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A newsletter to encourage the communication of research

Seeing Through Soil with Archaeogeophysics at the Thibodeau Site

By Jonathan Fowler, Saint Mary's University

A broad bend in the St. Croix River at Poplar Grove, Hants County, marks the former site of a pre-Deportation village founded by Pierre Thibodeau and Anne Marie Bourg in the early 1690s (Fowler 2000). Having grown up among the tidal farms of Port Royal and Rivière Dauphin, their apprenticeship in the routines of dykeland agriculture must have been sufficiently advanced to encourage the move, and we can imagine them shipping cherished tools, livestock, seeds, plants, and household supplies by sea from the parent community. Such coasting and freighting was common in Acadie, but all those knotted ropes and tightened nerves have left barely a crease in the historical record. The same smoothness, in fact, greets visitors to the site of the former Thibodeau village: the houses, fences, orchards, and hedges of the Acadians have gone, and the old cellars and wells have been filled in and ploughed flat.

"The frosted grass crunched under my magnetically neutral rubber boots and snow flurries flicked through the air."

However, history has not completely digested the Thibodeau Village, nor have its processes been universally reductive. The Shaw family, who live at the Thibodeau Site today, and who have been farming this land since their New England Planter

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ancestors arrived in the 1760s, retain memories of the Acadian settlement and its features (Duncanson 1985). As farmers, they are also intimately familiar with the soil and its contents, and generations of farming practice have netted some of the evidence that may have eluded folklore. If this were not enough, the Shaws have taken the further step of producing an archaeologist of their own in the form of Sara Beanlands, who is a niece of the current landowners, and since 2004 we have been exploring the archaeology of the Thibodeau Site as time and resources have allowed.

Our first test excavations took place on a picturesque hilltop pasture overlooking the river, where Shaw family tradition claimed an old Acadian house had formerly stood (Figure 1). A slight depression in the ground and the presence of several large stones popping out of the topsoil hinted at a ruined structure, and by the time our small-scale dig concluded we were holding evidence of an early 18th century occupation in the form of household ceramics, glass, and food waste (Fowler 2005). One of our test units was lucky enough to hit a midden containing hundreds of bones. The usual farmland domesticates were in evidence – cow, pig, sheep/goat, chicken – as were wild species such as Atlantic cod, haddock, salmon, rabbit, and passenger pigeon.

Figure 1 - A view of test excavations at Thibodeau Site 1 in 2004. The St. Croix River ascends to the east.

Middens are informative archaeological finds that can provide proxy access not only to ancient kitchens and bellies, but to former habitats, economies, and cultural practices surrounding food. But the age and origin of this midden was difficult to confirm owing to the limited chronological insight we could glean from the associated ceramics. The Anglo-American Redware, Tin-glazed earthenware and Westerwald ceramics recovered could have been used by either the Acadians or their successors, though the absence of white wares such as Creamware and Pearlware – ubiquitous on later 18th century sites – suggested a pre-Deportation date. The task of confirming the site's age through further excavations would have to wait.

Eight years is a long time to sit on a fence, but the posture can be managed with support from other projects and studies. By 2012, however, possibly sensing the approach of the ten-year anniversary of our initial excavations, the time seemed right to jump back into the field. That summer, Sara conducted another program of test excavations on a second hilltop site. Having now confirmed that both sites were not only real, but held real promise, instead of plunging back in with sharpened trowels we opted to use geophysical survey to learn more.

Archaeologists have been using electromagnetic sensing equipment to study buried sites for over half a century. Ground penetrating radar (GPR), resistivity, and magnetometry are just a few of the methods commonly employed, and each has its own personality profile in the form of strengths and weaknesses. These technologies may be used to both detect and delineate archaeological sites, are completely non-intrusive because they leave the archaeology literally untouched, and – relative to spadework – have been proven to be highly cost-effective survey techniques. Even though they are not suitable for every environment, the rolling hills and shallowly buried features of the relict

Thibodeau village seemed an ideal workspace for geophysics.

Our instrument of choice was the EM38B by Geonics, a metre-long device powered by a 9-volt battery that simultaneously measures small variations in soil conductivity and magnetic susceptibility. When carried over an archaeological site in parallel survey transects, the device generates lines of data that are logged in a portable computer worn around the operator's neck. Later, these data are processed to generate 2-dimensional maps of the survey area. Conductivity data, measured in millisiemens per metre, reveal variations in soil porosity and moisture content, which are often good indicators of buried archaeological features like pits, ditches, and foundations. Magnetic susceptibility, on the other hand, which is measured in parts per thousand, reflects the ease with which the soil and its contents respond to the presence of a magnetic field. A high response can be triggered by a number of factors, including the presence of buried stones (particularly the hard, volcanic rocks often used as construction materials), past burning, and organic enrichment, all of which regularly occur at sites of former habitation. The EM38B can effectively "see" to about a depth of about half a metre below the surface, which may not sound very far at all, particularly when compared to GPR, which is capable of detecting archaeological features to a depth of several metres. However, because most archaeological sites we are concerned with, particularly in non-urban environments, are not deeply stratified, experience has shown the EM38B to be effective time and again. It reveals not only the contents of the muddled plough soil that often blankets our rural archaeological sites, but also the layers immediately beneath, which often contain better preserved architectural features.

The EM38B had been successfully employed in archaeological projects in PEI and Nova Scotia for over a decade before I met geophysicist Duncan McNeill at Grand-Pré National Historic Site in 2000 (e.g. Ferguson 1990). We've been conducting surveys and chasing anomalies together ever since (Fowler 2006; McNeill 2012; McNeill and Fowler 2013), and in this case study, we'll focus on the susceptibility results at the Thibodeau Site.

We conducted our surveys at Poplar Grove in December (Figure 2). The frosted grass crunched under my magnetically neutral rubber boots and snow flurries flicked through the air. In an effort to

Figure 2 - Geophysical survey in progress at Site 2 on the morning of December 23rd, 2012.

capture not only the cellar features at the two sites, but also to hopefully detect evidence of more subtle features located nearby, we established 50 x 50m survey grids over and around each cellar. Each survey took about 2 hours to complete, carrying the instrument over the 1m survey transects at a slow walking pace. It is a beguiling kind of work, requiring continual focus during long periods of monotony. The survey line data are displayed in real time almost like an electrocardiogram, inviting the operator to speculate about what is happening underfoot. But there is no time to daydream, because pace, data markers, and other matters require focus to avoid errors. At 1m transects, which offers decent resolution for reconnaissance work, we can survey about a hectare a day. At this rate, each of our 50 x 50m grids was completed in about two hours.

The results were certainly worth the effort. At Site 1, where we had begun our work in 2004, the ploughed-out cellar area showed up as a distinct cluster of magnetic susceptibility anomalies (Figure 3). Some corresponded to the tops of the

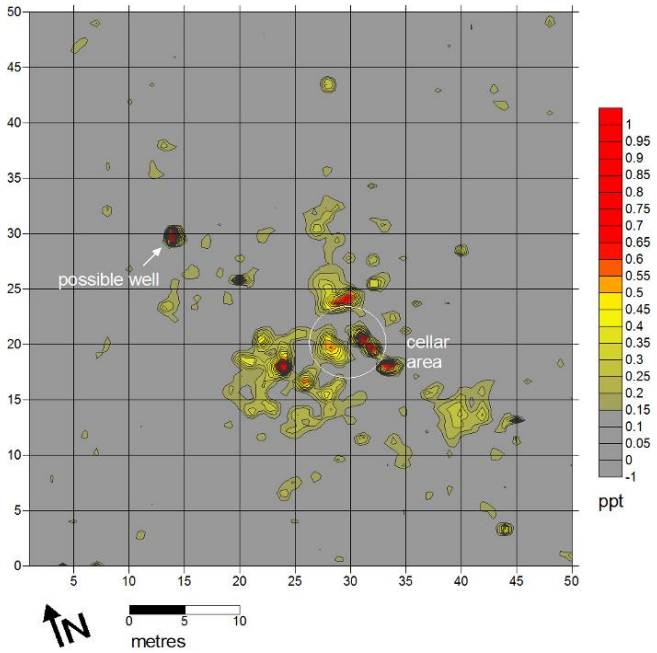

Figure 3 - Magnetic susceptibility results for Site 1. The survey grid measures 50 x 50m.

large stones we observed protruding from the surface, while others are evidently masked by the sod. Even though the upper layers of the house site have been badly disturbed, the geophysical results round out our picture of the ruin, aid in site delineation, and provide additional targets for future archaeological excavation. One such target is an outlying susceptibility anomaly tentatively identified as a stone-lined well.

Site 2, located farther inland, where Sara's 2012 test excavations yielded abundant 18th century material, proved to be much more geophysically active, possibly because it is architecturally more complex and may have been occupied for a longer period. In addition to the ploughed out cellar feature, which we expected to see, the geophysical results from Site 2 gave us a surprise in the form of rectangular anomaly a short distance to the west (Figure 4). If this anomaly is the result of stonework, then a very well preserved building foundation is now offering itself up for exploration.

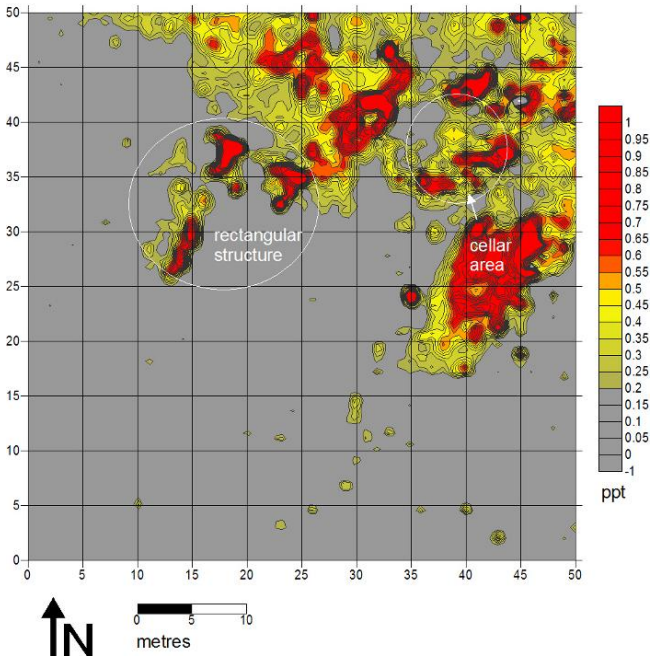

Figure 4 - Magnetic susceptibility results for Site 2. The survey grid measures 50 x 50m.

Both sites are slated for additional excavation in the summer of 2013, and the process of ground truthing our geophysical anomalies and pressing on with higher resolution surveys with tighter transect intervals will likely continue for several years. Even so, our preliminary results have given us much to contemplate. Site 1 is better defined than ever before, and the possible pre-Deportation-era well, which would have been exceedingly difficult to detect with shovel tests and was previously unknown to oral tradition, may prove to be enormously informative. All sorts of things find their way into wells, from discarded household goods to tiny palaeobotanical remains. The rectangular structure at Site 2 had also eluded traditional knowledge, and may well have dodged the archaeologist's trowel if not for the penetrating eye of the EM38B. What was this building? A house? An outbuilding? Acadian or New England Planter? The upcoming field season now has a fighting chance to answer these questions. ♦

This geophysical research was undertaken under Heritage Research Permit A2012NS160 (Fowler 2013). The Shaw Family have been gracious and accommodating hosts throughout this project. They deserve both thanks and acknowledgment, as do a number of others, in particular: Sara Beanlands for her enthusiasm and professionalism, Duncan McNeill for his unparalleled expertise, and our trusted friends and colleagues at the other end of the tape measure: Steve Garcin, Natalie Jess, Elizabeth McBlain, Alex Pelletier-Michaud, and Jeff Turner.

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Archaeological Resource Impact Assessment at Mill Lake, 2012

By Courtney Glen, Davis MacIntyre & Associates Limited

Davis MacIntyre & Associates Limited was contracted to conduct an archaeological resource impact assessment of an area around Mill Lake in 2012. The water of the Mill Lake system had been lowered for development, which led to the identification of a cabin foundation and surrounding landscape as well as a saw mill.

The saw mill was identified through large quantities of slab wood. Upon closer investigation of the area, the remains of the raceway and channel could be identified in the bed of the lake (Plate 1). A stone wall, glass fragments, coal and rusted hardware were also observed around the mill site. The site was photographed and mapped.

Plate 1: Looking south over the river channel (east), earth pad and mill track (west). Note the slab wood in the back right of the photo.

