Figure 10), a medium-sized pit containing ceramics. Since the wall post pattern in this area was quite diffuse, it is possible that this feature was just inside the house wall. Nine features were recorded in the vicinity of House 1, most of which did not yield any material remains. One pit, however, located 18 metres north of the house, yielded evidence of a hearth event and contained ceramic vessel body sherds.

Overall, the distribution of exterior features would not seem to suggest a significant amount of outdoor activity, with the exception of the refuse disposal that took place on the south edge of the site. In contrast, the frequency and patterning of exterior post moulds suggests a great deal of outside activity. A total of 1,176 post moulds, nearly one-quarter of all posts recorded at the site, was distributed primarily south of House 1 (Figure 4). Interestingly, the space between Houses 1 and 2 was relatively devoid of settlement patterns of any kind. The area between Houses 1, 2, and 3 contained a significant number of posts, including several short post alignments, each four or five metres long. There was also an approximately eight-metre-long post row extending to the northwest from the end of House 1. The most elaborate examples of these exterior walls were found near the midden, where there were two major align-

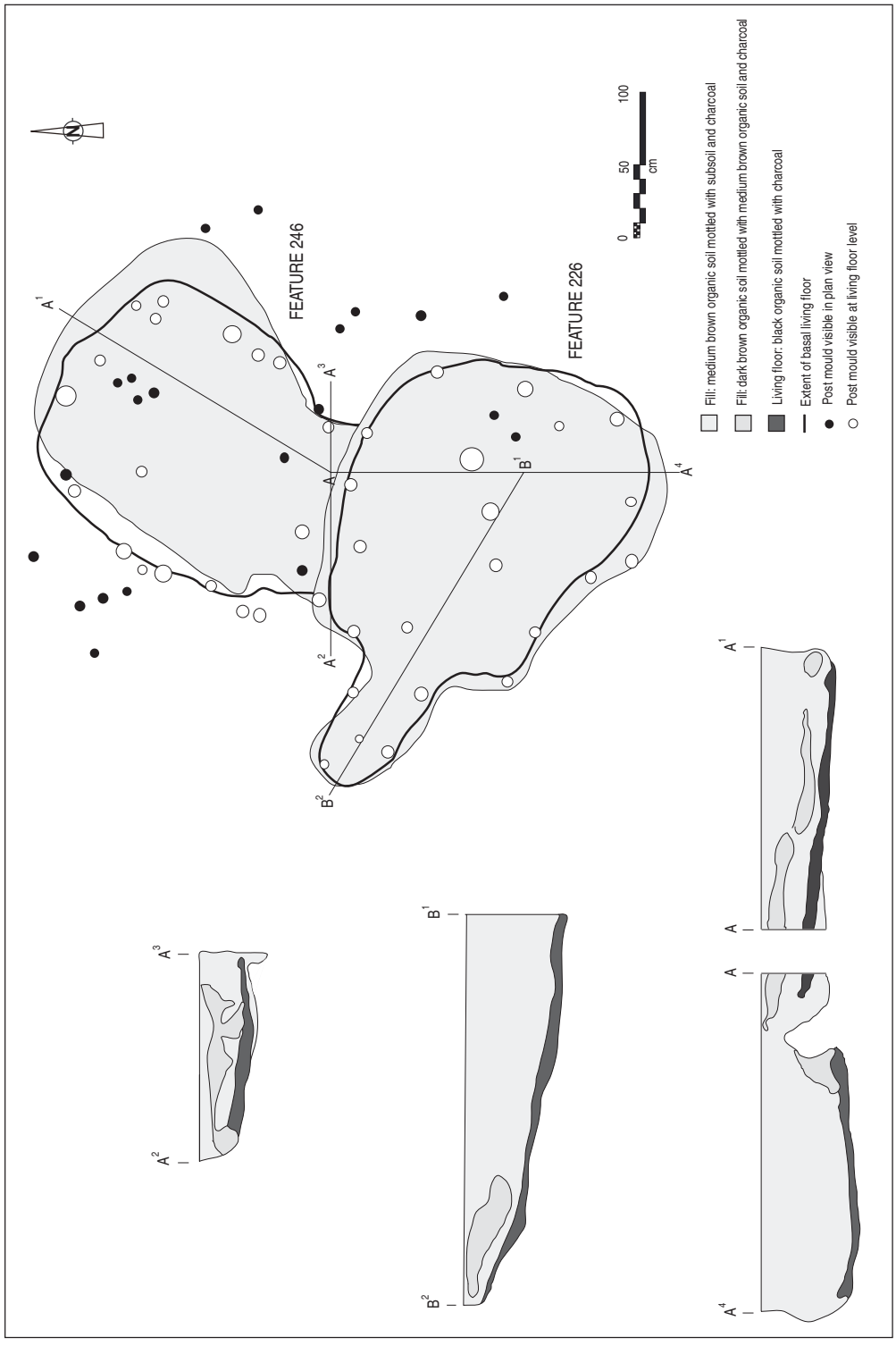


Figure 13. *Plan and profiles of SSL Features 226 and 246 in House 3 at the Hubbert site.*

ments of ten or more metres in length. No palisade was encountered. The post alignments that were documented may have been windbreaks servings as shelter devices in lieu of a palisade. Similar structures have been noted on other sites lacking perimeter fences, including the nearby Wiacek and Dunsmore sites (Robertson et al. 1995:51-53; Robertson and Williamson 2001).

The apparent random distribution and variable density of the exterior posts makes it difficult to confidently identify other exterior ancillary structures. The lack of associated cultural features further hampers the identification and interpretation of exterior structures and activity areas. Nevertheless, several clusters suggest the existence of rings of posts two or three metres in diameter. Given the high number of interior surface sweat lodges, and the frequency of sweat lodges in general, it seems reasonable to suggest that some of these exterior post clusters may also represent surface sweat lodges, although the absence of exterior hearths casts some doubt on this hypothesis. Fish drying racks may also be represented, as fish are prominent in the faunal assemblage.

Settlement Plan

As revealed by the 1990 excavations, the eastern portion of the Hubbert site comprised two, almost-parallel longhouses, oriented northwest-southeast. A small portion of a probable third house, oriented along a similar axis, was situated to the west of this pair. The position and orientation of Houses 1 and 2, together with their generally similar internal organization, suggest that the houses were built and occupied at the same time. House 3 may also be contemporaneous, although there is not enough evidence to be certain. A midden, located to the southeast of Houses 1 and 2 and adjacent to the ravine to the south, was likely shared by the occupants of both houses. Exterior activity, primarily evinced by post moulds rather than feature clusters, was mostly concentrated in the open area between Houses 1, 2, and 3, in the midden area, and in the open area to the east of the ends of Houses 1 and 2.

The internal floor plan of House 2 suggests two nuclear families sharing the single hearth and using pits aligned along the lateral margin of the central corridor. It appears that, after an initial period of sharing a central SSL, each family built and maintained its own. The resulting bilateral symmetry in consecutive SSLs is also evident in House 1, although in this larger house the affiliation with specific fire places is less clear. Indeed, there seem to be only two major SSL groupings, one to the northwest and another to the southeast of the central latitudinal axis. This may indicate demographic and/or numerical variations among the families living along the central corridor and the sharing of facilities by neighbours.

The Artifact Assemblage

Excluding subsistence remains, approximately 1,800 analyzable artifacts were recovered during the course of the excavations. Table 2 summarizes the material recovered by artifact class.

Ceramic Vessels

A total of 1,108 vessel neck, shoulder and body sherds, individually or in various combinations, constitute the majority of the analyzable ceramic vessel assemblage. An additional 3,130 sherds were too small or degraded to provide reliable data. Of the 712 analyzable body sherds, 36 showed some type of body treatment (15 with ribbed-paddling and 21 with decoration consisting of an opposed or horizontal motif). The assemblage also includes a total of 134 rim sherds that were mended and sorted into 98 vessels. Vessel rims were considered analyzable when they exhibited both exterior and interior surfaces, the lip, and enough of the outer collar-neck surface to ascertain decorative styles and attributes. An additional 123 rim fragments and 19 castellation fragments were recovered; they were too incomplete, however, to allow collection of useful attribute data.

Of the 98 analyzable vessels, there were two reconstructed vessels and one completely intact vessel. One of the reconstructed vessels contained only the neck/shoulder and body portions with no rim. The intact vessel, which was recovered from a small pit in House 1, is considered to be a miniature vessel (Figure 14) with a maximum diameter at the lip of 86 mm and a height of 95 mm. The

Table 2. *The Hubbert site artifact assemblage.*

Artifact Class	Frequency	%
*Ceramics**		
Rim Sherds (Vessels)	98	6.96
Neck Sherds	276	19.59
Shoulder Sherds	38	2.70
Neck/Shoulder Sherds	82	5.82
Body Sherds	712	50.53
Pipes	115	8.16
Juvenile Rim Sherds (Vessels)	76	5.39
Miscellaneous	12	0.85
Subtotal	1,409	100.0
Lithics		
Formal Tools	2	0.60
Utilized Flakes	76	22.82
Debitage	247	74.17
Ground Stone	8	2.40
Subtotal	333	100.0
Floral Remains		
Seeds	1038	
Wood Charcoal (g)	(592)	
Subtotal	1038	
*Faunal Remains***		
Bone (Primary Sample)	650	26.8
Worked Bone	65	2.73
Subtotal	2,428	100.0
Total	**5,208**	

* excludes 3,130 unanalyzable sherds
** analysed from inventory of 1,713 elements

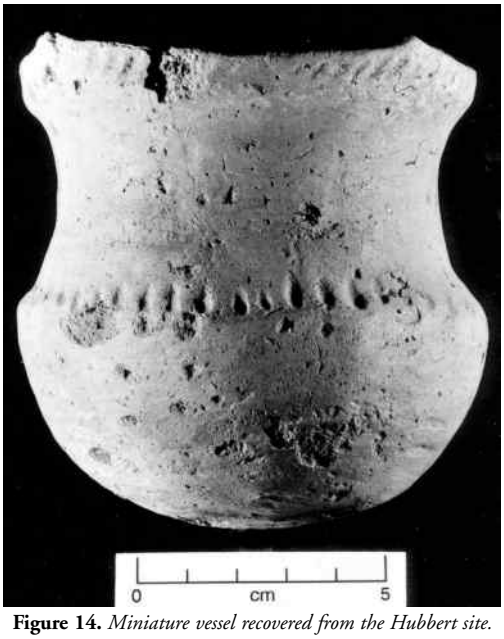


Figure 14. *Miniature vessel recovered from the Hubbert site.*

vessel has collar, shoulder, and body decoration with four castellations and a globular body. This miniature vessel was included in both the typological and attribute analysis but not in statistical analysis of the Hubbert rim attributes as the collar height, lip width, and basal collar width measurements produced outlying values with pronounced effects on the means and standard deviations. A second miniature vessel could be juvenile (small, slightly crude in form, but well executed) and therefore was not included in either the typological or attribute analysis. Excluding this vessel, the ceramic assemblage consisted of 97 vessels.

The ceramic vessels were analyzed, using both an attribute and traditional typological approach, by Ron Williamson and Terry Powis (1996:51-67) in order to facilitate inter- and intra-site comparative studies. Table 3 presents summary descriptive statistics of individual attributes.

The majority of the vessels have a well-defined collared rim form (87.6 percent), with incipient collared (9.3 percent) and collarless vessels (3.1 percent) occurring less frequently. All vessels exhibit a flat lip form. The angle of the lip to the interior profile of the vessels is a right angle (95.9 percent) on most vessels. Obtuse and acute angles are equally represented among the remaining vessels. Approximately two-thirds of the collar base shapes are angular (66.0 percent) with the remaining vessels having a rounded base. Three vessels were not included in this particular attribute analysis due to their collarless rim form.

Rim orientation is primarily outflaring (64.9 percent), while the rest of the assemblage exhibits a vertical orientation. No vessels show an insloping rim orientation. Most of the interior rim profiles are either concave (47.4 percent) or straight (33.0 percent); fewer vessels manifest a convex profile (17.5 percent). There are two specimens that have either a convex/concave or concave/convex interior profile. Conversely, many of the exterior rim profiles are convex (57.7 percent), with an almost equal number of concave (23.7 percent) and straight (18.6 percent) exterior profiles represented.

Summary collar height statistics are based on 95 vessels—they exclude the two miniature ves-

Table 3. *Hubbert site ceramic vessel rim descriptive attributes.*

RIM FORM	**n**	**%**
Collared	85	87.6
Incipient	9	9.3
Collarless	3	3.1
Total	**97**	**100.0**

LIP ANGLE	**n**	**%**
Right	93	95.9
Obtuse	2	2.1
Acute	2	2.1
Total	**97**	**100.0**

LIP FORM	**n**	**%**
Flat	97	100.0
Total	**97**	**100.0**

RIM ORIENTATION	**n**	**%**
Outflaring	63	64.9
Vertical	34	35.1
Total	**97**	**100.0**

INTERIOR PROFILE	**n**	**%**
Concave	46	47.4
Straight	32	33.0
Convex	17	17.5
Convex/Concave	1	1.0
Concave/Convex	1	1.0
Total	**97**	**100.0**

EXTERIOR PROFILE	**n**	**%**
Convex	56	57.7
Concave	23	23.7
Straight	18	18.6
Total	**97**	**100.0**

COLLAR BASE SHAPE (n=94)	**n**	**%**
Angular	62	66.0
Rounded	32	34.0
Total	**94**	**100.0**

COLLAR HEIGHT (n=95)	
Mean	13.22 mm
Standard Deviation	5.01
Coefficient of Variability	37.90

LIP WIDTH (n=95)	
Mean	6.12 mm
Standard Deviation	1.54
Coefficient of Variability	25.16

COLLAR BASE WIDTH (n=95)	
Mean	9.84mm
Standard Deviation	2.32
Coefficient of Variability	23.58

COLLAR MOTIFS	**n**	**%**
Oblique	40	41.2
Oblique + Horizontal	30	30.9
Oblique/Horizontal	13	13.4
Opposed	6	6.2
Plain	4	4.1
Horizontal	3	3.1
Oblique/Horizontal/Oblique/Horizontal	1	1.0
Total	**97**	**100.0**

COLLAR TECHNIQUES	**n**	**%**
Linear Stamped	25	25.8
Incised	24	24.7
Linear Stamped + Linear Stamped	16	16.5
Incised + Incised	11	11.3
Linear Stamped/Incised	8	8.2
Incised/Incised	5	5.2
Plain	4	4.1
Linear Stamped + Incised	2	2.1
Incised + Linear Stamped	1	1.0
Incised/Incised/Incised/Incised	1	1.0
Total	**97**	**100.0**

NECK MOTIFS	**n**	**%**
Plain	58	59.8
Horizontal	22	22.7
Horizontal/Oblique	8	8.2
Horizontal/Opposed	3	3.1
Oblique	3	3.1
Opposed	1	1.0
Horizontal/Punctate	1	1.0
Horizontal/Opposed/Horizontal	1	1.0
Total	**97**	**100.0**

NECK TECHNIQUES	**n**	**%**
Plain	58	59.8
Incised	25	25.8
Incised/Incised	6	6.2
Incised/Linear Punctate	4	4.1
Linear Stamped	1	1.0
Incised/Linear Punctate	1	1.0
Incised/Punctate	1	1.0
Incised/Incised/Incised	1	1.0
Total	**97**	**100.0**

INTERIOR MOTIFS	**n**	**%**
Plain	89	91.8
Oblique	8	8.2
Total	**97**	**100.0**

INTERIOR TECHNIQUES	**n**	**%**
Plain	89	91.8
Punctate	4	4.1
Linear Punctate	2	2.1
Linear Stamped	2	2.1
Total	**97**	**100.0**

LIP MOTIFS	**n**	**%**
Plain	80	82.5
Oblique	12	12.4
Horizontal	5	5.2
Total	**97**	**100.0**

LIP TECHNIQUES	**n**	**%**
Plain	80	82.5
Linear Punctate	8	8.2
Punctate	7	7.2
Incised	2	2.1
Total	**97**	**100.0**

sels and one Lalonde High Collar vessel with a collar height of 66 mm. Excluding this outlying value, the largest collar heights range from 24 to 33 mm, with a mean of 13.22 mm and a standard deviation of 5.01. The coefficient of variability for collar heights is 37.9. Similarly, lip widths and basal collar widths are based on 95 vessels. The mean lip width is 6.12 mm with a standard deviation of 1.54 and the basal collar widths have a mean of 9.84 mm and a standard deviation of 2.32. The coefficient of variability for the lip width and basal collar width is 25.16 and 23.58, respectively.

The most common collar decorative motif consists of simple obliques (41.2 percent), followed by obliques crossed by a horizontal element (30.9 percent). Other motifs less commonly represented are: obliques over a horizontal element (13.4 percent); opposed motifs (6.2 percent); plain (4.1 percent); and horizontal element(s) (3.1 percent). One vessel exhibits simple obliques over horizontals over obliques over horizontals on the upper collar. The major techniques that were used to decorate the vessel collars are linear stamped impression (25.8 percent) and incising (24.7 percent). Additive relationships include linear stamped crossed by linear stamped (16.5 percent), incised crossed by incised (11.3 percent), linear stamped over an incised element (8.2 percent) and incised over incised (5.2 percent).

Neck motifs are most often plain (59.8 percent), followed by a horizontal element (22.7 percent). Occurring less frequently are: horizontal over oblique (8.2 percent); horizontal over opposed (3.1 percent); and simple obliques (3.1 percent). Most of the decorated elements were executed by incising.

Interior rim decoration is predominantly plain (91.8 percent), with the remaining motifs represented by simple obliques. The techniques used to create these motifs are punctates (4.1 percent), linear punctates (2.1 percent) and linear stamped (2.1 percent). Lip decoration, although most frequently absent (82.5 percent), consisted of either obliques (12.4 percent) or a horizontal element (5.2 percent). The techniques include linear punctates (8.2 percent), punctates (7.2 percent) and incising (2.1 percent).

Table 4 provides a breakdown of specific ceramic vessel types as described by MacNeish (1952), and Table 5 provides type frequencies by provenience. Selected vessels are depicted in Figures 15-19. No statistically significant pattern was noted with respect to the inter-house distribution of the various vessel types.

With respect to type definition, the differentiation between Middleport Oblique and Pound Neck was made on strict adherence to the position of the horizontal elements: immediately above or on the collar base for the former; below the collar base for the latter. Also of interest is a short, well-defined, collared type, which includes simple obliques crossed by a horizontal element consisting of either a broken (short gash) or continuous line (Figure 15). This type was described previously by MacNeish (1952:16-17) as a late variant of Middleport Oblique with a short gash located on the lower collar and absence of neck decoration. The interior and exterior profiles of the Hubbert vessels, however, are often more characteristic of Huron Incised-type vessels and are referred to here as a Huron Incised variant (cf. Latta 1976:59; Ramsden et al. 1998b:145; Stopp 1985:20). Several examples have either lip, interior or sub-collar punctates.

Temporal Placement. With respect to J.V. Wright's rim sherd typology (1966:61), the com-

Table 4. *Hubbert site ceramic vessel types.*

Type	**n**	**%**
Huron Incised Variant	29	30.0
Pound Necked	14	14.4
Middleport Oblique	11	11.3
Lawson Incised	9	9.3
Huron Incised	6	6.2
Black Necked	5	5.1
Sidey Notched	4	4.1
Lalonde High Collar	3	3.1
Miscellaneous	3	3.1
Niagara Collared	3	3.1
Sidey Crossed	2	2.1
Lawson Opposed	2	2.1
Pound Blank	2	2.1
Warminster Horizontal	2	2.1
Ontario Horizontal	1	1.0
Ripley Plain	1	1.0
Subtotal	**97**	**100.1**
Miniature	1	—
Total	**98**	**—**

Type	House 1	House 2	House 3	Exterior Areas	Surface	Midden A
Huron Incised Variant	8	9	—	1	2	9
Pound Necked	—	2	1	—	1	10
Middleport Oblique	2	—	—	1	—	8
Lawson Incised	3	1	—	—	—	5
Huron Incised	3	1	—	—	—	2
Black Necked	2	1	—	—	—	2
Sidey Notched	—	3	1	—	—	—
Lalonde High Collar	1	—	—	1	—	1
Miscellaneous	—	1	—	—	—	2
Niagara Collared	—	—	—	—	—	3
Sidey Crossed	—	1	—	—	—	1
Lawson Opposed	—	1	—	—	—	1
Pound Blank	—	—	—	—	1	1
Warminster Horizontal	—	2	—	—	—	—
Ontario Horizontal	—	—	1	—	—	—
Ripley Plain	1	—	—	—	—	—
Total	**20**	**22**	**3**	**3**	**4**	**45**

Table 5. *Hubbert site ceramic vessels by provenience unit.*

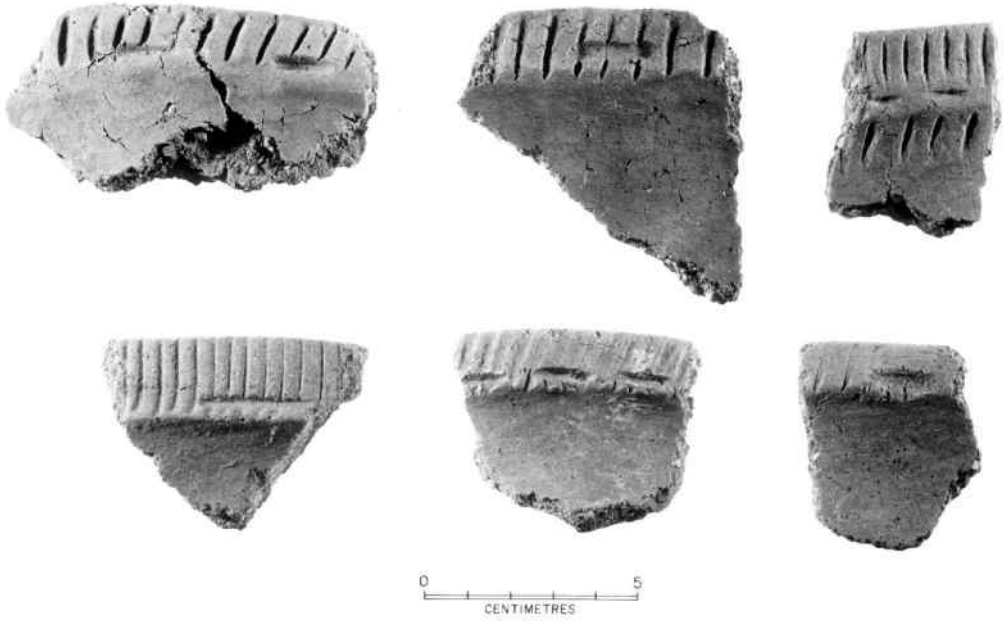


Figure 15. *Huron Incised variant rims from the Hubbert site.*

bined frequency of Middleport Oblique, Ontario Horizontal, and Lawson Incised is 21.6 percent of the assemblage, and of Middleport Oblique and Ontario Horizontal alone is 12.3 percent. This frequency would change considerably if the Huron Incised variant was considered instead as a variant of Middleport Oblique. Pound Necked and Black Necked vessels account for only 19.5 percent of the vessels, while 8 percent and 17 percent of the interior vessel and lip surfaces were decorated, respectively. On the other hand, the total frequency of Black Necked together with Huron Incised (including Huron Incised Variant), Lawson Incised, and Lawson Opposed is 52.7 percent, comfortably within the frequencies regarded by Wright (1966:70-71) as typical of the late pre-contact Iroquoian period in the north Lake Ontario shore area. These data,