The second site was identified during the field reconnaissance by a rough stone foundation. A large area close to the foundation appeared to have been cleared of rocks and may have served as a garden (Plate 2). There were other culturally constructed rock features which were noted in the landscape surrounding the cabin foundation, including a possible rock wall and possible fire pit (Figure 1).

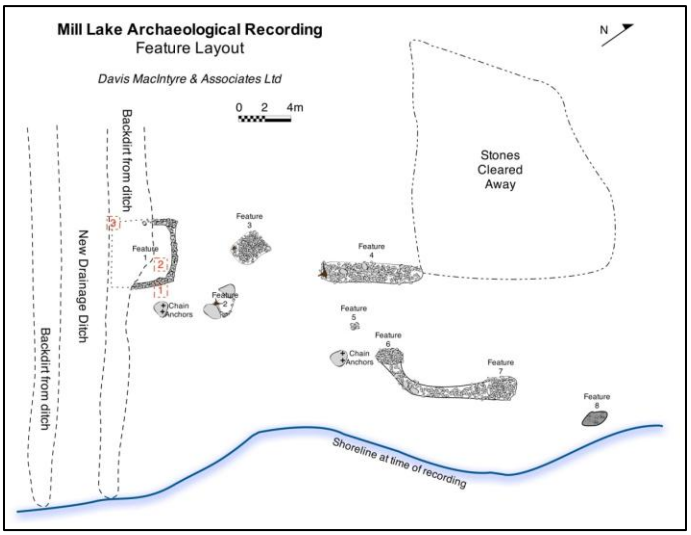

Figure 1: A map of the archaeological features at Mill Lake showing the foundation (feature 1) and possible fire pit (feature 2) as well as other cultural rock features.

Three formal test units were excavated inside and outside the cabin foundation to provide more information on the date of occupation. Tar paper over fibrous material (possibly degraded wood) was uncovered outside of the cabin, along with glass. The artifacts in direct association with the cabin included a light purple medicinal bottle finish (c. 1890-1925), a fragment of brown beer bottle glass (post 1930) and the leather sole of a child's left shoe (Plate 3).

Plate 3: Leather sole from a young child's shoe collected from the surface of a test unit within the cabin foundation.

The shoe was approximately the size of a modern child's size 8, the average size for a 2 to 3 year old. Fragments of women's leather shoes were also noted on the surface to the east of the cabin but were not collected (Plate 4).

Plate 4: Pieces of women's leather shoes in situ, located close to the cabin foundation.

The artifact scatter continued 50 meters upstream of the foundation. A sample of these artifacts were collected from the surface and included a complete smelling salts vial, sherds of milk glass cosmetic cream jars, a vitrified earthenware sherd, blue-green transfer print white earthenware saucer sherds, and a turquoise enamelled metal teapot lid (Plate 5).

Plate 5: Selection of cleaned artifacts from the surface scatter around the cabin foundation. Top row, left to right: a smelling salts vial, sherds of milk glass cosmetic cream jars, and a vitrified earthenware dish sherd. Bottom left: two fragments of a blue-green transfer-printed white earthenware saucer. Bottom right: a turquoise enameled metal teapot lid.

Based on the artifact assemblage and the tar paper, the date of occupation is most likely the late nineteenth to early twentieth century. The site could not date later than the early 1920s when the dam was built and the area was flooded. It is likely that the construction of the dam marked the end of occupation on the site. The brown beer bottle glass post dates 1930, however it was collected from the surface and may have been deposited after occupation of the cabin had terminated.

The artifact assemblage of the cabin site reflects the presence of women and children and provides positive evidence of their presence at the cabin and in the landscape. Along with other indications of domesticity, such as the fire pit, possible garden area and rock wall, the presence of women and children suggests the site was a domestic landscape inhabited by a family with at least one child.

The documentary record did not provide any evidence of a house or settlement in this area and it is probable that the site was occupied by squatters who did not officially own the property. The site is located in an area which was granted in 1786 to a Mi'kmaq chief, Paul Bernard. However, since the date of occupation is at least 100 years after this grant, it is not possible to identify the finds as a historic Mi'kmaq site. Without additional evidence of any kind, the tradition of the inhabitants is unknown. ♦

E'se'get Archaeology Project, 2012 Field Season

By: Matthew Betts[1] and Gabriel Hrynick[2]

[1]Canadian Museum of Civilization [2]University of Connecticut

Introduction

The E'se'get Archaeology Project is a long-term research endeavour focused on defining the Late Holocene prehistory of Nova Scotia's South Shore, and in particular the relationship between ancient Mi'kmaq and the coastal ecosystem (Betts 2009, 2010a, 2011a), with particular emphasis on developing an understanding of the economic, spiritual, and social lives of the ancient Mi'kmaq. The initial years of the project have been aimed at developing a regional economic, settlement, and technological sequence to provide a platform for exploring Maritime Woodland period lifeways in Nova Scotia.

Excavations were carried out between July 5th and August 1st 2012, and focused on three sites, AlDf-30, a small near-interior shell midden site; AlDf-08, an interior site previously tested by John Erskine (1962; 1986); and AlDf-06, a large highly disturbed site known to local collectors and also previously tested by John Erskine (1986).

As in previous seasons, the 2012 project was undertaken with significant input and participation from Acadia First Nation (AFN), the Department of Natural Resources (DNR), the Region of Queens Municipality, and the Department of Tourism, Culture, and Heritage. DNR provided extensive logistical support for many of the project's activities, including the loaning of equipment and the scheduling of site visits and public archaeology events. AFN supported and coordinated the travel of community members for two "archaeology days", events where local community members were able to view excavations and artifacts and ask questions about the research.

A Digital Excavation Strategy

The E'se'get Project has always used specially designed unit-level record forms to describe stratigraphic and artifactual information, make unit-level maps, and to keep a field catalogue of all recovered materials. This year, the traditional paper-based forms were replaced with PDF-based fillable forms on iPads, utilizing the PDF Expert iPad application. Tablet computers are increasingly being utilized by archaeologists to record field data (e.g., Fee et al. 2013), including the production of maps. Most of these systems utilize custom-built databases; however we developed a new system that utilizes PDF-based digital forms. Our rationale for using PDF forms is six fold:

1) Many archaeologists use paper forms to collect their field data (e.g. Kipfer 2007). Using PDF-based forms mimics their normal paper-based workflows, and therefore requires less training and creates less "digital shock".

2) The data in PDF forms is digital and can be instantly compiled into a spreadsheet database using Adobe Acrobat Professional.

3) PDF-forms are platform independent. They can be utilized with iOS, Android, or Windows-based devices.

4) The PDF forms incorporate graph paper that can be used to draw detailed plan maps. These maps can be directly exported to standard illustration software in a vector format.

5) Archaeological permitting agencies often require original paper versions of data for archival purposes. PDF forms can be printed without additional formatting, in a manner consistent with previously archived documents.

6) Digital PDF forms can be backed up to a "digital cloud" nightly, minimizing the risk of lost or destroyed paper forms.

While the PDF graph paper utilized on the digital forms was highly accurate, we utilized a vector-based drawing application, iDraw, to produce maps and profiles in the field. Traditional paper-based maps are time consuming, because to produce a digital report, each sheet must be scanned and these scans must then be loaded into illustration software to be traced. The traces must then be digitally concatenated and formatted to produce a publication quality map. This process can introduce transcription errors, because, essentially, each object on the map must be traced by hand. Using the tablet, we intended to produce maps and profiles in a format in which they would be eventually utilized – digitally. Finally, all photographic logs and field notes were produced on the iPad, using the Numbers and Pages applications, respectively. We found the camera feature on the iPads allowed for traditional field notes to be augmented with candid photographs of the excavations, which greatly increased the detail and effectiveness of the traditional note-taking process.

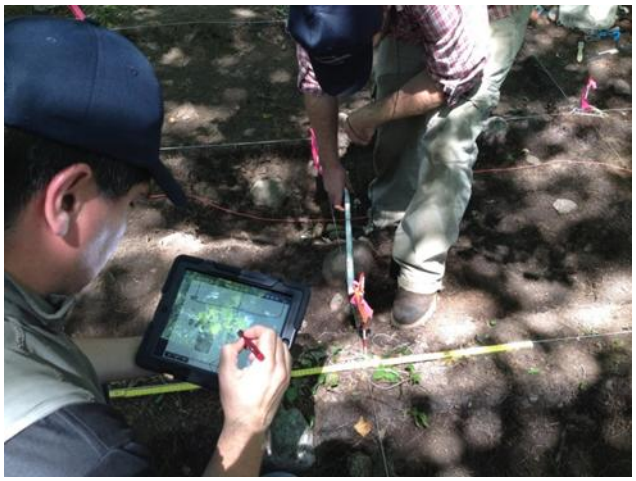

Figure 1: Drawing a feature plan at AlDf-30 using iDraw on an iPad.

Despite the new recordkeeping format, we did not alter our excavation methods. All deposits were excavated by trowel and all formal artifacts were mapped in relation to a unit datum. All deposits at AlDf-30 and AlDf-08 were screened through 3 mm (1/8th inch) while deposits at AlDf-06 were screened through 6mm (1/4 inch) mesh.

Excavations at AlDf-06 (MacAdam Garden, or Port Joli # 12)

AlDf-06 was first excavated by John Erskine in 1957 after local informants had told him that "a grave had been unearthed [there] in search for treasure" (Erskine 1986: 87). The site was well known to collectors in the area because of its proximity to the highway and its repeated use as a family garden.

Figure 2: AlDf-06 in 1957 (Top) and 2012 (Bottom), facing south.

Once an extremely large site, much of AlDf-06 has now been destroyed by development. The most extensive damage occurred with the construction of Highway 103, which bisects the site from west to east. Unfortunately, the site has been the location of a family garden for over 50 years, and was only recently converted into a lawn area by the current owner. To determine the boundaries of the site, soil probes were conducted on a cross-shaped transect which roughly divided the peninsula into four quadrants. The probes revealed that the entire surface of this peninsula to the edges of the surrounding embankments was once a dense black soil midden, characterized by sparse and highly fragmented shell in a richly organic cultural matrix.

Our probe transects and excavations indicate the deposit ranged between ca. 15 cm to ca. 35 cm in depth, although the latter extreme is likely a result of intensive ploughing into the subsoil in some areas.

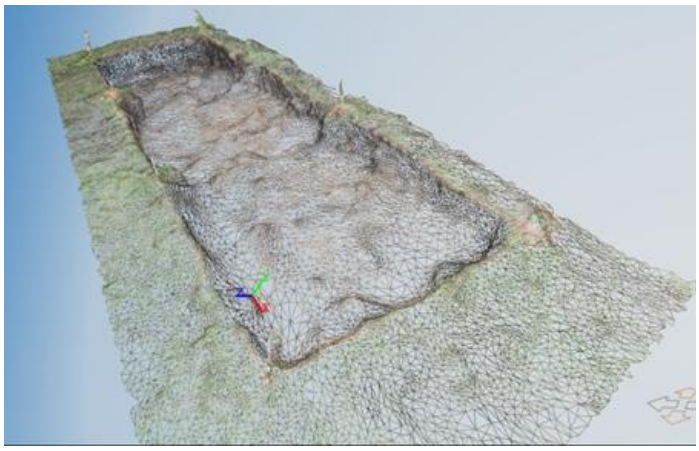

Figure 3: 3D model of AlDf-06 excavations, showing topography of Level 4 subsoil (facing northeast).

The AlDf-06 deposit is best described as a large "black soil midden" (e.g., Black 2002) characterized by an abundant cultural and organic component, but with little shell admixture. In fact, frequencies of clam shell are so low that few faunal remains are apparently preserved at AlDf-06. Despite the extreme fragmentation caused by ploughing, this nevertheless appears to be an accurate assessment because virtually no shell fragments or faunal remains were recovered, even in 6 mm mesh. The entire deposit, from its upper levels to the subsoil, was apparently disturbed and mixed by ploughing. Moreover, because of the extensive historic use of the area surrounding AlDf-06, the entire landscape has been extensively altered and disturbed. While some artifacts were recovered, the deposits exhibit thorough stratigraphic mixing.