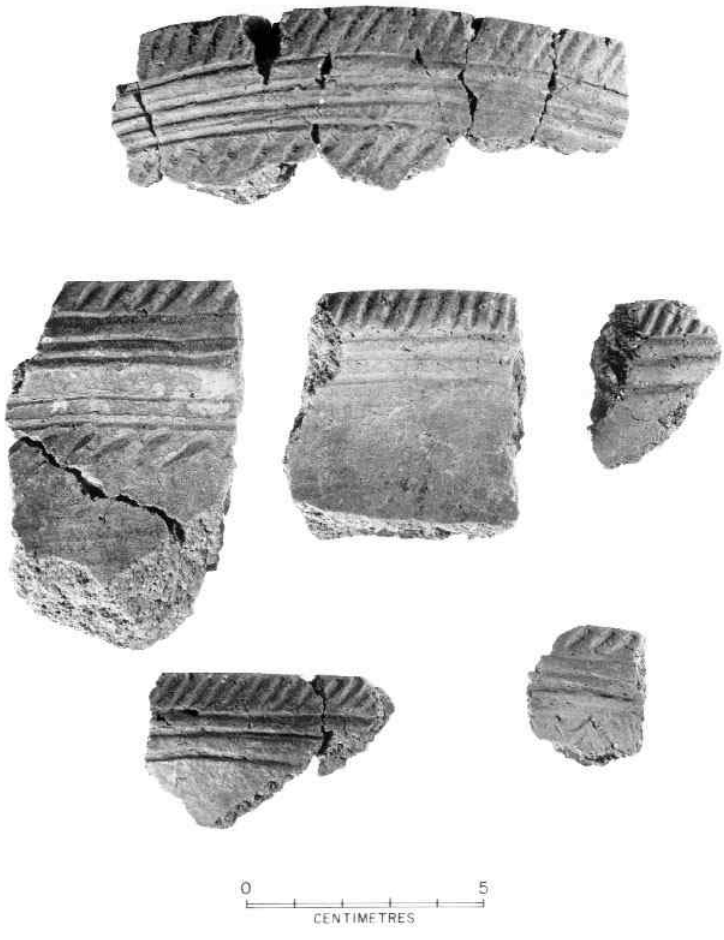


Figure 16. *Middleport Oblique rims from the Hubbert site.*

together with the relative absence of interior and lip decoration and high collars, suggest that the site dates to the early- to mid-fifteenth century. This places the site substantially later than the nearby, mid-fourteenth century Wiacek site (Robertson et al. 1995:57).

In order to assess the accuracy of the ceramic seriation, two radiocarbon determinations were obtained on wood charcoal and were calibrated using the software program CALIB 4.3 (Stuiver and Reimer 1993) and the most currently revised calibration data sets (INTCAL98.14C [Stuiver et al. 1998]). A sample derived from a SSL (Feature 147) in House 1 returned a date of 860±65 B.P. (WAT-2953) while one from a pit in House 2 (Feature 208) returned a date of 750±65 B.P. (WAT-2954). Calibrated to cal A.D. 1200 and cal A.D. 1278 respectively, both dates are well outside of the acceptable age range for the site based on ceramic and other indicators. They do, however, seem to cluster with a series of anomalous dates obtained from the nearby Wiacek site (Lennox et al. 1986:159-160). In order to explore the possibility that a pre-contact forest fire may have contaminated the soil in the area, and to obtain a more accurate result, a blended sample of carbonized maize from 12 features across the site was submitted for dating. This sample yielded a date of 550±75 B.P. (WAT-2964), which calibrates to cal A.D. 1406 (1386-1436 at one sigma). This date is more in line with ceramic and other indicators from the site. It also highlights the value of dating cultigens rather than wood charcoal (cf. Little 2002:115-116) and the need for detailed investigation of the

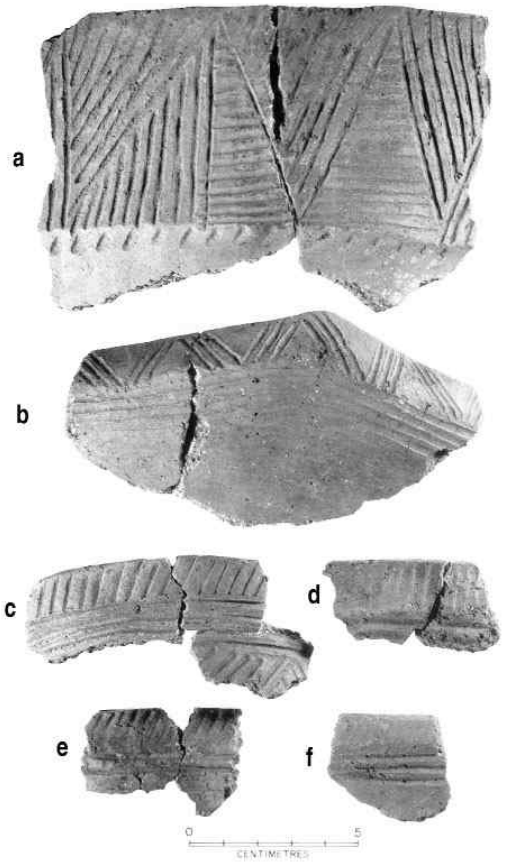


Figure 17. *Selected rims from the Hubbert site: Lalonde High Collar (a); Pound Necked variant (b); Middle Oblique (c); Pound Necked (d-f).*

pre-contact fire regimes of the mixed hardwood forests of southcentral Ontario in order to assess charcoal contamination in archaeological contexts.

Juvenile Ceramics

The juvenile ceramics were distinguished from the adult assemblage based on their crudeness of form, size, and decorative motifs and techniques. Every attempt was made to separate juvenile rims, necks, shoulders and body sherds from the adult assemblage. The juvenile assemblage includes 79 rims representing 76 vessels, 12 rim fragments, 14 neck/shoulder fragments, 18 body sherds and 12 lumps of clay (including three rolled pieces—possibly handles). Juvenile ceramics may be inappropriate for seriation, but they do reveal important information about the learning process among young potters.

Figure 18. *Reconstructed Pound Necked vessel from the Hubbert site.*

Four of the 19 body sherds have a decorative motif. Three sherds have a horizontal incised motif, while one sherd exhibits an opposed motif consisting of obliques bordered by round punctates. Nine of the 19 body sherds preserve a basal portion, which accounts for most of their vessel size.

Fourteen neck/shoulder sherds were analyzed and nine exhibit decorative motifs consisting of either linear punctates, horizontals, an opposed motif, or obliques over a horizontal element. The techniques used most often were incising and punctation.

There are 28 incipiently collared and 21 collarless vessels in the assemblage. The remaining 27 vessels are collared and collar height measurements were taken from only those vessels which exhibit a collared rim form. The collar heights range from 4 to 30 mm (mean=10.6), while vessel lip widths range from three to nine millimetres (mean=5.5). Fifty-eight vessels exhibit a vertical rim orientation, while the rest have an outflaring orientation. The interior profiles are nearly equally divided between straight profiles (n=33) and concave profiles (n=29).

Forty-two vessels have decorative collar motifs, while the remaining 34 exhibit plain collars. The collar motifs consist of: crude obliques (n=27);

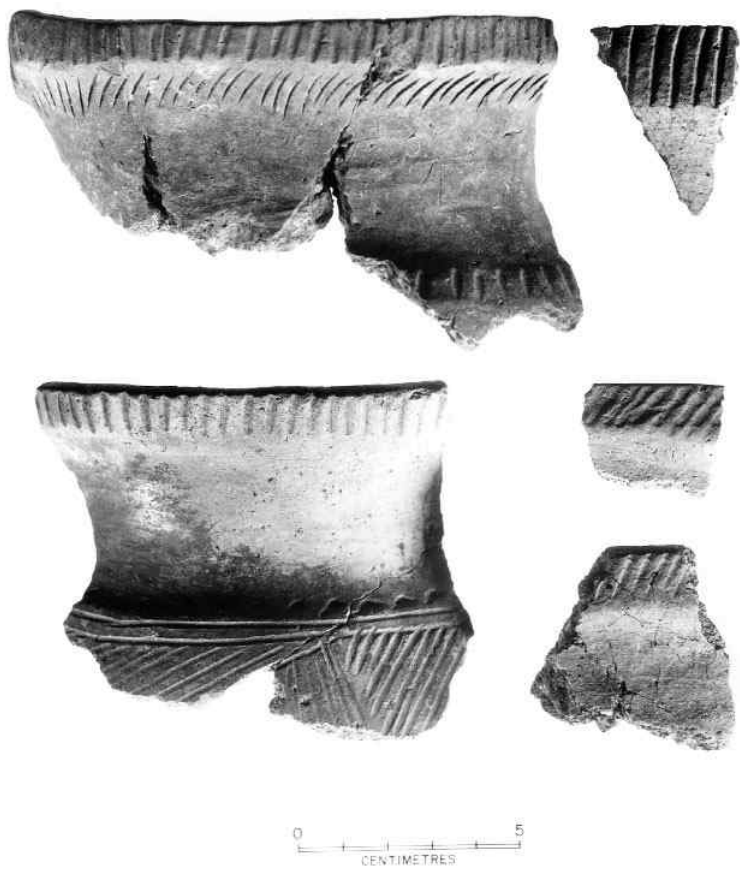


Figure 19. *Huron and Lawson Incised rims from the Hubbert site.*

opposed (n=6); punctates (n=4); horizontals (n=3); or obliques crossed by horizontals (n=2). The primary techniques used to decorate the collars were incising (n=31), linear stamping (n=6) and punctates (n=5). Five vessels manifest subcollar punctates, with either a simple or complex collar motif. There are eight vessels with lip decoration consisting of incised obliques, together with a simple oblique collar motif.

Sixteen vessels exhibit neck decoration, including nine with an opposed motif and six with a horizontal element. The technique used was primarily incising (n=14). Three vessels have shoulder decoration consisting of round punctates. The assemblage also includes three complete castellations which have either an opposed motif or a plain motif.

Twelve ceramic fragments were considered lumps of clay waste. Most of the pieces are either flattened or look as if the wet clay had been clenched by a human fist. Most of the fragments are undecorated and form no particular shape. However, three pieces had been rolled, and two of them may be coil fragments. The third rolled fragment is shaped like a handle and is decorated by linear punctates over the entire surface.

Most of the juvenile ceramic assemblage (60 percent) is derived from the midden, while the remainder is almost equally split between Houses 1 and 2. The assemblage is fairly large, attesting to the presence of children and, by inference, women. The collar motifs and techniques are well-executed, but the vessel forms are relatively crude. There are a high number of complex motifs used by the young potters, suggesting a certain degree of experience in the ceramic art. This experience is also evident from the number of vessels which exhibit secondary decoration, primarily punctates located at the base of collar, neck and shoulder areas. It should be noted,

however, that nearly half of the assemblage had a plain collar motif, including one complete "pinch" or "toy" pot.

Ceramic Pipes

The Hubbert site ceramic pipe assemblage is comprised of 115 complete and fragmentary specimens, including three complete pipes, 55 bowls, 40 stems, nine elbow sections, four juvenile pipes and four undetermined fragments. Wherever possible, fragments were mended together prior to the analysis, which was carried out by Eva MacDonald (1996b:68-73), whose findings are summarized here.

The most interesting pipe is a human effigy (Figure 20) recovered from the living floor of Feature 99, a SSL in House 1 (Figure 5). The triangular bowl measures 69.1 mm in height, and has been incorporated into the sculpted figure of a female, who sits facing the smoker with her knees drawn up and her hands resting above her chest. The bowl of the pipe is further decorated with punctates, which form triangular motifs on the "back" of the effigy. The head of the effigy had been snapped off and the facet ground smooth suggesting that the pipe remained in use after being broken. The mouthpiece also exhibits ground facets, suggesting that the stem, too, had been repaired.

A fragment of a modelled arm or leg from a second human effigy pipe was found in the primary fill layer of Feature 201, also a SSL, but located in House 2.

Two primary forms of bowls are present among the 22 analyzable bowls. Trumpet bowls with flat lips are the most common form, of which 10 are plain (e.g., Figure 21a) and six are decorated. Eleven of the 16 trumpet pipes are burnished, including the majority of the decorated forms. The largest intact bowl measures 61.8 mm in height, its outer rim diameter is 51 mm, and its exterior is encircled by three incised lines over a row of punctates (Figure 21b). Four of the remaining five decorated trumpet bowls feature this motif (e.g., Figure 21c). The sixth bowl is highly burnished and decorated with five, trailed horizontal lines below which a row of punctates has been placed.

Four of the five conical bowls are plain. Two of these conical bowls have been largely reconstructed. They are very similar in their proportion and manufacture (Figure 21d,e), differing only in the angle at which the stem meets the bowl. The only decorated conical bowl exhibits a lightly inscribed band of obliques directly below the lip, but these only encircle approximately a third of the bowl's circumference.

Among those 36 bowl fragments for which form could not be determined, incised parallel horizontals are the most common decorative motif (n=15). Specimens decorated with punctates of varying shapes, including annular punctates, incised opposed simples and incised obliques, are also present in the assemblage. Thirteen bowl fragments are plain. Decoration could not be assessed for eight bowl fragments, as these lack much of their exterior surfaces.

Of the 27 analyzable stem fragments, 13 specimens possess intact mouthpieces, of which six have an expanding form, five are tapered, and two have been ground to give the stem a cigar-shaped appearance. All of these stems are circular in cross-section and have flat mouthpieces ranging from 8.4 mm to 13 mm in diameter. All of the analyzable stem fragments, as well as the nine elbow fragments, have plain exteriors, and half of the stems have been burnished.

Of the juvenile pipes, one stem fragment has a kidney-bean-shaped cross-section. One juvenile bowl fragment is plain and has been formed into a crude square. Another bowl fragment, of undetermined shape, has a rounded lip and has been decorated with a single incised horizontal line, below which is a single row of punctates.

Trends in the development of the smoking pipe styles in the Simcoe County area may be characterized by an increase in undecorated trumpet forms and barrel forms decorated with horizontal incised lines during the early Late Iroquoian period; apple bowl forms also become more common, while conical or cylindrical forms decrease in frequencies (Latta 1976:80). The incidence of burnished or slipped pipes also increases, as does the appearance of new forms such as the coronet pipe. While miniatures and effigy pipes were once thought to be absent from

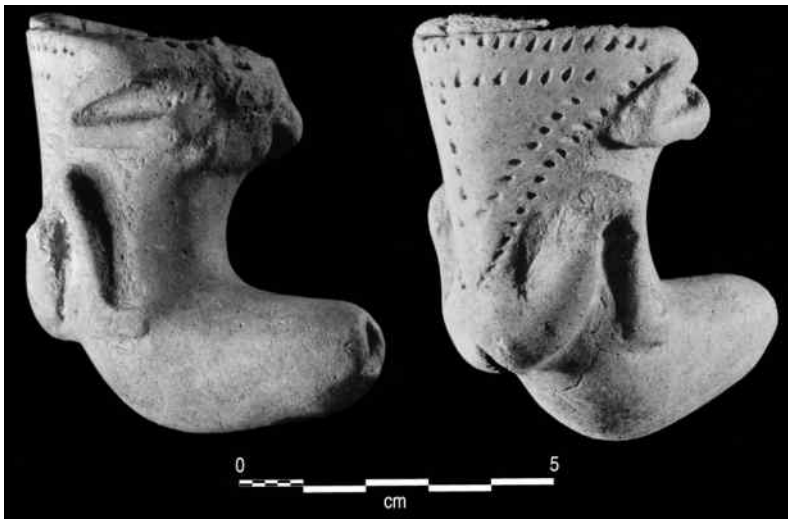


Figure 20. *Human Effigy pipe from the Hubbert site.*

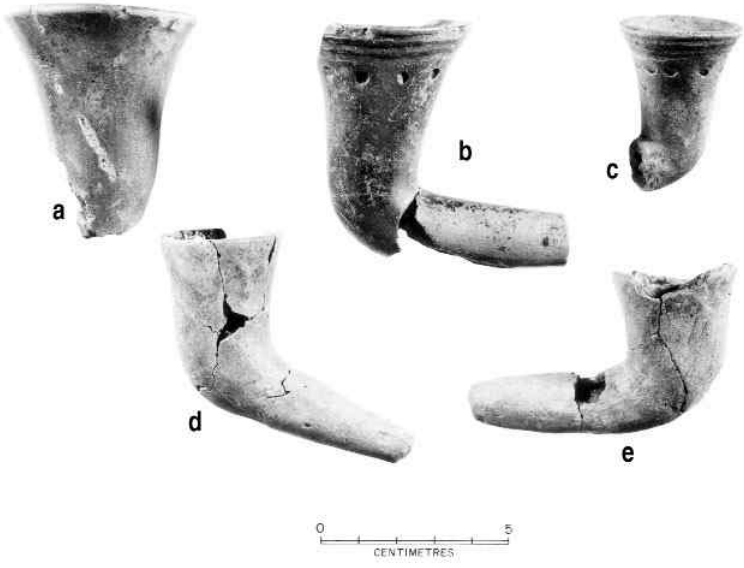


Figure 21. *Trumpet (a-c) and conical (d-e) pipes from the Hubbert site.*

Middle Iroquoian period Simcoe County assemblages (Latta 1976:80), recent excavations at the Barrie (Sutton 1999) and Holly (Williamson et al. 2000) sites have demonstrated otherwise, just as has proven to be the case in other regions.

A better understanding of these trends in southern Simcoe County can be reached through the comparison of the Hubbert assemblage with five other sites in the Barrie area: Barrie, Holly, Wiacek, Dunsmore, and Carson (MacDonald 1996b:72-73). The 1991-1993 excavation of a portion of the late thirteenth century Barrie site (Sutton 1999) yielded 18 ceramic pipe fragments of which there are seven analyzable bowls. These include three cylindrical bowls (one plain, one with linear stamped obliques and one with a horizontal over oblique motif), two conical (one plain and two with incised horizontals), one plain barrel and one effigy form. The pipe assemblage from the 1998-2000 excavation of the early fourteenth century

Holly site (Williamson et al. 2000) consists of 51 pipes of which many are complete bowl and partial stem specimens. Most of the bowls are plain or varieties of ring-barrel types, but many forms are represented, including conical forms, a flattened barrel type, and a vasiform. No trumpet forms are present. A number of motifs are represented on the pipes including horizontals, complex triangular, simple obliques using fingernail, and obliques and horizontals executed with rows of tiny punctates. The Holly sample includes three complete miniature pipes. There is also a series of remarkable pipes with various images portrayed on their surfaces, which have been executed with punctates. A number of familiar icons, including a thunderbird and other triangular forms, are represented. The 1983 and 1990 excavations of the mid-fourteenth century Wiacek site produced 154 pipe fragments (Lennox et al. 1986:58-62; Robertson et al. 1995: 65). Conical forms are more frequent in the combined assemblage; although slightly flared trumpet, vasiform and barrel forms are also present. Half of the bowl assemblage is undecorated (Lennox et al. 1986:59-60) and no effigies or miniature pipes were recovered. In contrast, the early to mid-fifteenth century Hubbert site has yielded an assemblage in which trumpet forms (n=16) outnumber conical pipes (n=5). Two-thirds of the bowls are plain, and although two fragments of effigy pipes were recovered, no other forms were identified. At the mid-fifteenth century Dunsmore site, trumpet forms were also common, comprising 59 percent of the assemblage (MacDonald 1996a:81-88). Over half of the total bowl sample is undecorated and three effigies were recovered. The presence of an apple-bowl barrel type and one Iroquois ring barrel type would suggest, however, that the assemblage was even later than that of the Hubbert site, as does the high proportion of burnished specimens (MacDonald 1996a:81).The Carson site is also believed to be Late Iroquoian, as plain trumpet forms outnumbered barrel forms three to one (Parker et al. 1990:Table 3). No other bowl forms were observed in the sample of 93 bowls.

Lithic Artifacts

The Hubbert lithic assemblage consists of 325 flaked stone and six ground stone artifacts, including discarded formal and informal tools, as well as debitage (MacDonald and Pihl 1996:74-77). The assemblage is summarized in Tables 6 and 7. While the flaked stone is dominated by Onondaga chert (48.2 percent), cherts and quartz that are likely derived from local till sources together make up an almost equal portion of the assemblage (43.8 percent).

The only formal flaked stone tools are a fragmentary Nanticoke Notched point and a triangular point (Figure 22b, c). Utilized flakes represent nearly one quarter of the lithic assemblage and, together with debitage, make up over 99 percent of the flaked stone recovered (Table 6). While both bifacial and bipolar reduction techniques are represented, bipolar debitage (compression flakes and bipolar nuclei) accounts for over 56 percent of the flake assemblage, with bifacial flakes and shatter comprising 13 percent and 31 percent, respectively.

The only complete, formal, ground-stone artifact is a rectangular object manufactured from a dark burgundy-coloured slate (Figure 22a). Measuring 77 by 24 by 11 mm, the piece exhibits slightly rounded ends, flat sides, and a slight ridge on both faces. On the obverse face, the bevel from the ridge to the nearest side is 6.5 mm, while on the reverse face the bevel is only 3.5 mm from the nearest edge and is only 59 mm long. Both bevels occur on the same side of the piece. One end is slightly narrower than the other (22.5 versus 24 mm), and the narrower one features a three millimetre bevel on the same face as the wider of the two lateral bevels and a one millimetre bevel on the other face. All surfaces exhibit fine parallel striations. Those on most surfaces are predominantly aligned parallel to the main axis of the surface, however, those on the bevelled surfaces are predominantly oblique. The bevelling does not seem to be a design feature but rather is wear resulting from use of the artifact as a whetstone abrader. The remaining ground stone consists of a mano, a possible abrader fragment, and several celt fragments.