Excavations at AlDf-08 (Lower Path Lake Brook, or Port Joli # 7)

In 1957 John Erskine discovered his seventh site in Port Joli (Port Joli #7), which he described as located "on the slope south of Lower Path Lake Brook, about 300 yards inland" (Erskine 1986: 87). He plotted this location on a map in his 1962 report on the Port Joli excavations (Erskine 1962:3) and this location is currently recorded in the sites database maintained by the Nova Scotia Museum. Survey conducted by the authors in 2008 and 2009 (Betts 2009, 2010a) in the area plotted on Erskine's map failed to relocate Port Joli #7. However, in 2012, a knowledgeable local informant, who had just transferred her property to the Nature Conservancy of Canada, took us to a site that matched Erskine's description. We noticed surface disturbance consistent with previous excavation, but we could find no evidence of recent looting – a rarity in this area of Nova Scotia. Upon our return to the lab, we compared our photographs of this new site to Erskine's original 1957 photographs of Port Joli # 7 and discovered that a large boulder to the north of the site matched perfectly in both sets of photographs (see Figure 4). This conclusively establishes that the position of AlDf-08, or Port Joli # 7, was incorrectly described by Erskine in his 1962 map. AlDf-08 is a large mixed deposit site of a type that we have rarely encountered in Port Joli Harbour. The site contains extensive "black soil" middens with shell admixtures, which manifest as rich organic soil deposits containing some broken shell and

Figure 4: AlDf-08 (Port Joli #7) in 1957 (Top) and 2012 (Bottom), facing North. Note that the boulder is the same in both photographs.

abundant artifacts and animal remains. The site also contains areas of more classic shell midden deposits composed of layers of broken and crushed shell in a thin soil matrix. However, the majority of the site is a highly organic cultural soil deposit with shell occurring only in quantities great enough to preserve organic remains.

Approximately 30 metres long by 20 metres wide, with the long axis oriented along true North, the site is located in the lee of two large boulders on the northern and western margins of the site. The site slopes downhill to the south and east, with highest concentrations of shell occurring in the east and west margins of the midden. A disturbed area, approximately three metres wide by five metres long, occurred directly adjacent to the large northern boulder, with a back-dirt pile occurring directly south of this. This disturbance corresponds well with the description of Erskine's (1986:91) excavation of the site in 1957, 1959, and 1962.

We established a 1m x 1m grid over a flat and apparently undisturbed area of the site, near Erskine's excavations and within five metres of the northern boulder. Excavation revealed a deep and rich black soil midden approximately 45 cm deep. As suggested by high densities of lithic debitage, the compact nature of the deposit, burnt bone, fire-reddened soil, fire cracked rock, and the limited nature of shell, the deposit appears to represent a series of superimposed living floors, essentially similar to the deposit excavated at AlDf-24 Area C (Betts 2011a; Hrynick et al. 2012).

Figure 5: AlDf-08 facing northwest. Subject is standing next to test unit.

Excavations at AlDf-30 (Jack's Brook)

AlDf-30 (see Betts 2009, 2010a, 2011a) is located ca. 300 m inland west from the coast of Port Joli Harbour. The site sits on a small knoll, the centre of which is treeless, within a relatively dense, mixed forest. To the immediate north of the site is Jack's Brook, a very small, shallow stream which is fed by a fen that surrounds the knoll on the east, west, and south sides. Excavations in 2008, 2009, and 2010 revealed three relatively shallow shell middens comprised primarily of Mya arenaria, separated by a thin highly organic black soil. Excavations in 2009 within the black soil sheet midden revealed the margins of a possible

domestic feature (Betts 2010a:15). Although some of the midden deposits have been subject to twentieth-century pot-hunting along their margins, the central black soil deposit is undisturbed.

The site is much smaller than other Middle Maritime Woodland sites at Port Joli Harbour, and its location, ca. 300m inland from the high tide mark, does not conform to site locational models for Maritime Woodland sites in Port Joli Harbour (Betts 2009, 2010a, 2011a) or indeed the rest of the Maritime Peninsula (Black 2004; Kellogg 1987, 1994). It is unlikely that its location would have been tested in a typical archaeological survey, and its discovery is somewhat serendipitous. In 1935 a reverend was walking along an old ox track after a storm and noticed shell and artifacts spilling from the roots of an overturned tree (Raddall n.d). He alerted Thomas Head Raddall, a writer living in Liverpool, Nova Scotia, who excavated a small portion of the site with his son and friends between 1935 and 1938 (T.H. Raddall II, pers. comm. 2012; Raddall n.d.).

The 2012 excavation devoted over four weeks to the evaluation of the feature in the black soil midden identified in 2009, with the anticipation that it represented the margin of a dwelling floor. As will be described below, the 2012 excavation of Area A suggested the presence of a series of concatenated, or "stacked", domestic and possible ritual features.

Feature 1 appeared as a compact black sandy loam with moderately abundant comminuted charcoal. The feature was oval, approximately 3 meters by ca. 2.5 metres, shallow, and basin-shaped, but without evidence of built up berms or an excavated floor surface. It is more likely that the floor was cleared of debris and any depression of the surface was caused by repeated trampling/use of the structure. The margins of the feature were relatively distinct, marked by a slight colour change to a browner coloured soil with less comminuted charcoal. Large rocks and cobbles protruded into this layer from levels that were stratigraphically deeper, and appear to have been incorporated into the architecture of the dwelling.

Near the northern margin of the feature, in unit N52W51, a roughly oval, ca. 30 x 40 cm hearth feature was encountered (Feature 1A). Characterized by the presence of fire-reddened sandy loam, the precise size and shape of the hearth was impossible to discern as it extended into Area A's unexcavated east-west baulk.

Figure 6: AlDf-30, Area A, Feature 1, facing southwest. The orange string indicates the edges of the dwelling feature.

Feature 2 represents another domestic occupation or living surface, which was distinguished from the Feature 1 surface above it primarily by changes in soil colour. The deposit can be characterised as a very compact/firm dark black sandy loam with abundant pebbles and higher concentrations of comminuted charcoal than the Feature 1 layers above it. Feature 2 was oval in shape, ca. 3 metres in diameter, roughly the same size and orientation as Feature 1, above it (Figure 7). In profile, it displayed the classic "saucer-shaped" appearance associated with dwelling features on the Maritime Peninsula (Sanger 2010). Similar to Feature 1, large boulders and cobbles intruded into this unit from deeper stratigraphic levels, producing a rather undulating floor surface.

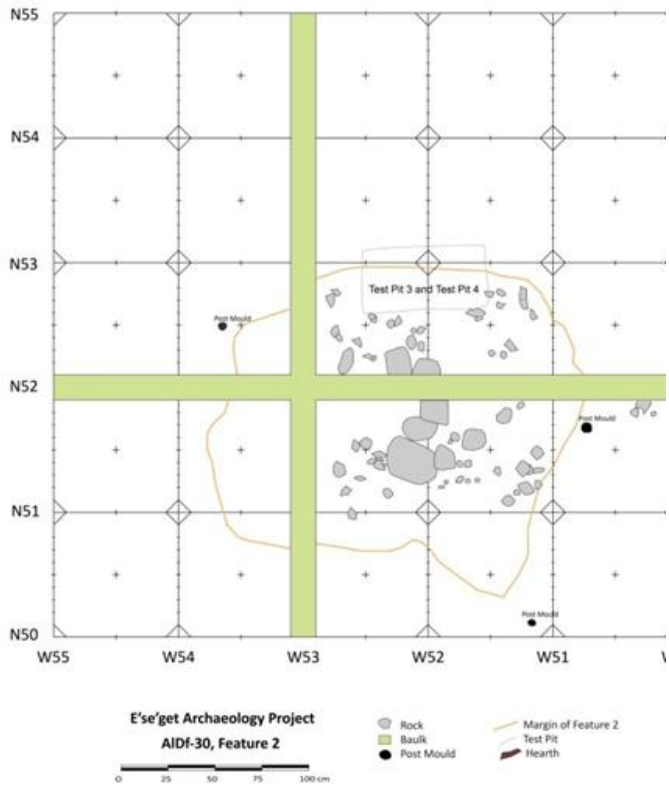

Figure 7: AlDf-30, Area A, plan map of top of Feature 2.The dotted line indicates where we interpret the boundary of the feature to be. This drawing is a conflation of Levels 3D, 3E, and 3F.

Feature 3 appears to have been dug into the Area A subsoil and is not represented by a distinct fill deposit that could be distinguished stratigraphically from the layers above. The primary element of the feature is a large central boulder, flanked on all sides by several large stones and numerous cobbles, as well as a formal cobble paving partially lining a small ovoid pit in the southwest. Immediately northwest of the central stone, a small bench or step may have been shaped into the subsoil, forming the northern margin of the pit feature. The entire feature is very small, roughly 2.5 metres by 2 metres, and its margins, especially on the northern, southern, and western sides, were very steep, creating a bowl-like depression, in some instance excavated more than 40 cm into the subsoil.

Figure 8: Feature 3, Level 4, facing west. Note bowl-shaped profile and orange hue to subsoil.

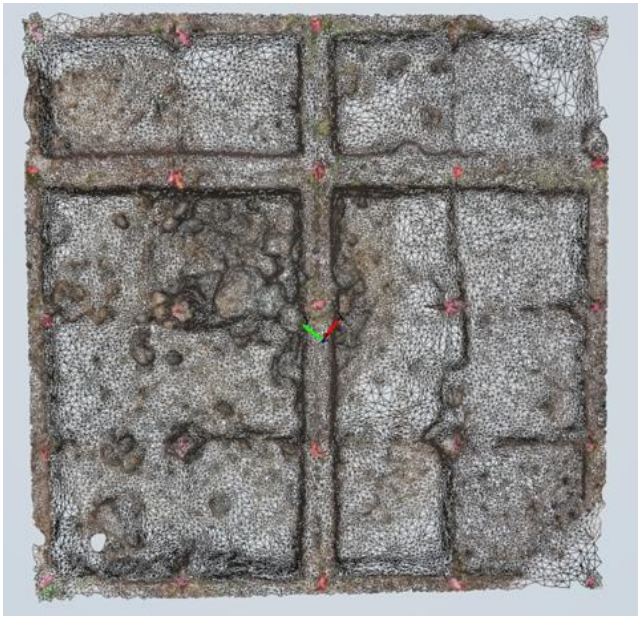

Figure 9: Wireframe 3D model of AlDf-30, Feature 3, Level 4, facing west. This "top-down" plan view was only possible utilizing 3D reconstruction.

In summary, Feature 3 is nearly one metre smaller in diameter than a typical dwelling structure (see Hrynick et al. 2012; Sanger 2010), with an unusually deep bowl-shaped profile and a substantial boulder/cobble architectural element uncharacteristic of dwelling features on the Maritime Peninsula. It apparently contained no artifacts, and limited cultural debris of any kind, save for one piece of fire cracked rock, one piece of charcoal, and a large heat- altered and fractured

cobble. The ethnohistoric literature from the Maritime Peninsula describes that a variety of "sweat lodge" type structures existed shortly after sustained European contact in the region (e.g., Denys 1908 [1672]:416; Drake 1841:91; Lescarbot III:185–186; Prins and McBride 2007:18; Speck 1917:312, 1997:48; Wallis and Wallis 1955). Much of this ethnohistoric literature indicates that purpose-built sweat lodges were smaller than typical wigwams, which is consistent with Feature 3. As stated above, Feature 3 did not exhibit significant amounts of fire-cracked rock or charcoal; however Denys's (1908 [1675]:416) describes that many sweat lodges did not contain fires and that rocks were heated outside the structure and brought to the participants inside by wives or children. Furthermore, some sweatlodges did not employ water, instead using steam produced by hemlock boughs placed over the hot stones (Wallis and Wallis 1955:124), which would have reduced the degree of thermal shock on stones.

Materials Recovered

AlDf-06 (MacAdam Garden, or Port Joli #12)

Despite the repeated anthropogenic impacts on this deposit, some diagnostic material was recovered from AlDf-06. Formal lithic tools included four small unifacial, or "thumbnail," scrapers, and a small quartz corner-notched projectile point. All are similar in form to those recovered from the Late Maritime Woodland deposits at AlDf-24 Area C (Betts 2011a). A unique lithic tool recovered from AlDf-06 is a small ground stone adze or celt, made on a basalt beach or river cobble.

Prehistoric ceramics were universally small and highly fragmented, leaving the identification of temper and decorative motifs difficult. All pieces exhibited grit temper, and of the pieces with decoration, punctate, small dentate-stamped, and cord-wrapped stick motifs could be discerned.

As would be expected given the site's 20th century Eurocanadian use, several historic artifacts were encountered at AlDf-06, including bottle and pane glass, wire nails, and historic ceramics.

Figure 10: Formal lithic tools from AlDf-06

AlDf-08 (Lower Path Lake Brook, or Port Joli #7)

Despite the limited nature of the 1m x1m test excavation at AlDf-08, the context produced an extremely rich and varied artifact assemblage. The 146 ceramic sherds recovered from AlDf-08 predominately exhibited cord-wrapped stick decoration, with both shell and grit temper. In manifestation, this assemblage of ceramics closely resembles the suite of traits characteristic of Ceramic Period 5 (Petersen and Sanger 1993:136), which dates to ca. 950 to 650 BP, the Middle Late Maritime Woodland period.

Figure 11: Representative decorated ceramics from AlDf-08.

Lithic tools from the site included two triangular Levanna-style (Ritchie 1961:31) point bases, as well as a small fragment of an "ear" from a triangular Levanna-like point, made from quartz. One small quartz side-notched projectile point, made from black rhyolite, and one quartz biface tip were also recovered. Similar to other black-soil middens in Port Joli Harbour, the AlDf-08 unit contained a large number of small "thumbnail" scrapers.

Faunal remains from the site were extremely abundant, the majority deriving from large terrestrial ungulates, including many fragments of spirally cracked bone. Faunal remains identified in the field include woodland caribou, beaver, geese, and some specimens in the genus Canidae.

Figure 12: Formal lithic tools from AlDf-08.

AlDf-30 (Jack's Brook)

AlDf-30 produced the largest proportion of materials recovered during the 2012 excavations, numbering 8135 specimens. Eight "thumbnail" scrapers were recovered from AlDf-30, all ovate or slightly rhomboidal with significant acute retouch at one end. Two rather large triangular Levanna-like (Ritchie 1961:31) projectile points, both made from a black/grey rhyolite, were encountered in upper layers of the excavation. Levanna points are not common in professionally excavated sites in Nova Scotia but are known in collector-based assemblages from the South Shore. Pentz (2008: Figure 4.4.4-g) recently identified a Levanna point from the Vidito, or Lequille, site (BeDi-07) collection, from the Alains River area, and Erskine excavated similar points at Timber Island Brook (Erskine 1962:Plate IV) and photographed them in collector's assemblages from sites in Port Joli Harbour (probably from AlDf-06). They are generally believed to represent a Late Maritime Woodland manifestation in the Maritime Provinces; however, they occur in Middle Maritime Woodland sites throughout New England.

Figure 13: Formal lithic tools recovered from AlDf-30, Area A.

The other projectile points recovered from AlDf-30 are also quite large and include a side-notched projectile point (missing its tip), flaked from a unique green glassy rhyolite; and a leaf-shaped projectile point with a rudimentary stem, and a possible stem from a similar point, both made from grey/black rhyolite. Ceramic sherds were the most abundant artifacts recovered from the AlDf-30 excavations. The majority of ceramics recovered are consistent with attributes common in Petersen and Sanger's (1993) Ceramic Period 3 (1650-1350 BP). These sherds were often relatively thick-walled with grit temper and dentate or rocker-dentate decoration. Linear incised specimens occur as well, although some of these decorations appear so regular that they might have been applied with an unusually-shaped stamping tool. Only one specimen, recovered from

Level 3a, exhibits cord-wrapped stick decoration, which may suggest some occupation during the early stages of Ceramic Period 4.

Figure 14: Decorated ceramics from AlDf-30.

Faunal remains from the AlDf-30 black soil midden were very different from those recovered in other contexts in Port Joli harbour. The absence of shell in the majority of contexts meant that little well-preserved faunal material was recovered, as only tiny fragments of calcined bone tended to be preserved.

Conclusions and Insights

The 2012 season of the E'se'get Archaeology Project was a success from a multitude of perspectives. Not only were we able to "fill in the gaps" of our archaeological sampling, what we recovered has fundamentally altered our understanding of the prehistory of Port Joli Harbour. Specifically, the deposits we excavated suggest a significant increase in the range of locations for, and types of, deposits dating to, the Late Maritime Woodland Period. These include both small and large near interior sites, very large coastal sites, and thin occupations capping Middle Maritime Woodland deposits. Many of the Late Maritime Woodland deposits appear to be "black soil middens" with shell admixtures (Black 2002), many of which contain overlapping domestic architecture.

The 2012 season also saw the excavation of feature types never before encountered in Maritimes archaeology. AlDf-30, Feature 3 represents the only prehistoric sweat lodge feature known archaeologically on the Maritime Peninsula, suggesting that Wabanaki sweat lodges, at least in the form encountered at AlDf-30, are of great antiquity. While only limited excavations were carried out at AlDf-06 and AlDf-08, they are equally instructive. The large and apparently intensive Late Maritime Woodland occupation of AlDf-08 and AlDf-06, which are both adjacent to larger streams may suggest that the large Middle Maritime Woodland shell midden sites were eventually relocated near to the head of the harbour and adjacent to streams fed by medium sized lakes.

Our collaboration with Acadia First Nation and local communities is a central part of the E'se'get Archaeology Project, and the public archaeology programme implemented in 2012 was a great success. A public lecture was given at the Queens County Museum and the project blog received more than 10,000 unique views. Two Acadia First Nation archaeology days were held, where youth and adult members from multiple communities were bussed to Thomas Raddall Provincial Park, given a tour of AlDf-30, and provided an opportunity to view artifacts and ask questions.

Figure 15: Acadia First Nation members at the community event. The crew can be seen barbequing in the background.

Acknowledgements

This research would not have been possible without the advice, support, and participation of multiple organizations and individuals. First, Acadia First Nation has supported the E'se'get Archaeology Project since 2008, and in 2012 they provided substantial logistical support for organizing the public archaeology days and site visits in addition to their ongoing collaboration. DNR provided critical logistical support for the excavations and public events. Dirk Van Loon, who operates the Harrison Lewis Coastal Discovery Centre, has supported the project since 2009, and his facilities provide the perfect base of operations for scientific research on the South Shore. ♦

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Experience in Co-Op Archaeology

By Travis Crowell, Davis MacIntyre & Associates Limited

I started my first Co-Op work term with Davis MacIntyre & Associates in May 2013. As an anthropology student at Saint Mary's, I received a great introduction to the field of archaeology but I still didn't have an idea of what it was like to get my hands in the soil. This is where the Co-Op program, in conjunction with university faculty, steps in to provide students like me an opportunity to connect with employers for meaningful and educational work experience.

Plate 1: Surveying the retaining wall.

My first big "find" was a stone retaining wall supporting an old road next to a brook. Sunlight was coming down through the spruce trees and leaves of an old birch where I had gone to the cool myself with water. When I looked up along the bank, there it was (Plate 1). I don't want to say I fell in love on that hill overlooking the Gulf of St. Lawrence, I didn't hear any Sam Cooke on the wind, but I did feel different about that wall than any other I've come across in my life. I actually felt responsible for this wall.

I don't have a history of feeling flush around stone features. I doubt that many people do. But when I saw that stone retaining wall I made the connection between the feature and the people that made it. It was a lesson that I and other students were taught Day 1 of Introduction to Archaeology. Archeology is about people, not things. When I saw the wall I could imagine the time and effort put into its construction, the maker's intention for long-term settlement. I could see its proximity to an old road, which even today is still evident through the undergrowth. I wondered if indeed it was built by a farmer and his family, and if when they finished they stood back in the same place I did and looked with a measure of pride at what they had done.

This wasn't the first wall we found that day, it was actually the third or fourth. Two appeared to be an informal deposit of stones on an embankment that may have been mine tailings, and may have all been the same feature with sections broken or hidden over time. The size of it alone prompted Stephen Davis to observe that it probably wasn't the work of a farmer unless he had twelve sons. There was however another wall, which stretched at least 70m back into the forest, that appeared to be agricultural. The wall was double-skinned, a

style associated with the Scots of the Hebrides, around the mid nineteenth century. Background research indicated late Scottish settlement in the area, as did the old Presbyterian Church standing watch only a few minutes from the site. The evidence at hand pointed to historic settlement, as well as a history of resource extraction.

Walking the hill with DM&A I learned about reading the landscape. When I worked in the sign business we called it the "sign eye", the ability to line things up perfectly at a glance, eyeball whether something was level or crooked. Archeologists I've worked with do something similar when they walk landscapes. Their eye is searching for things that most people overlook, pass by or trip over. Levelled areas of ground that hint to field clearing, the appearance or absence of navigable waters ways, whether stone formations are cultural or natural. They read the landscape not only as it is but what it would have been to people over centuries or thousands of years. What did it mean to them, what would have attracted people to the area? With full credit to both my teachers in the classroom and in the field, I'm starting to get a look at the past they see. It's fuzzy but it's coming into focus.

There were no ground-breaking discoveries on the hill that day. This is probably the most attention anyone has given that retaining wall since it was built, and I'm only speculating about that moment of appreciation. It may not be noticed again for another century except by the property owners. However coming across it has been a highlight of my short-time with DM&A, and one that couldn't be replicated in class. It occupies the same space as looking at my first section of J.F. DesBarres, The Atlantic Neptune and doing background research in my hometown. I've enjoyed being able to work in a field where curiosity is rewarded, and you feel like you're chasing down the elusive.

Plate 2: Trees bowing down on the old road.

When I have someone come over for the first time I like to walk them through my pictures. Most of the photos are framed shots of my family, stretching back to my grandparents when they were my age. I have photos of both my father and grandfather in their hockey gear, my grandmother as a young woman, my dad as a kid flying on my grandfather's outstretched legs, plus the friends and family that I have tacked to my fridge. It's my way of showing people who I am and where I come from. For me, it is a reminder. I am beginning to see our cultural landscape the same way, a collection of reminders of who we are and where we come from. The more that we record the clearer our focus is on the past. Or at least, the more well-informed the arguments at the kitchen table are. Not everyone cares about the past, but on the same hand not many get away from it. I said earlier that I felt responsible for the stone retaining wall, and that's true. I wouldn't want to see it destroyed, even if the earth didn't shift when I spotted it. Credit and thanks everyone involved who has given me a chance to experience that feeling first-hand. ♦

Archaeology at the James M. Rogers Sawmill, Scots Bay, Kings County

By Adrian Morrison, Memorial University

In the nineteenth and early twentieth-century a boom in Canadian forestry sent thousands of men and boys into the country's forests in pursuit of an income. Nova Scotia was no exception. In 1861 there were 1401 sawmills located in Nova Scotia alone (Robertson 1986).

Nova Scotia's international, and even national, trade was relatively insignificant when compared to neighboring New Brunswick. However, the industry still made major contributions to the province's economy. Despite exports being comparatively low, hundreds of mills produced small quantities of lumber for local use and for specialized markets such as furniture making, and – perhaps most importantly – shipbuilding (Robertson 1984, 1986).

In an effort to learn more about these small-scale enterprises, archaeological research was carried out at the site of the James M. Rogers Sawmill; a mid to late nineteenth-century mill located in Scots Bay, Kings County.

Scots Bay, like many Nova Scotian communities, has a lengthy tradition of lumbering and related timber-based industries. The first known sawmill in the village was built in 1783 and at least 16 others have since been in operation (Martin 2005).

The James M. Rogers Sawmill

The James M. Rogers Sawmill was a simple family-run enterprise located on a small brook directly behind its owners' home. It was used to provide lumber for the Steele Shipyard – which was owned by James M. Roger's brother-in-law Jonathan Steele – and was likely run opportunistically to supplement an income generated primarily through agricultural activities (Huntley 2012, and Steele 2012).

While the mill no longer exists, its footprints remain in the form of archaeological features and artifacts. It has also survived in the memories of its surrounding community. This community displays great continuity. Since the construction of the Rogers' home in approximately 1857, the house and property have continually been owned and occupied by descendents of the Rogers family. For over 150 years these people have worked, played, and lived within a cultural landscape created by their ancestors. As such, the physical environment has become a palimpsest inscribed with the actions of many generations.

Previous Research

The James M. Rogers Sawmill was first recorded archaeologically by Michael Deal from Memorial University. Deal has been conducting research in Scots Bay and surrounding areas since 1988 as part of the Western Minas Basin Archaeology Project. As such, his studies put him in regular contact with Scots Bay's residents, many of whom have expressed an interest in the area's industrial heritage. Motivated by this community enthusiasm, he began a survey of Scots Bay's mills and shipyards in July 2004. The survey aimed to record the locations of historic industries in order to register them in the Maritime Archaeological Resource Inventory, and thus designate them as official archaeological sites. Through the course his research he documented 3 shipyards and 14 mills, including the James M. Rogers Sawmill (Deal 2010).

Summary of 2012 Field Season

The James M. Rogers Sawmill was re-visited in August 2012 as part of my Masters research at Memorial University. Fieldwork was carried out by Dr. Michael Deal, Cameron Milner, and myself, with the assistance of volunteers. The work included the surveying and mapping of surface features, as well as subsurface testing and excavations.

Plate 1: A wooden sluice used to direct water onto the sawmill's water wheel.

Surface features included a large millpond depression, a spillway, a millpond retaining wall, and two piles of culturally deposited stone interpreted as dam remains and a stone ramp. Excavations revealed additional features including a wooden sluice (Plate 1), a natural - but utilized and modified - stone wall (Plate 2), and wooden timbers.