In summary, the stone tool assemblage is small and nearly devoid of formal tools. In contrast, expedient flaked tools are very much in evidence. So too is employment of the bipolar technique and the use of local till cherts. The relatively low

Table 6. *Summary of the Hubbert site lithic assemblage.*

Artifact Class	n	%
Flaked Stone		
Projectile Points	2	0.6
Utilized Flakes	76	23.1
Debitage	251	76.3
Total	**329**	**100.0**
Ground Stone		
Abraders	2	25.0
Mano	1	12.5
Celt Fragment	1	12.5
Ground stone Fragment	4	50.0
Total	**8**	**100.0**
Lithic Raw Materials		
Onondaga Chert	164	48.7
Lower Gull River (Huronian) chert	92	27.3
Upper Bobcaygeon (Balsam Lake) chert	38	11.3
Lower/Middle Bobcaygeon & Upper Gull River (Trent Valley) chert	11	3.3
Manitoulin (Wike) chert	1	0.3
Kettle Point Chert	1	0.3
Unidentified Chert	11	3.3
Quartzite	10	3.0
Non-chert	1	0.3
Miscellaneous Ground Stone	8	2.4
Total	**337**	**100.2**

Table 7. *Summary of the Hubbert site debitage and utilized flakes.*

Debitage Category	Not Utilized		Utilized		Subtotals	
	n	%	n	%	n	%
Compression	56	22.3	16	21.1	72	22.0
Primary Reduction	1	0.4	–	–	1	0.3
Primary Thinning	13	5.2	7	9.2	20	6.1
Secondary Reduction	7	2.8	6	7.9	13	4.0
Secondary Thinning	5	2.0	2	2.6	7	2.1
Shatter	87	34.7	17	22.4	104	31.8
Bipolar Nucleus	82	32.7	28	36.8	110	33.6
Totals	**251**	**100.1**	**76**	**100.0**	**327**	**99.9**

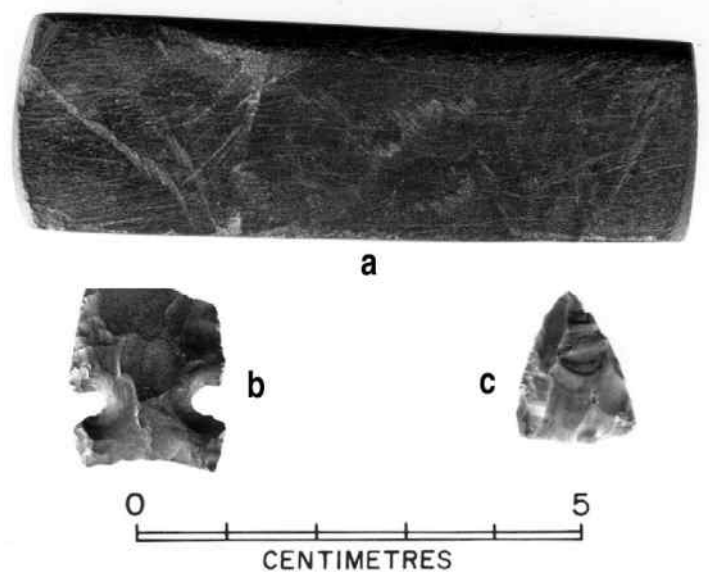


Figure 22. *Whetstone abrader (a), Nanticoke Notched point fragment (b), and triangular point (c) from the Hubbert site.*

frequency of high quality Onondaga chert—less than 50 percent compared with over 90 percent on contemporaneous sites south of the Oak Ridges Moraine (Robertson and Williamson 1998:149)—seems to suggest politically controlled access, rather than a pure distance-decay function. The paucity of formal tools, the high frequency of local cherts, and the common use of the bipolar technique all suggest a conservative flaked stone industry, where good quality chert was at a premium, and every effort was made to derive the maximum worth from both local and imported raw materials.

Worked Bone

In contrast to stone tools, the bone tool industry, analyzed by Stephen Cox Thomas (1996:133-164) and whose findings are summarized here, is represented by a fairly wide range of items. These include: 16 perforating tools, in the form of awls, bodkins, or other pointed hand tools of varying sizes and types (Figure 23); two rodent incisor chisels; a netting needle; eight shell and bone scraping tools; 28 beads and/or tubes (Figure 24); a perforated deer phalanx; a turtle shell bowl fragment; and various scraps of worked bone representing manufacturing failures and waste. Of the awls/bodkins, approximately 44 percent are manufactured from avian elements, including wild turkey (*Meleagris gallopavo*), Canada goose (*Branta canadensis*) and common loon (*Gavia immer*), and 38 percent were made from large mammal or Cervidae sp. elements. Dog (*Canis familiaris*) and snowshoe hare (*Lepus americanus*) elements account for the remaining specimens. Few examples of manufacturing waste from large mammals were found, suggesting the conservation of such items.

Over three-quarters of the beads/tubes were made from avian elements. Identified or probable identified species for the elements include tundra swan (*Cygnus columbianus*), Canada goose, wild turkey, ruffed grouse (*Bonas umbellus*), northern goshawk (*Accipiter gentilis*), black duck (*Anas rubripes*), and greater scaup (*Aythya marila*). Beads/tubes made from mammalian specimens are dominated by snowshoe hare; one specimen was derived from a lynx (*Lynx canadensis*).

An interesting aspect of the Hubbert bone industry is the high incidence of shell tools, which make up almost 20 percent of the worked faunal remains. While much of this material was less than well preserved, it was possible to identify five ventral-edged and six central-edged, freshwater mussel shell cutting/scraping tools (Figure 25). In most cases the sharp working edges had been formed by transverse grinding, although some instances of longitudinal grinding were noted. In one case, a small shell lacking any edge preparation was used as an expedient scraper.

Subsistence Remains

A sample of the plant remains from the site were analyzed by Stephen Monckton (1996:79-92), whose findings are summarized here. Cultivated plants include maize (*Zea mays*), bean (*Phaseolus vulgaris*), cucurbit (*Cucurbita pepo*), sunflower (*Helianthus annuus*), and tobacco (*Nicotiana* sp.). Noncultigens include fleshy fruits such as bramble (*Rubus* sp.), strawberry (*Fragaria* sp.), elderberry (*Sambucus* sp.), hawthorn (*Crataegus* sp.), plum (*Prunus nigra*) black nightshade (*Solanum nigrum/americanum*), and an unidentifiable species of *Prunus*. Greens/grains include chenopod (*Chenopodium* sp.), purslane (*Portulaca oleracea*), and pepper-grass (*Lepidium* sp.). Other taxa include spikenard (*Aralia* sp.), sumac (*Rhus typhina*), and possible cat-tail (*Typha latifolia*). Taxa identified within the wood charcoal remains include maple (*Acer* sp.), beech (*Fagus grandifolia*), ash (*Fraxinus* sp.), elm (*Ulmus* sp.), ironwood (*Ostrya virginiana*), larch (*Larix laricina*), pine (*Pinus* sp.), and an unidentified conifer.

A sample of the faunal assemblage (Tables 8 and 9) was examined by Stephen Cox Thomas (1996:93-166), a summary of whose analysis is presented here. The sample is dominated by fish bone, representing 44.5 percent of identified specimens. Mammal elements, which tend to be more robust and better preserved than bones of other faunal classes, comprise only 37.7 percent of the assemblage. Birds, amphibians, molluscs, and reptiles each contribute 9.8 percent, 5.2 percent, 2.3 percent, and 0.4 percent, respectively.

Thomas (1996:108-124) suggested that three fishing strategies were employed by the occupants

Figure 23. *Bone perforating tools from the Hubbert site.*

Figure 24. *Bone beads and tubes from the Hubbert site.*

Figure 25. *Freshwater mussel shell cutting/scraping tools from the Hubbert site.*

of the Hubbert site. An upstream fishery during the spring is indicated by lake sturgeon (*Acipenser fulvescens*) and longnose sucker (*Catostomus catostomus*), and perhaps also by the presence of certain other migratory fish, including white sucker (*C. commersoni*), yellow perch (*Perca flavescens*), and smallmouth bass (*Microterpus dolomieu*). A long-term watercourse fishery is suggested by the presence of brown bullhead (*Ameiurus nebulosus*). White sucker, yellow perch, and sunfish (*Lepomis* sp.) may also have been taken through this strategy. A lacustrine fishery is indicated by lake trout (*Salvelinus namaycush*) and smallmouth bass, while walleye/sauger (*Stizosedion* sp.), white sucker, and yellow perch may also have been harvested from the lake. Virtually all of the identified species could have been taken from the Lovers Creek watershed and/or Kempenfelt Bay. Swamps and marshes appear not to have been a target of fishing activities.

Exploitation of mammals appears to have been directed primarily toward small- to medium-sized species. Small mammal elements make up over three-quarters of the faunal assemblage. They include, in decreasing order of frequency: eastern chipmunk (*Tamias striatus*), snowshoe hare (*Lepus americanus*), woodchuck (*Marmota monax*), red squirrel (*Tamiasciurus hudsonicus*), muskrat (*Ondatra zibethicus*), deer mouse (*Peromyscus manticulatus*), grey squirrel (*Sciurus carolinensis*), weasel (*Mustela ermina/frenata*), and marten (*Martes americana*). Medium-sized mammals account for about 17 percent of the assemblage and include dog/wolf (*Canis* sp.), beaver (*Castor canadensis*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), and lynx (*Lynx canadensis*). Large mammals comprise less than four percent of the assemblage and include: black bear (*Ursus americanus*), white-tailed deer (*Odocoileus virginianus*), and moose (*Alces alces*). The paucity of deer is consistent with other Late Woodland assemblages from Simcoe County and probably results from local environmental limitations on deer populations (cf. Robertson et al. 1995:77-80). It may also, however, reflect politically controlled access to deer stocks south of the Oak Ridges Moraine, as might have been the case for high quality Onondaga chert. The shortage of raw materials derived from deer could have been mitigated through arrangements with neighbouring Algonquian populations to supply moose and other hides, as was the case in the post-contact period (Tooker 1964:25).

Table 8. *Analyzed faunal material from the Hubbert site by zoological class.*

Zoological Class	**NISP**	**%**
Osteichthyes (Bony Fishes)	314	44.5
Mammalia (Mammals)	266	37.7
Aves (Birds)	69	9.8
Amphibia, all Salientia (Frogs and Toads)	37	5.2
Mollusca, all Unionidae (Freshwater Mussels)	16	2.3
Reptilia, all Chelonia (Turtles)	3	0.4
Class Unknown	1	0.1
Total	**706**	**100.0**

The majority of birds identified to species are upland species such as wild turkey (*Meleagris gallopavo*), ruffed grouse (*Bonasa umbellus*) and passenger pigeon (*Ectopistes migratorius*). Waterfowl are relatively poorly represented, but include shallow-water surface-feeders such as Canada goose (*Branta canadensis*), black duck (*Anas rubripes*), and wood duck (*Aix sponsa*), as well as deep water divers such as the common loon (*Gavia immer*) and greater scaup (*Aythya marila*). The lack of emphasis on waterfowl may reflect the paramount importance of the spring upstream fishery relative to estuary and lake exploitation, or simply that fishing activities at the lakeside did not include significant pursuit of fowl (Thomas 1996:127).