Plate 2: Michael Deal uncovering a natural stone wall used to support the south side of the James M. Rogers Sawmill.

Unfortunately, excavations revealed scarce material culture relating to the sawmill itself. The only artifacts that could be linked to the mill were iron spikes, an axe head, and a horse buckle that is likely associated with the draft animals that worked around the lumberyard (Plate 3). Nevertheless, a considerable quantity of material culture was uncovered that pertains to daily life at the homestead. These objects date from the second half of the nineteenth-century through to the middle of the twentieth-century. They include, for example, items relating to the consumption of food and beverages – primarily ceramics and glass – as well as those characteristic of transportation and labour.

Plate 3: Horse buckle recovered from the James M. Rogers Sawmill Site.

Today, the Roger's original home remains occupied by their descendants. The barn they constructed continues to provide shelter for the family's livestock, and Rogers' great-great-great-grandson still plows the fields with horses as it has been done for over 150 years. Nevertheless, the Rogers' sawmill has disappeared, leaving few traces behind except the residue of features embedded within the landscape.

Acknowledgements

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The Boswell Site Archaeological Project

By Michael Deal, Memorial University

Introduction

This report outlines the findings of 17 days of archaeological testing at the Pre-Contact Boswell Site (BfDf-08). Logistical support for this project was provided by the Nova Scotia Museum and Mi'kmaq Rights Initiative. The site is located on farmland along the Annapolis River, at South Farmington, near the town of Kingston. It consists of a large flat terrace, along the eroding river bank (Figure 1). Artifacts believed to date to the Terminal Archaic period of the Maritime Peninsula were surface collected by a local couple fishing at this location in 2009 (Cottreau-Robins 2010). The goal of the current project is to explore the site for in situ evidence of the Terminal Archaic and Woodland Period occupations and to collect sediment samples for the recovery of faunal and floral information.

Setting

The Annapolis-Cornwallis Valley has a bedrock base of weakly cemented Triassic sandstones and sandy shales (Hickox 1962:9; Roland 1982:188ff.; Simmons et al. 1984). This is overlain by extensive glacial deposits of gravel, sand and clay, with slow moving meandering streams and rivers. Extensive marshes are encountered where the rivers drain into tidal waters. A maximum elevation of 38m a.m.s.l. occurs at Caribou Bog, near Aylesford, which divides the Annapolis River watershed from the Cornwallis River watershed (Gibson 1992:75-77). The Cornwallis River flows 35 km westerly to the Minas Basin, while the Annapolis River flows easterly 142 km to the Annapolis Basin (Daborn et al. 1979:155).

Figure 1: Boswell site 2012.

The head of tide for the Annapolis River is at Paradise, approximately 37 km above the mouth (Figure 2). The soils below Paradise are poorly drained silty loam and silty clay loam, while upstream soils are well-drained sands and gravels (MacDougall et al. 1969). A small traditional Mi'kmaq settlement persisted on the south bank of the river at Paradise until the late 20th century (PWI 1991:241ff.).

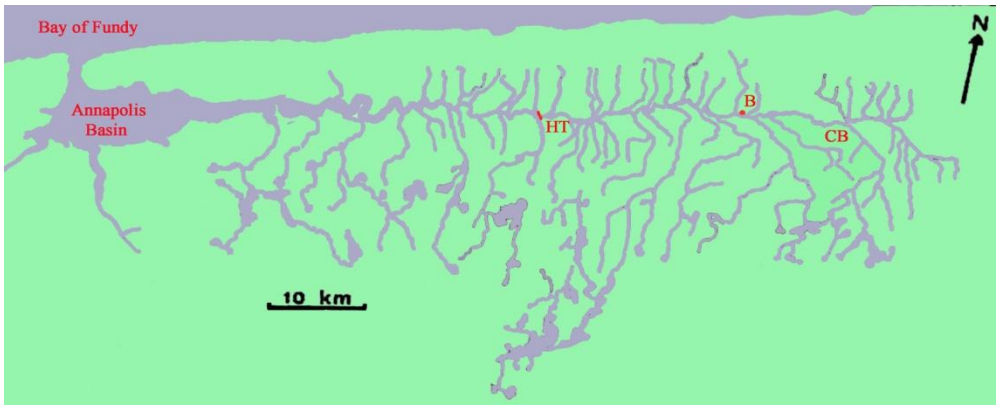

Figure 2: Annapolis Valley watershed, indicating location of the Boswell site (B), Caribou Bog (CB) and the original head of tide (HT) at Paradise.

The natural vegetation of the Annapolis-Cornwallis Valley is a forest of softwoods or mixed hardwoods and softwoods, with very little undisturbed forest. The area forms part of Louck's Red Spruce-Hemlock-Pine zone, and also features red oak and balsam fir in the west and red maple and black spruce in the east (Simmons et al. 1984:649ff.). The non-tidal portions of both rivers have fauna typical of slow moving water. The modern faunal population includes mammals often associated with agricultural areas, including raccoon, fox, woodchuck, skunk, beaver and mink. Avifauna includes pheasant, snipe, woodcock, and hawks. The important fish species in the rivers include striped bass, white perch and American shad. Adjacent oxbow lakes have a different flora and fauna, including turtles, sticklebacks and muskrats.

Previous Research

Despite being the area of earliest European occupation in Canada, with well-documented contact between French settlers and the Mi'kmaq, very little is known about Pre-Contact occupation along the Annapolis River. At present there are less that 50 recorded Pre-Contact sites on the Annapolis River Watershed. In the 1950s, John Erskine spent two summers excavating the Bear River site, on the Annapolis Basin, and tested a disturbed site at Lequille (1998:45-57). An additional 16 sites were recently recorded by Ben Pentz (2008) while surveying along a known Contact period portage route between the Annapolis Basin and the Mersey River drainage as part of his MA research. An archaeological survey by Steve Davis (1981) reported 11 Pre-Contact sites above the head of tide at Paradise. Six of these sites cluster around the Boswell site, suggesting that this was an important resource area.

Summary of Field Work

The field work began in 2011 with the establishment of a site datum on the terrace above the original find spot. A cluster of flakes was identified along the woods road into the site, to the northeast of the new datum. Initially, three 1x1m test units were opened; Test Pit 1 over the flake cluster, Test Pit 2 near the river bank below the datum, and Test Pit 3 on the terrace above the original find spot (Figure 3). Later in the week, three additional test units (TP3-6) were opened on the terrace above the find spot. In addition 11 shovel tests were added along the terrace.

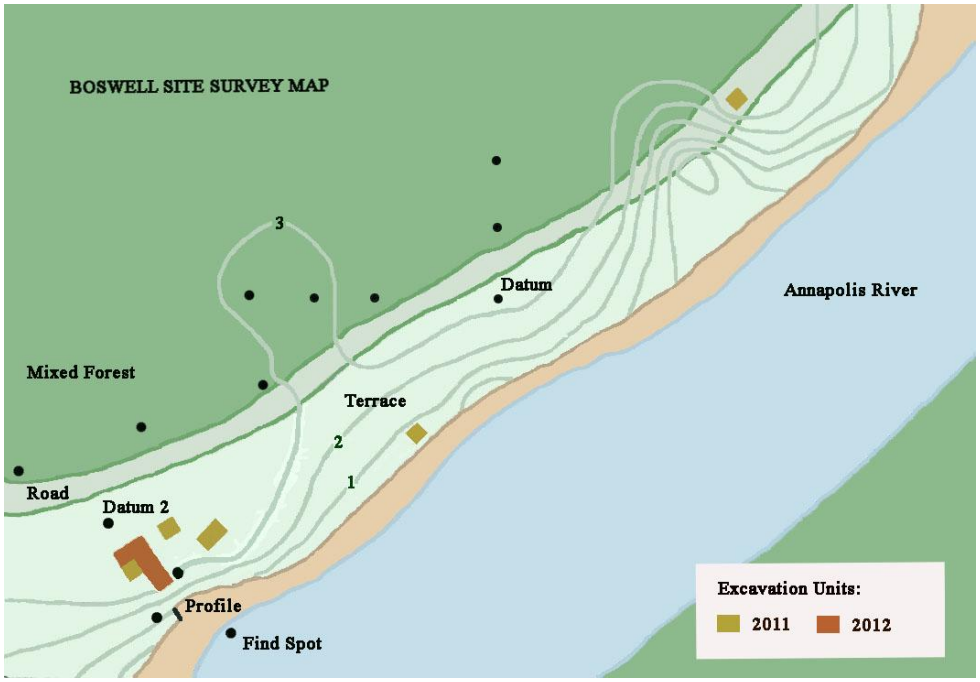

Figure 3: Boswell Site Survey Map 2011, indicating the location of test units, shovel tests (black dots) and original find spot.

Figure 4: Adrian Morrison uncovering pottery sherds in Feature 1, TP3.

Test Pit 1 produced a variety of lithic flakes, but no finished artifacts or features. Test Pit 2 produced no Pre-Contact material culture, but two historic iron nails and a metal fish hook were recovered. The first Pre-Contact feature was encountered in Test Pit 3, consisting of a dense concentration of charcoal and two clusters of pottery sherds (Figure 4). These were later determined to be from a single undecorated vessel. Test pit 6 was opened to find the extension of this feature, but no additional pottery was discovered. Both units produced lithic flakes. Feature 2, in Test Pit 4, consisted of a mottled brown, silty loam, with charcoal fragments. It may be an extension of Feature 1, but only a single chalcedony flake was discovered. Test Pit 5 at first appeared to be sterile, but at 38 cm below the surface, an extensive feature (3) was encountered in the northeast corner. Feature 3 consisted of a concentration of pottery sherds and charcoal overlaying a rock formation. Two small mammal bone fragments were also recovered, but no lithics. The sediments of this site are extremely sandy, and rocks are rarely found, suggesting that this was an intentional arrangement and probably a hearth. The feature continues into the northeast and northwest walls of the unit. Since the feature was discovered on the last day of the field work, the pottery cluster was removed as a blocklift and excavated back at camp.

The 2012 season began with the removal of backfill from Unit 5 down to Feature 3. The grid was extended to the NE and SE corner for one unit south and five units north to establish a new baseline. At five metres north a new site datum (Datum 2) was established. One unit was laid in to the north of Unit 5 (Unit 7) and four new units were added to the west (Units 8-11). The plan was to excavate a trench to the riverbank. The five additional units were excavated to 1m below surface. Unit 11 was a partial unit that extended to the eroding shoreline of the river (Figure 5). After the excavation, profile drawings were made of the north (Units 8 and 9) and east (Units 9 to 11) walls of the trench. A profile was also cleared at the shore down to water level. The profile was 2.5m deep, but no additional cultural levels were noted (Figure 6).

Feature 3 extended into the three units around Unit 5, with an extensive deposit of ceramics being uncovered in Unit 9 (Figure 7). A separate, but related feature (Feature 4) was found in Unit 7 that consisted of a large cluster of calcined bone, seeds and charcoal (Figure 8). Four large bags of sediment were collected from the unit. A small cluster of charred and uncharred seeds was also found in the SE corner of Unit 7. A charcoal sample associated with the pottery in Feature 3 has been dated to 2190 +/-30 B.P. (Beta-344775).

Figure 5: Boswell site trench.

Figure 6: Shoreline profile.

Figure 7: Ceramic cluster in Unit 9 (Feature 3 extension).

Figure 8: Large cluster of calcined bone, seeds and charcoal (Feature 4), Unit 7.

Laboratory Work Completed

Pottery

Pottery sherds were recovered from Feature 1 and Feature 3. Based on rim sherds, at least five individual vessels can be identified. All vessels have grit temper. Vessel 1 in Feature 1 represents a single undecorated vessel, with dark grayish brown paste (Munsell 10YR 4/2), represented by 39 sherds and 6 fragments. The conjoined sherds form part of the vessel's upper body and neck, which has a diameter of around 12cm, and a maximum thickness on the shoulder of 5.85mm. A total of 199 pottery sherds (including 1 rim sherd) and 693 fragments were collected from Feature 3. There now appears to be at least four vessels represented. Vessel 2 (Figure 9) has a pale brown paste (Munsell 10YR 6/3) and maximum body thickness of 9.70mm and a rim diameter of about 20cm. A horizontal band of linear dentate design appears on the exterior rim, and parallel horizontal bands of linear dentate design appear on the neck and shoulder.

Figure 9: Vessel 2. Photograph by Dominique Lavers.