The relatively large number of frog (*Rana* sp.) elements suggests that frogs may have been a food source, possibly exploited incidental to the fishery. Alternatively, the frog remains may have been the stomach contents of large fish or were hunted by children for sport (Thomas 1996:124-126). The small number of freshwater mollusc shells that were identified to species inhabit regional lakes and rivers of all sizes on various substrates. Molluscs, like the frogs, could have been harvested as food incidental to the fishery. The high frequency of worked shell (Thomas 1996:145-150) suggests, however, that they were also an important raw material for making tools.

Table 9. *Summary of faunal specimens from the Hubbert site.*

Mammals		
Taxon	**NISP**	**%***
Snowshoe hare (*Lepus americanus*)	50	18.79
Hare/rabbit (*Lagomorpha* sp.)	3	1.13
Grey squirrel (*Sciurus carolinensis*)	2	0.75
Red squirrel (*Tamiasciurus hudsonicus*)	27	10.15
Woodchuck (*Marmota monax*)	32	12.03
Eastern chipmunk (*Tamias striatus*)	66	24.81
American beaver (*Castor canadensis*)	12	4.51
Deer mouse (*Peromyscus maniculatus*)	5	1.88
Muskrat (*Ondatra zibethicus*)	16	6.02
Domestic dog (*Canis familiaris*)	11	4.14
Probable domestic dog (*Canis* cf. *familiaris*)	12	4.51
Dog/wolf (*Canis* sp.)	3	1.13
Red fox (*Vulpes vulpes*)	4	1.5
Black bear (*Ursus americanus*)	5	1.88
Racoon (*Procyon lotor*)	1	0.38
Weasel (*Mustela erminal frenata*)	1	0.38
American marten (*Martes americana*)	1	0.38
Lynx (*Lynx canadensis*)	1	0.38
White-tailed deer (*Odocoileus virginianus*)	2	0.75
Probable white-tailed deer (cf. *O. virginianus*)	1	0.38
Moose (*Alces alces*)	2	0.75
Probable moose (Cervidae cf. *Alces*)	1	0.38
Cervid species (Cervidae sp.)	2	0.75
Probable cervid (Mammalia cf. Cervidae)	2	0.75
Possible cervid Mammalia sp. (large)	4	1.5
Total	**266**	**99.95**

*percentages are within each class

Freshwater Mussels		
Taxon	**NISP**	**%***
Lady finger(*Elliptio dilatata*)	2	12.5
Prabable lady finger (*Elliptio* cf. *complanata*)	2	12.5
Elliptio sp. (medium-shelled)	1	6.25
Fat mucket (*Lampsilis radiata*)	2	12.2
Unionidae sp. (medium-shelled)	5	31.25
Unionidae sp. (medium- to heavy-shelled)	2	12.5
Total	**16**	**100**
Aves		
Taxon	**NISP**	**%***
Common loon (*Gavia immer*)	1	1.45
Probable common loon (*Gavia* cf. *immer*)	1	1.45
Probable tundra swan (cf. *Cygnus columbianus*)	1	1.45
Canada goose (*Branta canadensis*)	4	5.8
Black duck (*Anas rubripes*)	2	2.9
Wood duck (*Aix sponsa*)	1	1.45
Greater scaup (*Aythya marila*)	1	1.45
Northern goshawk (*Accipiter gentilis*)	5	7.25
Ruffed grouse (*Bonasa umbellus*)	8	11.6
Wild turkey (*Meleagris gallopavo*)	3	4.35
Sandhill crane (*Grus canadensis*)	2	2.9
Probable sandhill crane (cf. *Grus canadensis*)	1	1.45
Passenger pigeon (*Ectopistes migratorius*)	20	28.99
Probable passenger pigeon (cf. *Ectopistes migratorius*)	1	1.45
Red-headed woodpecker (*Melanerpes erythrocephalus*)	1	1.45
American crow (*Corvus brachyrhynchos*)	2	2.9
Aves sp. (medium)	4	5.8
Aves sp. (medium to large)	3	4.35
Aves sp. (large)	8	11.6
Total	**69**	**100.04**

Fishes		
Taxon	**NISP**	**%***
Lake sturgeon (*Acipenser fulvescens*)	2	0.64
Lake trout (*Salvelinus namaycush*)	3	0.96
Probable lake trout (Salmonidae cf. *Salv. namaycush*)	1	0.32
Probable muskellunge (*Esox* cf. *masquinongy*)	1	0.32
Minnow (cf. Cypriniformes)	1	0.32
Probable longnose sucker (*Catostomus* cf. *catostomus*)	13	4.14
White sucker (*Catostomus commersoni*)	37	11.78
Probable white sucker (*Catostomus* cf. *commersoni*)	18	5.73
Sucker (*Catostomus* sp.)	35	11.15
Sucker family (Catostomidae sp.)	1	0.32
Brown bullhead (*Ameiurus nebulosus*)	51	16.24
Probable brown bullhead (*Ameiurus* cf. *nebulosus*)	12	3.82
Bullhead (*Ameiurus* sp.)	9	2.87
Probable bullhead (Ictaluridae cf. *Ameiurus* sp.)	5	1.59
Burbot (*Lota lota*)	3	0.96
Pumpkinseed (*Lepomis gibbosus*)	1	0.32
Probable pumpkinseed (*Lepomis* cf. *gibbosus*)	1	0.32
Sunfish (*Lepomis* sp.)	2	0.64
Smallmouth bass (*Micropterus dolomieu*)	14	4.46
Probable smallmouth bass (*Micropterus* cf. *dolomieu*)	1	0.32
Black crappie (*Pomoxis nigromaculatus*)	1	0.32
Yellow perch (*Perca flavescens*)	76	24.2
Sauger (*Stizostedion* cf. *canadense*)	2	0.64
Walleye (*Stizostedion vitreum*)	6	1.91
Probable walleye (*Stizostedion* cf. *vitreum*)	4	1.27
Walleye/sauger (*Stizostedion* sp.)	4	1.27
Total	**314**	**100.01**
Amphibians and Reptiles		
Taxon	**NISP**	**%***
Bullfrog (*Rana catesbeiana*)	2	5
Probable bullfrog (Anuran cf. *Rana* sp.)	35	87.5
Blanding's turtle (*Emydoidea blandingi* sp.)	3	7.5
Total	**40**	**100**

Interpreting the Hubbert Site Sweat Lodges

The most conspicuous feature of the Hubbert houses is the abundance of sweat lodges, which occur in numbers heretofore unprecedented in Iroquoian archaeology. In total, it is estimated that 14 such structures are associated with House 1, nine of the semi-subterranean type and at least five of the ground-level type, which were tentatively identified from the occurrences of ring-shaped clusters of small posts that did not surround fire places. House 2 also contained many sweat lodges, six of the semi-subterranean type and one of the ground-level type, while the exposed portion of House 3 contained two semi-subterranean sweat lodges. This profusion of sweat lodges presents a unique interpretive opportunity.

While the identification of the ground-level type of sweat lodge remains problematic, owing to the difficulty of interpreting dense clusters of post moulds (Bursey 1989; MacDonald 1988, 1989; Stopp 1989; Welsh 1989), the identification of the semi-subterranean type (SSL) is on an increasingly firm footing (MacDonald 1988, 1992a). Nevertheless, lingering concerns about the interpretation of these features (Fitzgerald 1991; MacDonald 1991) warrants a brief review of the thesis.

Comparative data on SSLs as a discrete class of feature are now very robust, with over 230 examples documented from more than 40 Late Woodland sites across southern Ontario (Table 10). Basic attributes of this feature class (for a detailed summary see MacDonald 1992a), including the "keyhole" plan shape, flat bottom, straight sides, ramped entranceway, interior perimeter post moulds, and basal living floor, are consistent with both archaeological and ethnographic examples of semi-subterranean structures worldwide. In North America, the use of semi-subterranean architecture is both widespread and of great antiquity (MacDonald 1992a:328-329). The striking consistency of these architectural attributes leaves little room for doubt that these features represent semi-subterranean structures.

The main point of contention with respect to SSLs seems to be their functional interpretation as sweat lodges. Fitzgerald (1991) has criticized the sweat lodge hypothesis on functional grounds, suggesting that semi-subterranean structures would have been cooler than above-ground storage facilities and may have served as cold-storage for perishable foods. Informally, others have raised the possibility that these structures may have functioned as menstrual seclusion huts. While such alternative functional interpretations are worthy of consideration, the sweat lodge hypothesis is strongly supported by several lines of evidence. First, the use of semi-subterranean structures as communal sweat lodges is a circum-polar phenomenon, with widespread usage throughout aboriginal North America (Driver and Massey 1957:314; Kroeber 1925; MacDonald 1992a). Second, the historical use of communal sweat lodges—albeit above-ground types—by Ontario Iroquoians is well documented. Third, sweat lodges are the only historically recorded ancillary buildings that were routinely constructed within longhouses. Fourth, numerous examples of the purposeful interment of symbolically charged items or human remains within SSL features suggests that these structures had considerable ideological significance (MacDonald 1992a; Ramsden et al. 1998a:73; Robertson et al. 1995:49-50).

While we argue that semi-subterranean structures functioned primarily as communal sweat lodges, we do not discount possible secondary functions. Yet their use for menstrual seclusion seems improbable, for unlike their Algonquian neighbours, the seventeenth-century Huron did not engage in this practice (Tooker 1964:125). Whether the same is true for other Iroquoian groups and other times is unknown and it is perhaps unwise to make assumptions about the character of practices related to managing the "danger" of menstruation. Beliefs associated with menses are intimately tied to culturally-specific concepts of gender, fertility, sexuality, and power. Buckley's (1988) ethnographic account of menstrual seclusion among the Yurok of California exemplifies the complexity of customs associated with this practice (c.f. Buckley and Gottlieb 1988) and serves as a caveat for archaeological interpretation of the same phenomenon. Of particular interest in the Yurok example, though, is

Table 10. *The occurrence of semi-subterranean sweat lodges on Ontario Iroquoian sites.*

Site	Region	Houses (n)	SSLs (n)	Max. No. SSL/House	Comments (Extent of Excavations, Notable SSL Contents)	Major Reference
Late Thirteenth to Early Fourteenth Century						
Myers Road	Waterloo	10	18	6	Completely excavated; great horned owl wing	Ramsden et al. 1998a
Uren *	Haldimand-Norfolk	11	8?	3?	Partially excavated; burials	Wright 1986
Anderson	Haldimand-Norfolk	5+	1+	1	Partially excavated	Bursey 1996
Olmstead	Hamilton	4+	1+	1	Partially excavated	Welsh and Williamson 1994
Gunby*	Halton	10+	7+	2	Partially excavated	Rozel 1979
Bennett *	Halton	7+	5+	2	Partially excavated; burials and one deer skull	Wright and Anderson 1969
South Track	Halton	1+	3+	2	Limited testing	Finlayson 1998
Laurenssen	Halton	1+	1+	1	Limited testing	Finlayson 1998
H&R	Halton	1+	1+	1	Limited testing	Finlayson 1998
Antrex	Peel	9	4+	2	Completely excavated; partially documented	Mayer et al. 1991; Robertson and Williamson 2002b
Seppala	Simcoe	?	1	?	Limited testing; sweat lodge isolated	Lennox et al. 1997
Barrie	Simcoe	2+	2+	1	Partially excavated	Sutton 1999
Holly	Simcoe	6	15	4	Completely excavated	Williamson et al. 2000
Wellington	Simcoe	2	2	1	Completely excavated; special-purpose site	Pihl and Williamson 2000
Fourteenth Century Middle Iroquoian						
Reid*	Haldimand-Norfolk	3+	2	2	Almost completely excavated	Wright 1978
Nodwell *	Bruce	12	6	2	Completely excavated	Wright 1974
Serena	Hamilton	6	3	2	Completely excavated	Austin and Williamson 2002
Unick*	Halton	5+	3+	2	Limited testing	Finlayson 1998
Robb	York	9	1	1	Completely excavated; disturbed settlement patterns	ASI, no published summary
Alexandra	York	17	29	3	Completely excavated; human remains, woven mat	ASI, no published summary
Hutchison	York	2	4	1	Completely excavated; special purpose site	ASI, no published summary
Wiacek *	Simcoe	5	6	3	Completely excavated; bear skull	Lennox et al. 1986; Robertson et al. 1995
Dykstra	Simcoe	1	2	1	Completely excavated; special purpose site	Clish 2000
Lee	Simcoe	8	2?	1	Completely excavated	Michael Henry, personal communication 1998
Fifteenth Century Late Iroquoian						
Norton	London	9+	1	1	Partially excavated; SSL between and accessible from two houses	Cooper and Robertson 1993
Day	Waterloo	1	2	2	Completely excavated; special purpose site	Dodd and Riddell 1993
Moyer*	Waterloo	11	1	1	Partially excavated	Wagner et al. 1973
Coleman	Waterloo	3+	4+	3	Partially excavated	MacDonald 1986
Crawford Lake*	Halton	12+	11+	4	Partially excavated	Finlayson 1998
Alderson Farm	Halton	6	5	3	Completely excavated	Griffin-Short in Finlayson 1998
Parsons	York	10+	3	2	Partially excavated; human remains	Robertson et al. 1998
Baker	York	4	5	1	Completely excavated	ASI, no published summary
Murphy-Goulding	York	4	5	3	Completely excavated	Austin et al. 1995
Orion	York	6	1	1	Completely excavated	Andreae et al. 1998
Over	York	7+	3	1	Almost completely excavated	Sutton 1996
Grandview	Durham	11	6	2	Completely excavated; deer skull and scapula	Austin 1999
Hubbert	Simcoe	3	17	9	Partially excavated	this paper
Dunsmore	Simcoe	15	22	6	Completely excavated; burials	Robertson and Ramsden 1996; Robertson and Williamson 2002
Carson	Simcoe	8	20	5	Completely excavated	Parker et al. 1990; Varley 1993
Bauman*	Simcoe	2+	1+	1	Partially excavated	Stopp 1985

* Part or all of the site excavated prior to the definition of SSLs in the literature.

the parallel use of sweat lodges by men during periods of menstrual seclusion by women. Unfortunately, data concerning the cross-cultural form and function of menstrual seclusion huts are far more sparse than for other domestic structures, including sweat lodges (Buckley and Gottlieb 1988:12; Galloway 1997). In any case, there is reason to suspect that, at least for the period that longhouses were the domain of women, menstrual seclusion may have been superfluous. Not only were men frequently away from these communities, but the potential for menstrual synchrony in communal residences dominated by women (e.g., Buckley 1988; Knight 1991) may have rendered the practice of seclusion impractical.

Storage is another possible secondary function for semi-subterranean structures, although, in their survey of traditional North American Indians cultures, Driver and Massey (1957) reported no examples of such storage structures, but many examples of SSLs. They found that underground storage was more often used for dried vegetable food than meat, and that simple cache pits were used. These pits were lined with grass or leaves and covered over with sticks, stones, and earth to discourage animals. Above-ground granaries and storage structures were also common. Meat was commonly dried and stored on an elevated cache or in a tree, which provided the air movement necessary to keep the meat dry and prevent rotting (Driver and Massey 1957:247). Historically recorded Huron storage practices were consistent with these trends. Precious possessions were put in casks and buried in pits within the longhouse. Dried and shelled corn was placed in large bark casks and stored in cubicles at the end of the longhouse. Smoked fish was similarly stored in bark casks, although one species that was not cleaned was strung from the roof to prevent it from rotting (Tooker 1964:41).

In light of the current evidence, the most compelling interpretation of the semi-subterranean structures encountered on Iroquoian sites in Ontario is that they served primarily as sweat lodges. Accordingly, the following discussion of the significance of the Hubbert examples is based on this conclusion. We begin with a description of the context of each SSL feature within its respective house, discuss several possible examples of above-ground sweat lodges, and then present a comparative analysis of Ontario Iroquoian communal sweat lodges and their possible integrative function in Iroquoian society.

The SSLs in House 1 exhibit a noticeable degree of symmetry with respect to their placement and number on either side of the long axis of the house. If, as argued previously, Feature 73 is interpreted as two sweat lodges sharing a single body, rather than a single sweat lodge with two entranceways, then each side of the longhouse contained five sweat lodges. Not all of these structures, however, were contemporaneous. Based on intersecting features, the number of structures standing at any one time would have ranged from one to four on the south side, one to three on the north side, and one to seven for the entire house. As symmetries in the location of SSLs have been documented at other sites in Ontario, such as Day (Dodd and Riddell 1993), Myers Road (Ramsden et al. 1998a), and Dunsmore (Robertson and Williamson 2001), it seems reasonable to suggest that certain pairings of SSLs were purposeful. If so, this pairing raises questions about the motives underlying this behaviour and how these may, in turn, reflect on social structure and ideology. It also provokes questions about the spatial and temporal variability in the frequency, density, and position of SSLs, since this phenomenon is unusually conspicuous at Hubbert.

Perhaps a logical first step in approaching such questions is to consider any possible correlation between the placement of SSLs along the house and the hearths from which heated rocks could be obtained to stoke them. The evidence in House 1 is equivocal. On the south side of the house, SSL Features 147 and 167 form an obvious cluster, although their entranceways are four to five metres away from the nearest hearth, Features 171 and 172 (Figure 5). Also, the entrance of Feature 167 points away from the hearth complex. The position of these SSLs would make more sense if there had been a fourth hearth near Feature 178, as suggested earlier. This is also true for the SSL Feature 135/136 pair, which is the counterpart to the Feature 147/167 cluster on the

north side of the house. If Feature 135 replaced Feature 136, as the evidence suggests, the effect would have been to move the body of the SSL to the east while maintaining the position of the entrance. Although the cross-house link with Features 147 and 167 is tenuous, the chronology of Features 135 and 136 suggests that only one of the former pair was in use at a time, and if symmetry were a factor, this would point to 167 replacing 147 in order to line up with 135.

Feature 12 is somewhat more problematic, since it is the SSL most distant from any documented hearth, although again, its position would make more sense if there had been a fourth hearth. The fact that it is angled slightly with respect to the house wall, such that the ramp appears to favour entry from the east rather than west end, and its greater proximity to Feature 136, may indicate an association with the occupants of the east part of the house, although it is located almost dead centre along the house wall.

The Feature 92/98 pair is very interesting, as the interior SSL (Feature 92) clearly superseded the exterior one (Feature 98). This overlap contradicts an earlier hypothesis advanced by MacDonald (1986:50) that exterior SSLs may have replaced interior ones in order to free up space within the house. It appears that, in this case, either some interior space became available or other factors were responsible for the construction sequence. One alternative explanation, based on practical considerations, is that appended SSLs were constructed during fair weather, when ground frost and thermal efficiency were of no concern. Conversely, interior SSLs would have been constructed indoors during the winter, when excavation would have been impossible outside and when heating would have been facilitated by the insulating effect of the surrounding house.

Related to the issue of construction sequence is that of SSL lifespan. With a dwelling such as House 1, where there is minimal evidence of substantial structural refurbishment, it seems reasonable to assume that we are dealing with an occupation of a dozen or so years. While it may be that SSLs were constructed for one-time use only, the investment of effort represented by each structure would tend to favour repeated use. The variability in the build-up of the living floor and the number of interior post moulds also suggest re-use and maintenance. Accordingly, it is argued that certain SSLs in House 1 were used over a period of years, while others were short-lived. Feature 73 was likely one of the former because there is evidence for renovation that included reorientation of the entranceway. If maintaining cross-house symmetry was a consideration in repositioning the ramp from the west to the east end, it would imply that the later version was contemporary with Feature 92. This may further imply that early Feature 73 was contemporary with Feature 98.

Although one might expect interior SSLs to outlive appended ones that were exposed to the elements, Feature 99 may have been an exception. Containing an unparalleled number of robust post moulds, together with several additional surficial post moulds, likely to bolster the superstructure, this sweat lodge had either been re-built one or more times or was originally of a more sturdy construction.

The position of Features 73, 92, and 98 would tend to indicate an association with hearth Feature 123. Feature 99 is situated midway between hearth Feature 123 and the hearth complex of Features 20/79 as well. While this may seem to cast doubt on the probability of its association with the Feature 20/79 hearth complex, it should be noted that all of the sweat lodges in House 1 are positioned well away from the house ends.

The ring-like clusters of post moulds, located between the hearths along the central corridor, are believed to represent locations where ground-level sweat lodges were repeatedly built. Two of these clusters were associated with large, shallow lenses of ashy soil (Features 21 and 180) that may represent remnant living floors analogous to those found in the bottom of the SSLs. From the post densities, it is evident that this type of sweat lodge was employed fairly frequently. We suggest that the dichotomy in sweat lodge form reflects the two basic modes of sweat lodge use: communal sweating in the larger, more permanent SSLs;

and individual sweating in *ad hoc*, ground-level sweat lodges (cf. MacDonald 1988).

Perhaps the most obvious characteristic that House 2 shares with House 1 is the profusion of sweat lodges: six of the semi-subterranean type and one of the ground-level type. Also like House 1, there is a notable degree of cross-house symmetry in the position and number of SSLs (Figure 10). The overlapping of Features 201, 232, and 233 on the east side indicates that only one is likely to have existed at any one time, whereas the two SSLs on the west side could have been contemporary with each other. The central SSL, Feature 219, could have co-existed with any of the others, although there is reason to believe that it did not.

The position of Feature 219 in the central corridor suggests that internal space was not a major concern at the time of its use, and the relatively low number of sub-floor post moulds may indicate that this SSL was short-lived. The intrusion of the hearth (Feature 216), ash pit (Feature 217), and a plethora of interior house post moulds, further suggest that this SSL was used and de-commissioned early in the life of House 2. Feature 219 and the intrusive hearth, Feature 216, are problematic, as there does not appear to be another hearth to heat the rocks necessary to stoke the sweat lodge. Fired soil in Feature 202 and a nearby post mould may indicate the presence of a short-lived hearth in this area, however, any unequivocal evidence appears to have been obliterated by plough action.