Vessel 3 has a rim diameter of about 18cm and a maximum thickness at the shoulder of 8.43mm. The rim exterior exhibits horizontal bands of linear dentate design, overlain by dragged horizontal bands (left to right). A row of punctates separates these elements from vertical rows of linear dentate designs (Figure 10). This vessel also has a distinctive castellation, which is an attibute that Petersen and Sanger (1991:125) note is more

common on CP2 vessels from Maine and the Maritimes than in areas to the west of south.

Figure 10: Vessel 3. Photograph by Dominique Lavers.

Vessel 4 has a diameter of about 18cm and maximum thickness at the shoulder of 8.43mm. Diagonal bands of dentate design run from the edge of the rim down to the shoulder. These are overlain by two horizontal rows of fingernail impressions just below the rim (Figure 11). Vessel 5, from Unit 11, has a rim diameter of about 22 cm and a maximum thickness at the shoulder of 6.10mm. The neck and shoulder areas are heavily worn, but a row of small punctuation marks appear around the edge of the rim above another row of larger punctates (or linear dentate marks).

Figure 11: Vessel 4 (left) and Vessel 5 (right). Photograph by Dominique Lavers.

Lithics

Five lithic artifacts were recovered in 2011. These include a quartz biface fragment from Unit 3 and a jasper biface fragment from Unit 6. Three surface collected specimens include a jasper core fragment, one quartz core, and a groundstone fragment. The 2012 excavation recovered nine additional lithic artifacts and a nodule of graphite. Four ground stone specimens were recovered, including a ground fragment from Unit 11, a cobble hammer stone from Unit 8 and a section from a ground stone celt (Figure 12) and a possible grinding stone from Unit 9. Chipped stone pieces included two jasper end scrapers (Figure 13) and two core fragments from Unit 11 and a core fragment from Unit 10. In addition, 190 flakes were recovered (Table 1), including 14 quartz, 29 quartzite, 91 chert/jasper, 8 chalcedony and 48 rhyolite.

Figure 12: Groundstone celt from Unit 9 (see Figure 14 for location). The tool is sheared in half and both ends are badly damaged. Photograph by Dominique Lavers.

Figure 13: End scrapers from Davidson Cove jasper. Photograph by Dominique Lavers.

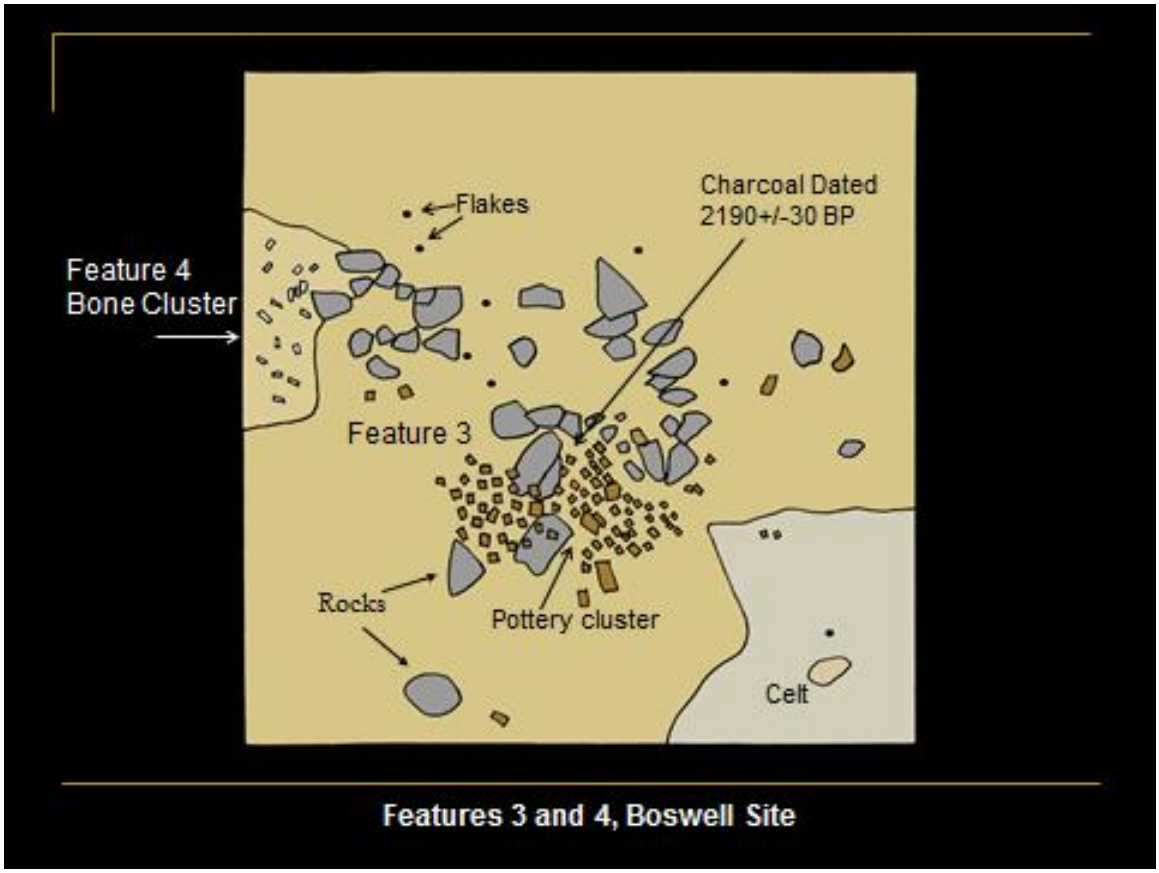

Figure 14: Composite drawing of units 5, 7, 8 and 9 revealing the extent of Features 3 and 4.

Ecofacts

Thirty charcoal samples, totaling 91.2 grams, were collected from Units 3-11, including each feature. These will be examined to determine species/genus and some samples will be archived for radiocarbon analysis. In Spring 2012, two sediment samples were processed at the Paleoethnobotany Laboratory, Memorial University (Holmes 2012). Both samples were processed using an IDOT flotation device, which produced three fractions; flot, coarse and fine. Sample 1, from Feature 1, produced four charred botanicals, including one fir needle (Abies balsamea), two raspberry or blackberry seeds (Rubus sp.) and one crowberry seed (Empetrum sp.). Sample 2, from Feature 2, produced 65 charred specimens, including 62 fir needles, one spruce needle, one possible woundwort seed (Stachys sp.) and one possible mugwort seed (Artemisa sp.). Other materials in the samples included charcoal flecks, fungal fruiting bodies, insect eggs, an insect head, and a fish scale.

In 2012 four sediment samples were collected from Feature 4, Unit 7 (Figure 14). These were processed in Fall 2012, Sample 1 using the IDOT flotation device and Samples 2-4 were combined and processed using a forced-air flotation machine (Harris and Morgan 2012). A pH test indicated a pH level of 5.5, indicating a strong acid level, which would inhibit organic preservation. Botanical remains from the flot included 8 sheep sorrel seeds (Rumex sp.), 1 charred and 1 uncharred blueberry seed (Vaccinium sp.), 1 possible dogwood seed (Cornus canadensis), 2 grass seeds (Panicum sp.) and 1 dandelion seed (Taraxacum officinale). An additional 8 sheep sorrel seeds were found in the fine fraction.

The charred crowberry, blueberry and raspberry (or blackberry) seeds represent edible berries, which were probably consumed at the site. The other seeds probably represent intrusive weed species. The presence of acorns (Quercus rubrus)

in some samples indicates the use of this nut species. The coarse fraction of the samples produced over 600 bone fragments. Four elements were identified as beaver (Castor canadensis).

Charred fuel wood samples from Feature 3 include fir, spruce, maple and oak. Charred fir and spruce needles probably also represent fuel woods.

Discussion

The two artifacts found at the Boswell site in 2009 consist of the base of a broad-bladed stemmed projectile point, a hallmark of the Terminal Archaic, and a complete biface (Figure 15). Even though no Archaic materials were recovered in situ, the presence of a Terminal Archaic projectile point at this site has important implications for our understanding of population movements in the region.

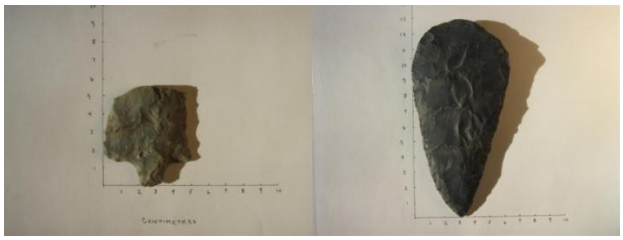

Figure 15: Boswell broad-bladed stemmed projectile point (left) and biface (Nova Scotia Museum).

It is generally agreed that there was a movement of people, usually identified with the Susquehanna tradition, into the Maritime Peninsula after 4000 B.P. (Bourque 1995; Deal 1986; Sanger 1975, 2006:241-242; Spiess et al.1983:97-98; Spiess and Hedden 2000; Tuck 1991). This group brought a distinctive tool-making tradition and the practice of cremation burial. They are also generally considered to be the technological innovators responsible for the transition, via steatite vessels, to the use of pottery in the Northeast (Tuck 1978b:37-39). Their stemmed projectile points and drills are relatively common in the Maritimes. The tradition is characterized by a more diversified subsistence pattern than that of the Late Archaic populations. Sites are located at both coastal and interior locations. Jim Tuck (1978) describes them as deer-bear-moose hunters that utilized both coastal and interior resources. Bruce Bourque's work at the Turner Farm site indicates that coastal Terminal Archaic groups exploited deer, seal, waterfowl, cod and shellfish (1995).

The most northerly Terminal Archaic site on the Maritime Peninsula is a cremation burial excavated at Ruisseau-des-Caps (CkEk-2), in the Gaspé area (Dumais 1978). The burial is situated on a terrace, about 20m above the St. Lawrence River. It consists of an elliptical-shaped pit containing small calcined bone fragments, and has been dated to about 3670±90 B.P. (QU-357). The grave inclusions include two broad-bladed projectile points, a drill and drill tip, biface fragments, a possible pestle, and an abrading stone.

In New Brunswick, the densest area Terminal Archaic occupation is along the Chiputneticook-St. Croix Drainage and Passamaquoddy Bay, where material culture has been identified from at least 13 sites. However, the only excavation of an undisturbed Terminal Archaic component is at the Mud Lake Stream site (BkDw-5; Deal 1986). This site is situated below the rapids on Mud Lake Stream, which drains into Spednic Lake. The Terminal Archaic component is represented by two features in the basal stratum of the site.

Radiocarbon samples from the two features have dated the component to about 4000 B.P. The two features produced 14 broad-bladed projectile points and fragments, as well as three drill fragments, two small bifaces, and a chipped stone celt. A fully-grooved axe and a plummet collected on the beach in front of the site are also both believed to date to this period. Faunal remains recovered from the Terminal Archaic component include 31 calcined fish bones, 14 of which have been identified as American shad (*Alosa sapidissima*).

David Sanger (2008:27-28) has suggested that the early Terminal Archaic presence at Mud Lake Stream likely represents a quick movement of people along the interior waterways and portage

routes to the St. Croix River and to a lesser extent to the Saint John River drainage. A few broad-bladed projectile points and soapstone bowls have been recovered from the Saint John River system. The largest collection is from Portland Point (BhDm-7) where seven artifacts were recovered by Russell Harper in 1956 from disturbed contexts (Jeandron 1996). These include three steatite bowl fragments, one broad-bladed projectile point and a drill.

projectile points, drills and large end scrapers similar to those identified by David Sanger in Passamaquoddy Bay (Sanders 2013; Sanders et al. 2009). Broad-bladed projectile points have also been recovered at the Indian Gardens (BbDg-10), Eel Weir VI (BbDh-6), and Bear River (BdDk-4) sites in southwestern Nova Scotia (Christianson 1985:9; Connolly 1977; Ferguson 1986). Site locations suggest a preference for river outlets on large lakes, although rising sea levels may have inundated coastal sites.