The cluster of SSLs on the east side of House 2 is a fairly clear sequence, with Feature 233 replacing 232 and Feature 201 replacing 233. It is possible, though less likely, that the interior SSL in this area was moved to the northwest (from Feature 232 to 233) to permit the construction of Feature 201 across from Feature 197. If this latter sequence occurred, Feature 233 must have been de-commissioned prior to Feature 201, as the edge of the appended SSL's ramp clearly intrudes on the Feature 233 fill. The chronology on the opposite side of the house is uncertain, but on the tenuous basis of cross-house symmetry, we suggest that Features 197 and 201 were used at the same time and Feature 199 was contemporary with Features 232 and 233. That Feature 199 may have overlapped with both of the latter SSLs is suggested by its greater number of sub-floor post moulds.

A cluster of post moulds, interpreted as the location where ground-level sweat lodges were repeatedly constructed, is situated to the south of the hearth, and part of this group intrudes upon Feature 219.

Overall, a certain degree of symmetry in the placement of SSLs within the longhouses was noted. While this characteristic has also been documented at several other Ontario Iroquoian sites, the trend is not as consistent as one might expect if it were part of a prescriptive aesthetic, perhaps related to the dualism common to Iroquoian sacred ideology. Instead, we suggest that this symmetry is an artifact of individual nuclear families in these houses having their own sweat lodge. On the other hand, there appears to have been a tendency to re-erect structures in the same locations (e.g., Features 232, 233 and 201 in House 2; Features 226 and 246 in House 3). It is not known whether this phenomenon attests to the ideological significance of particular locales within the house, is a reflection of allowances during initial bench line construction, or both.

In order to contextualize the frequency of SSLs at Hubbert, a review of the occurrence of these features on northern Iroquoian sites was undertaken (Table 10). SSLs were found to occur only on southern Ontario sites dating from the mid-to-late thirteenth century through to the late fifteenth century, after which time they appear to have been replaced entirely by ground-level sweat lodges. This listing was prepared using the literature produced both before and after the identification of these features as SSLs (MacDonald 1988, 1992a). For those site analyses prepared prior to the definition of these features, SSL frequencies have been estimated using site and house plans as well as information on the location, morphology, and content of features, following MacDonald (1988, 1992a). The possibility of additional houses or SSLs being present in a site is noted by the use of a plus symbol in the frequency column of Table 10. In a few cases

where the original researcher had returned to their data to reassess feature functions, not all assignments of SSL functions were accepted (e.g., Finlayson 1998; Lennox 2000). It would appear, for example, in the absence of any supporting evidence of the characteristics typical of these features, such as their keyhole shape and usual locations and most importantly, the posts around their living floors, that SSL functions may have been assigned too indiscriminately (e.g., Finlayson 1998:3:1075, 1076; Lennox 2000:52-53). Moreover, the belief that these features occurred simultaneously with sleeping platforms betrays the lack of a basic understanding of their structure and nature (Finlayson 1998:1:279). On the other hand, our estimates of SSL frequency, based on textual descriptions only (e.g., Wright 1979, 1986), could be seriously flawed, underscoring the need for all researchers to provide detailed site and house plans and feature profiles in their published reports.

In comparison with sites of all ages and regions, the number of SSLs at Hubbert is unusually high, especially considering only a third of the village was excavated. Moreover, although 20 SSLs were documented at the completely excavated Carson site and 22 at the almost completely excavated Dunsmore site (both, like Hubbert, dating to the fifteenth century), the maximum numbers of SSLs per house was six at Dunsmore and five at Carson. There are an unprecedented nine lodges in the 35.8 metre-long House 1 at Hubbert.

Given the high frequencies of SSLs on Simcoe County village sites, it is tempting to search for a regional answer for the Hubbert phenomenon. High frequencies of SSLs, however, do occur elsewhere in southern Ontario. The late thirteenth to early fourteenth century Myers Road site, in Cambridge, had 18 SSLs distributed among ten houses, two of which contained six each (Ramsden et al. 1998a). The recently completely excavated mid- to late fourteenth-early fifteenth century Alexandra site, in Scarborough, yielded 29 structures among 17 houses, with three found in several of the houses. Myers Road, Dunsmore and Alexandra all appear to have been occupied for a considerable length of time, with both village components and houses having undergone multiple phases of occupation. These long occupations may have resulted in higher frequencies of SSLs. The sandy soil among Simcoe County sites may also have reduced the long-term structural integrity of SSLs, occasioning their frequent rebuilding, as is seen in a number of the Hubbert examples.

Notwithstanding these comments, the frequency data in Table 10 suggest that the timing of the maximum occurrence of SSLs appears to have been regionally specific. In the Waterloo area, they are most conspicuous on an early to mid-fourteenth century site; in York Region it is a late fourteenth century site; and in Simcoe County they are predominant on both early fourteenth century and early to mid-fifteenth century sites.

The notion that communal sweat lodges were used as instruments for promoting social integration is long established (cf. MacDonald 1988:18; Trigger 1969:99-100; Tyyska 1972), and Mima Kapches (1995:90) has argued that the SSL gained importance through Middle Iroquoian times as a focus of male bonding ritual in a society in which matrilocality and matrilineality were evolving. She suggests that SSLs "allowed men from different lineages to meet together in their new matrilineal residence [to] bond through religious ceremonies, thereby strengthening their group identity and diffusing hostile interactions" (Kapches 1995:90; cf. Cooper and Robertson 1993:40; Ramsden et al. 1998a:35). We would argue, on the other hand, that intramural integration may have depended more on the less formal social processes involved in on-going cohabitation and that SSLs served to strengthen intermural integration by providing a venue—during any of the social or ritual events that may have required their use—for men to host their village kinsmen, as well as visiting members of their wider social network, possibly including Algonquian trading and hunting partners.

SSLs first appear in the mid- to late thirteenth century and early fourteenth century, at the time of the first consolidation of Iroquoian communities into segmented villages (Williamson and

Robertson 1994). This may have been a time of increased competition among regionally based populations, when there would have been a need for integration among clan members from neighbouring communities. The symbolic identity of the clan may even be signalled in some cases by the placement of animal skulls or other anatomical parts on the living floors of the structures. Examples of such potentially significant deposits include a great horned owl wing at the Myers Road site (Ramsden et al. 1998a:73; Thomas et al. 1998:94-95), a juvenile black bear cranium at the Wiacek site in Barrie (Robertson et al. 1995:49-50), and a deer skull at the Grandview site in Oshawa (Austin 1999:11-12; Thomas 1999:133-134). By the time of the Hubbert occupation, such integrative forces had already led to larger community aggregations in other parts of south-central Ontario, as represented by sites such as Parsons (Williamson et al. 1998) and Draper (Finlayson 1985). The emergence of these large sites has been interpreted as evidence for the formation of tribal systems (Williamson et al. 1998).

The use of communal SSLs to maintain clan cohesion may account for their relatively high frequency at sites like Hubbert, where fully integrated tribal systems had yet to be formed. For small communities within small regional populations there was possibly a high level of motivation for inter-community integration, through social discourse and clan exogamy, in order to manage ecological risk and improve defensive capabilities. If so, then the variability of clan affiliation per household among in-marrying males would potentially be higher than in more populous communities. Co-habiting brothers-in-law from different clans might prefer to maintain their own sweat lodge to entertain their own associates rather than share a single structure, particularly if large groups of men from different clans came together at the same time to participate in sweating rituals. Variability in the patterning of SSL frequency and location may relate to the vagaries of kinship affiliation and residence protocol in Iroquoian society (cf. Trigger 1969:54-62), especially during Middle Iroquoian times when it seems that the kinship system was in its final stages of transition from patrilineality to matrilineality. It also appears that the two periods during which SSL activity peaks across southern Ontario are the early fourteenth century and the early fifteenth century, both times of village amalgamation and tribal formation (Williamson and Robertson 1994; Williamson et al. 1998:12-16).

Summary

The 1990 excavations at the Hubbert site resulted in the exposure of the eastern third of this roughly one hectare settlement. Two longhouses and the end of a third were documented, as well as one midden, many exterior post moulds, and several exterior features. Excavation of 174 cultural features, screening of soil in the midden area, and a controlled surface collection resulted in the recovery of over 8,000 artifacts, as well as plant and faunal remains. While certain interpretations remain tentative, since roughly two-thirds of the site remain unexcavated, the investigations resulted in the revision of the age and size of the site from previous estimates (Hunter 1976; Warrick and Molnar 1986). Based on the radiocarbon date on maize and a comparative assessment of the ceramic assemblage, Hubbert is now considered to date to the first half of the fifteenth century. These revisions underscore the risk of misidentifying settlement sizes, types, and ages based on surface collections and, together with insights gained through excavations at other sites in southern Ontario, highlight the need to be cautious when formulating regional syntheses on the basis of normative views of Late Woodland settlement (Robertson et al. 1995:57; Robertson and Williamson 2001, 2002a).

The two completely exposed longhouses at Hubbert were oriented to the northwest. Although difficult to gauge with certainty, the end of the third house appears to be oriented to the west-northwest. Cold-weather occupation of the site is indicated by the nature and density of features within both longhouses. Neither House 1 nor House 2 had been extended, contracted, or re-built. No palisade was encountered, however, a profusion of exterior post moulds, many comprising walls or windbreaks up to about 10 metres in length, was mapped, primarily in the

area between Houses 1, 2, and 3 and in the vicinity of the midden. Exterior features, although few, also tended to occur in these areas. Except for the linear post alignments, no ancillary structures could be identified with confidence. Nevertheless, the abundance of exterior activity suggests occupation of the site during the warmer seasons as well.

A substantial quantity of juvenile ceramics indicates the presence of both women and children, if one accepts traditional stereotypes regarding material culture and gender role associations. Likewise, smoking pipes, which are also well represented in the Hubbert ceramic assemblage, indicate the presence of men. The analyzed plant remains include the complete range of Late Woodland cultigens—maize, bean, cucurbit, sunflower, and tobacco—as well as wild fruit remains, including bramble, elderberry, strawberry, and black nightshade. Other taxa of potential economic interest include sumac, spikenard, cat-tail, chenopod, purslane, and pepper-grass. The presence of the full Late Woodland cultigen complex, including significant quantities of maize cupules that reflect local cropping and processing, together with weedy plants indicative of forest clearance, as well as the settlement patterns, all support the classification of the Hubbert site as a small, semi-permanent agricultural village.

Ring-shaped clusters of smaller posts, centrally located along the longhouse corridors, were tentatively identified as ground-level sweat lodges, as none were surrounding fire places. The most conspicuous features associated with the longhouses, however, were SSLs. Seventeen SSLs were distributed among the three longhouses, nine in House 1, six in House 2, and two in the small excavated portion of House 3. These occurred in various places: in the central corridor; within the bunk line; and appended to the exterior of the house, with the ramp entrance protruding through the house wall. The frequency with which these structures occur suggests that they may have been a fundamental part of daily life in an Iroquoian household, especially if their use related to a curing society that functioned as a socially unifying institution within the emergent tribal systems of the Middle and early Late Iroquoian periods. We trust that further work at Hubbert and other neighbouring sites will serve to further resolve these issues and help to place them in the full context of Late Woodland culture history in southern Ontario. The fact that heightened socio-political integration was occurring in different places at slightly different times—as reflected by the variable appearance of socially integrative mechanisms such as sweat lodges in both time and space—nevertheless serves as additional evidence for the multi-linear character of Iroquoian cultural evolution.

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