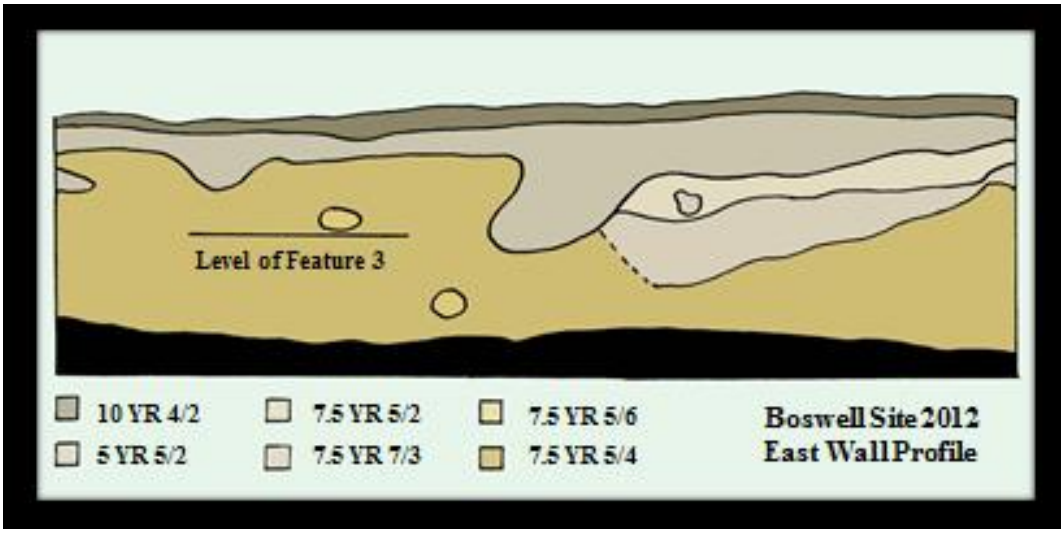

Figure 16: East Wall Profile, indicating stratigraphic level of Feature 3

At least 20 Nova Scotia sites have produced Terminal Archaic material culture (e.g., Deal and Rutherford 2001:144-145; Deal et al. 2006). The largest single collection includes eight projectile points, a drill and a shallow-grooved gouge from Tusket Falls (AlDl-17), near Yarmouth (Sanger and Davis 1991:70). Several other sites are clustered along the Lake Rossignol-Mersey River and the Gaspereau Lake-Gaspereau River drainage systems.

In 1967 John Erskine identified a Terminal Archaic component at the Gaspereau Lake site (BfDb-05), which consisted of six broad-bladed projectile points and a fully-grooved axe (Murphy 1998). Dawn Laybolt (1999) identified six additional sites on Gaspereau Lake with Terminal Archaic material culture. Since 2007, CRM Group has been testing sites on Gaspereau Lake. They have identified five sites with Terminal Archaic components and the familiar range of tools, including broad-bladed

Conclusion

The Boswell site is a multicomponent and deeply stratified site, which may be typical of sites along the Annapolis River system. Sites are affected by seasonal flooding and deposition of sediments, and by the long term effects of meander formation. The effects of flooding are illustrated by the east wall profile of the Boswell site trench (Figure 16), which shows the nearly 50 cm of sterile deposits overlaying Feature 3. Terminal Archaic deposits have not yet been identified. The diagnostic broad-bladed projectile point may have eroded from the bank directly, from below the Middle Woodland stratum, or it may have been found *in situ* at water level (i.e., about 2.5 m below the surface at Datum 2).

Pottery from the Boswell site confirms an early Middle Woodland to Late Woodland occupation. Ecofacts from the site suggest hunting of beaver and fishing, along with the collection of various edible berries and nuts.

It is likely that other Terminal Archaic sites will eventually be discovered along the Annapolis River. An Acadian map (c. 1738-48) illustrates a portage route connecting the start of the river with the Minas Basin area (Dawson 1988:133). French portage routes often followed existing Mi'kmaq trails. The Annapolis River was undoubtedly a highway for the movement of people and trade between central and southwest Nova Scotia. It also provides an important link between the clusters of Terminal Archaic sites in these two regions of the province. ♦

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South Canoe Wind Farm

By Courtney Glen, Davis MacIntyre & Associates Limited

In November 2012, Davis MacIntyre & Associates Limited conducted an archaeological resource impact assessment of the proposed South Canoe Wind farm in South Canoe Lake, Lunenburg County. The assessment involved the reconnaissance of a large study area where the access roads and turbine candidate sites were located. The desktop study noted that the shores of South Canoe Lake would be of low to moderate potential for First Nations resources, particularly since the lake was dammed in 1942. This caused significant flooding of the shoreline and adjacent low points, potentially submerging sites of First Nations occupation.

Plate 1: Wooden sill and plank construction of cabin, looking southwest. Note the wooden sills are placed directly on the ground.

After European contact, South Canoe Lake became part of the township of Falmouth grant but it is not known how many of the lots were occupied upon granting. The A. F. Church maps of Hants County (1871) and Lunenburg County (1893) indicate little land use or occupancy of the study area in the late nineteenth century. The early twentieth century marked a period of extensive logging activity and the 1931 Geological Survey of Canada map identifies a sawmill and a camp (probably associated with logging) in the vicinity. The subsequent flooding of South Canoe Lake in 1942 most likely submerged any remains of the saw mill.

Plate 2: Cast iron bed frame protruding from the cabin collapse.

When the field reconnaissance was conducted, the majority of cultural activity noted in the study area was attributed to modern logging. However, a collapsed cabin and associated camp site were identified within the study area, based on some information provided by local hunters. The camp site is believed to date to the pre-1930s and is probably associated with logging.

The cabin was situated in a mixed forest in a grassy area and was constructed with wooden log sills sitting directly on the ground (Plate 1). The walls and roof were composed of wooden planks, with asphalt shingles covering the roof, which had collapsed into the house. Multiple colours of asphalt shingles were noted on the cabin which

may indicate use over a period of time or the reuse shingle scraps.

Although portions of a wall and the roof had fallen in, some of the interior furnishings were identifiable, including a cast iron bed frame (Plate 2). Two large glass alcohol jugs were noted within the cabin (Plate 3). Styrofoam was also observed within the ruins, possibly the sign of a modern hunter's or hiker's lunch. Other artifacts associated with the site were found in the area around the cabin, most notably the remains of a decorative cast iron stove. A maker's mark was observed on the stove, reading "Silver A___" (Plate 4).

Plate 3: Two glass alcohol bottles located within the collapsed cabin.

Plate 4: Pieces of the decorative cast iron stove, including the maker's mark "Silver A___" (bottom right).

It is important to reflect on the construction technique of the cabin. The building was most likely intended for a short seasonal occupation. This intention is reflected in the building technique, where wooden sills were laid directly on the ground to form the foundation, with minimal ground disturbance. Once the wooden structure has decomposed completely, there will potentially be very little visible indication of the site. If this building technique was commonly used for resource camps, it is probable that they will be difficult to detect during field reconnaissance. ♦

Palimpsests of Community: On 2012 Excavations at the St. Croix Site, Hants County

By Cameron Milner, Memorial University

Nova Scotia has one of the richest and most diverse histories of human occupation in North America, from the introduction of Paleo-Indian groups approximately 10,000 years ago, through the influx of a variety of aboriginal culture groups and eventually some of the earliest European settlements in Canada. These groups have built and altered the archaeological record and made for complex and interesting sites. One such site is that of St. Croix in Hants County.

St. Croix has been valued through its occupation for a variety of reasons. Aboriginal groups utilized the site as a fishing camp due to its proximity to the head of the tide, and later Acadian and Planter communities utilized its arable farm land. These occupations have left a distinct mark on the landscape of St. Croix, not only in the development of the community but in the layers of the archaeological record. Sub-Surface testing in July 2012 by Cameron Milner, in conjunction with his Masters research at Memorial University, has continued to explore the history of this community.

History of Archaeological Research

The site was first located in 1962 by John Erskine while investigating the source of a collection owned by Clarence Burton. Subsurface testing found the site to be highly disturbed and it was thought that no further excavations were warranted. The site was relocated during the Minas Basin Archaeology Survey in 1989 and found to be much larger and more in-tact than previously thought. In addition, a possible Acadian cellar was found on an adjacent property. Two field schools (Plate 1), one in 1990 by Memorial University's Archaeology unit and another in 1993 through Acadia University's Geology Department collectively opened up thirty-three one meter square test units and located 7214 lithic artifacts and sherds from approximately 91 ceramic vessels. Graduate projects concerning the artifacts found at St. Croix were undertaken in 1994.

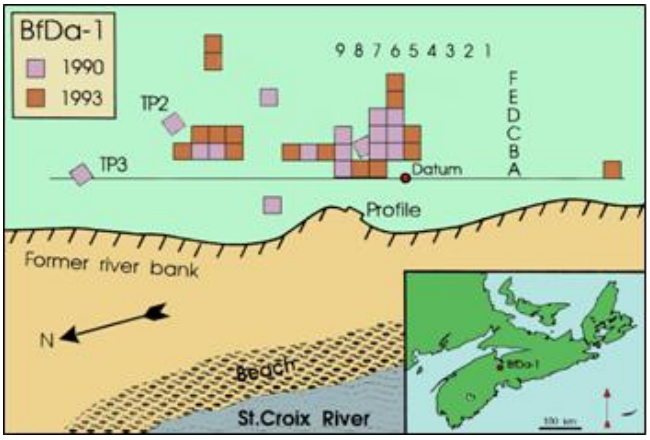

Plate 1: Map of previous excavations. Image courtesy of Michael Deal.

The site is one of the most extensively dated sites in the province. Both radiocarbon dating and thermoluminescence dating were utilized to date the earliest site occupation to 2500 +/-120 B.P. (Godfrey-Smith, Deal, Kunelius, 1997). Given the presence and decorative styles of recovered ceramic material, this date places the site's occupation within the Woodland Period, 2500-500 B.P. Artifacts associated with the site from Clarence Burton's collection add a possible Late Archaic element, although no in situ evidence has been found to confirm this. Additionally, extensive paleoethnobotanical analysis has been completed.

2012 Field Season

From July 2nd to July 27th, 2012, Adrian Morrison and the author pursued subsurface testing at St. Croix. Assisting us in our efforts were our MA supervisor Michael Deal and volunteers Heather MacLeod Leslie, head of KMKNO's Archaeology division, her son Jake Leslie and Jodie Howe, a volunteer from the Millbrook Mi'kmaq community. Also present for two days were volunteers Steve Wall, a student of St. Mary's Physical Anthropology undergraduate program, and Keith Pierce, a local resident with a keen interest in the Mi'kmaq presence in the area.

After having re-established the datum and baseline, the baseline was extended north along the St. Croix

River to edge of the property line. Utilizing trowels and brushes, a series of 1m x 1m excavation units were dug in areas of interest. Units F3 and A15 were opened first to expand on work conducted during the 1990 and 1993 field schools in areas where previous artifact counts were high (Plate 2). F3 yielded a large assortment of pottery and lithic material, while A15 yielded only lithics. Unit A25 was excavated next as the first unit along the baseline extension due to its proximity to a large depression initially thought to be an Acadian cellar. A25 had both deposits of ceramics and lithics, as well as historical artifacts including a pipe stem, but revealed no indication of an Acadian origin to the depression.

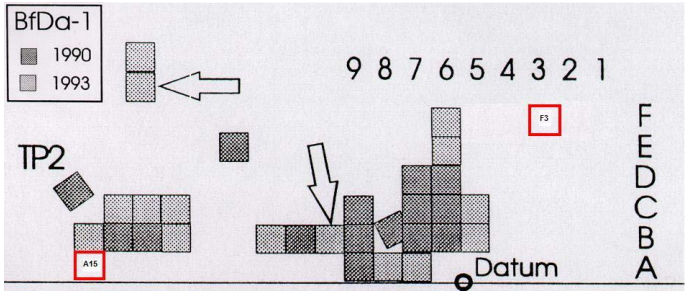

Plate 2: Map of previous excavations in relation to the 2012 units, A15 and F3 highlighted in red. Source image courtesy of Michael Deal.

With the help of volunteers, units A38 and A53 were opened, extending excavations north along the baseline. Both yielded significant lithic and ceramic artifact counts, as well as hearth features. A38 is significant for the recovery of three projectile points of differing shapes and source materials.

With units on the baseline being excavated by volunteers, Morrison and the author undertook the extension of the baseline south towards the highway, opening units in areas known for past domestic cultivation. Unit 2Y -64 was opened in what was known in past reports as Sullivan's Garden, named after the previous landowners. The surface of Sullivan's Garden is littered with artifacts which have been turned up due to years of cultivation. Excavations revealed that the artifacts within the tilled soil extends to approximately 40cm, with a thin layer of undisturbed occupation layer above sterile. The Ross Garden Unit, or RGU, was undertaken in a neighbour's yard that had been cultivated in the past by the current landowners, the Ross family. Although less artifact dense than 2y-64, RGU had a similar area of undisturbed soil above sterile approximately 30cm below the surface containing a number of lithic and ceramic artifacts.

Unit A62 was opened within the final days of excavation and revealed a thin deposit of artifacts, extending the known parameters of the site 60m beyond its previously established boundaries. In an attempt to confirm the origin of the depression next to A25, unit F25 was opened on the opposite side of the depression. Due to time constraints, F25 was only a 50cm x 50cm test unit. The test unit revealed no indication of an Acadian element associated with the depression.

Upon completion profiles of units were drawn and photographed. All units were then backfilled. Total station measurements were taken for mapping purposes.

Completed Laboratory Work

Artifacts

Laboratory work began during the field season through borrowed lab space in Acadia's Geology and Environmental Sciences labs in Huggins Science Hall building. Work here consisted of washing and dry brushing artifacts, as well as the construction of a preliminary catalogue. Upon the author's return to Memorial University, lab space was acquired in the Archaeology Department's Palaeoethnobotany lab in the basement of Queen's College. Work there proceeded with cleaning and organizing artifacts and the expansion and development of the catalogue. Currently the catalogue contains 210 artifacts or groups of artifacts, such as groupings of ceramics or nails based on location and morphology. Soil samples taken during the excavation were processed utilizing two kinds of water flotation devices for palaeoethnobotanical analysis, a process that is still ongoing.

Lithic Analysis

Lithic artifacts found at St. Croix come in a variety of shapes and source materials. Projectile points, bifaces, scrapers, unifaces, cores, a single groundstone tool and debitage flakes make up the lithics found on site.

Plate 3: Projectile points. Left to right, top row, BfDa-1: 2138, 2240, 2274, 2206. Bottom row, BfDa-1: 2214, 2143, 2183, 2226. (Credit: Cameron Milner)

The majority of the 14 projectile points are contracting stem, from the Early Middle Woodland Period (ca. 2350-2150 B.P.) and corner-notched points from the Middle to Late Woodland Period (2000-500 B.P.) (Plate 3). BfDa-1:2138, BfDa-1:2143, BfDa-1:2183, and BfDa-1:2214 are all of the shallow shouldered, long bladed contracting stem style. The most visually striking point, BfDa-1:2240, has a fine point, wide shoulders and contracting stem. BfDa-1:2182 and BfDa-1:2183 bear a striking resemblance to pieces from Ritchie's collection of New York Lamoka points, encompassing both the straight stemmed and slightly side notched varieties, a style that Ritchie notes was still in use until the Middle Woodland Period (1971:29). BfDa-1:2206 and BfDa-1:2226, both corner-notched, are most likely from the early Late Woodland Period due to their relatively large size and corner-notching. BfDa-1:2226, with its distinctive black chert, may be related to BfDa-1:2221, a scraper of the same material.

Other lithic artifacts include 3957 debitage flakes, 35 bifacial tools or fragments, 19 unifaces, 13 of which were scraping implements, and a number of cores, utilized flakes and possible blanks. Also found was one ground stone hammer. In keeping with the Woodland Period, the majority, if not all the source materials are local, ranging from cherts and jasper from Scots Bay, chalcedony from Davidson's Cove and quartzite from White Rock.

Ceramic Analysis

Excavations this summer recovered 32 decorated ceramic pieces. Decorative styles range from pseudo scallop shell (3 specimens), fabric paddling (2), dentate (rocker and linear) (17), cord wrapped stick (3), punctuate (3) and a variety of trailing and combing patterns (4). In addition, 169 non decorated pieces were also found. The majority of these pieces were fired with a grit temper, but seven contained shell temper which was used mostly during Middle Woodland Period.

A complete analysis of the ceramics is on-going. Further identification of decorated specimens will allow for relative dating utilizing Petersen and Sanger's (1991) tentative model for the Ceramic Period in Maine and the Maritime provinces. It is worth noting that all units except for A15 contained ceramics. There was no indication in the archaeological record as to why this might be the case.

Historic Artifacts

Units 2Y-64 and RGU were placed in areas of known disturbance and the historic artifacts found reflect that. Ceramics recovered were a mix of refined white earthenwares with transfer print and hand painted decorations as well as two pieces of ironstone and porcelain. Small glass fragments were also found, most of which have been melted past the point of being diagnostic. Metal artifacts include a broad variety of modern and historic nails, the oldest being iron cut nails from the mid 1800s. Fragments of clay pipes were found throughout the site, including a pipe bowl embossed with the letter 'J'. A possible trade bead (Plate 4) was also found in 2Y-64, the only

hesitation to its identification being an half enclosed end on one side.

Plate 4: Probable trade bead (BfDa-1: 2197) found in Sullivan's Garden. . (Credit: Cameron Milner)

Ecofacts

As mentioned before, the St. Croix site has already been extensively dated but charcoal samples were taken during the 2012 field season. Although most of the charcoal was highly fragmentary, a few units did produce pieces large enough for sampling. These have yet to undergo dating, although the species of the trees have been determined as spruce and oak.

Faunal remains include two pieces of mammalian bone. The butchering marks and their find location in areas of previous domestic cultivation lead the author to believe they are relatively modern kitchen waste. Previous faunal identification efforts have revealed only two identified specimens, the right distal tibia of a fox (Vulpes fulva) and an unidentified fish vertebra despite the recovery of 786 faunal samples. High acidity in the soil makes for poor bone preservation and makes classification difficult.

Palaeoethnobotany

One of the major focuses of this project has been palaeoethnobotany. Soil samples taken from occupation layers and features have been subjected to floatation utilizing two different pieces of floatation equipment; a Flote-tech style floatation machine which uses forced air to float large samples and the IDOT (Illinois Department of Transportation) screen used for manually processing smaller samples. During the floatation process, organic material (flot) floats to the surface where it is collected and dried. The dried flot is then examined using a binocular microscope. Seeds, needles, nuts, micro artifacts, charcoal, insect remains and fungal fruiting bodies are collected and identified using sample collections. From the 12 samples consisting of a total of 22,775.7g of sediment, three charred seed specimens were recovered including two blueberry (Vaccinium sp.) seeds and one cherry seed (possibly Prunus virginiana).

Summary

Using evidence from the 2012, 1990 and 1993 excavations, a picture can begin to be formed of life at St. Croix through time. Thermoluminescence and radiocarbon dating have pointed to an occupation spanning the full breadth of the Woodland Period, and the lithic and ceramic artifacts reinforce this date range, revealing a possible summer and early fall fishing camp used for generations. Excavations have proven that the site extends much farther and wider than previously known, and thanks to investigations in areas of domestic cultivation, areas once thought irrevocably disturbed now warrant further excavation. More work still has to be done, but through the analysis of past, current and future research we can begin to decipher the palimpsests of each community and write the history of St. Croix.

Acknowledgements

Many thanks to the following people who made this possible: Mike Deal and Memorial University; Katie Cottreau-Robins, Steve Powell and the Nova Scotia Museum; Heather Macleod-Leslie and KMKNO; volunteers Adrian Morrison, Brittany Roberts, Jodie Howe, Jake Leslie, Stephen Wall and Keith Powers; and the landowners D.Wasowski, N. Geres and B. and M. Ross. ♦

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Curator's Corner…

By Katie Cottreau-Robins, Nova Scotia Museum, Collections and Research Unit

Nova Scotia archaeology remained robust in 2012 with a record year of fieldwork, research, consultation and stewardship activity. Over 170 heritage research permit applications for archaeology were reviewed by the Curator's office and issued to qualified archaeologists or archaeologists-in-training as part of Masters or Doctorate level research projects. Again, the highest percent of permits were directly linked to cultural resource management projects and pre-development archaeological screenings and assessments. Characteristic to 2012 was the significant level of archaeological assessment and First Nation consultation connected to aboriginal archaeological investigations as Nova Scotia's hydro systems underwent review and refurbishment planning to meet Canadian dam safety regulations. Initiated by Nova Scotia Power Inc., many previously recorded pre-contact site areas along the various hydro systems have been the subject of fresh review and assessment. In addition, many new sites have been recorded and several mitigated resulting in important pre-contact, proto-historic, and historic Mi'kmaw site data and collections for community review, study, exhibit and loan.

Figure 1: One of six Great White Shark teeth, Carcharodon carcharias, excavated in 2012 at the site of a Nova Scotia Power Inc. archaeological mitigation project in Kings County, Nova Scotia. Identification of the shark teeth assemblage was completed by Andrew Hebda, Curator of Zoology, NSM. (Image: K. Cottreau-Robins, 2012)

In other news, 2012 was highlighted with a range of specific projects and research endeavors involving Nova Scotia Museum archaeology and ethnology staff, research associates, joint committees and external partners.

Debert Standards, Revised Edition

In the spring of 2008, regulations to Nova Scotia's *Special Places Protection Act* were adopted by the Province of Nova Scotia that state "A person must not excavate or otherwise disturb the soil on any portion of the Debert Lands without first completing an archaeological resource impact assessment under a heritage research permit for that portion of the Debert Lands."[1] Linked to the regulation is a Memorandum of Understanding between the Department of Communities, Culture and Heritage and the Assembly of Nova Scotia Mi'kmaq Chiefs that provides for a combined Province of Nova Scotia and Mi'kmaq review and recommendation process for the issuance of Category C archaeological resource impact assessment permits for the defined Debert Lands.[2] Alongside the new regulations for the Debert Lands was the development of the "Standards for Archaeological Impact Assessment and Reporting in Debert and Belmont, Nova Scotia." The Standards are archaeological testing procedures and recording methods that reflect the heritage significance and research importance of the Debert area Palaeo landscape and the archaeological sites contained within. The Standards have been developed to identify archaeological resources and to provide information for the assessment and management of significant archaeological resources.

[1] See the 2008 Debert Standards at http://novascotia.ca/cch/exploring/docs/Debert_Testing_Standards.pdf

[2] The "Debert Lands" refers to the Debert transfer lands, a collection of land parcels near the Debert and Belmont Palaeoindian archaeology sites conveyed to the County of Colchester in 2008.

Since the implementation of the Standards in 2008, nearly 30 heritage research permits have been issued and through that fieldwork experience, insights have been gained about archaeological testing. In 2012, the Debert Standards Review Committee distributed to the Nova Scotia archaeology community a revised version of the Standards. The revised Standards incorporate new in-the-field insights and provide clarification on points noted by permit-holding archaeologists and the Review Committee as requiring additional information and/or guidance. New sections on reaching depth, testing in wet areas, surficial sampling, monitoring, and mapping were added and distributed for comment. The Review Committee is confident the Revised Standards is a better procedural and technical document. Consideration of the helpful feedback from the archaeology community has been completed. Next steps include final review of the revisions by Communities, Culture and Heritage, the Confederacy of Mainland Mi'kmaq and the Kwilmu'kw Maw-klusuaqn Negotiation Office and the initiation of the formal Provincial and Mi'kmaq approval process. Upon approval, the Revised Standards will be posted on the Communities, Culture and Heritage website.

Figure 2: A coronet graver, a distinctive Palaeoindian tool form, collected under heritage research permit and the Debert Standards framework in 2012. (Image: Roger Lloyd, Nova Scotia Museum, 2012)

Nova Scotia Museum Collections and Research Virtual Exhibit

In 2012 a team of curatorial staff members at the Nova Scotia Museum were tasked with an exciting project - the development of the Museum's first virtual exhibit to highlight collections and research. Thirty six team meetings over seven months brought together innovative ideas and experience in history, marine history, archaeology, botany, zoology, ethnology, photography, conservation, geology, interpretation, and design. Given this was a fresh initiative, the focus was on 100 objects only representing all the curatorial disciplines active at the NSM. The building blocks are in place and a soft launch of the site designed to collect feedback has taken place. Staff will soon begin meetings to discuss next phases including more collections on line, social media opportunities, current research news, public presentation and more. The ideas are endless!

Figure 3: Ethnologist Roger Lewis examining the Bedford Barrens Petroglyph. (Image: Roger Lloyd, Nova Scotia Museum, 2012)

The new Collections and Research web pages contain items of interest such as Why Collect?, Meet the Curators, Collections Data Links, Ask A Curator, Policies, NSM Curatorial Reports and the 100 objects. Archaeology Collections featured on the new site include a slate ulu found near Digby Neck, a wetstone from a Loyalist plantation, a Maritime Archaic banded green slate bayonet, a Cross of St. Louis from the 1725 shipwreck of the Chameau and more. Excellence in photography for the objects, artifacts and specimens was critical to the VE Team. Standard and 360 degree methods were employed and finely coordinated by NSM photographer Roger Lloyd. A team from Dalhousie

University worked with staff to experiment with 3D imagery.

Research Associates

Currently there are three Research Associates in Archaeology at the NSM engaged in collaborative projects that will contribute to the knowledge and understanding of Nova Scotia's past and support future archaeological work. April MacIntyre of Davis MacIntyre and Associates has been working with the Curator of Archaeology on the development of a book focused on the urban archaeology of Halifax, Nova Scotia. The book, a historical archaeology endeavor, will highlight eighteenth and nineteenth century sites and collections located on the city's peninsula. The NSM newly launched e-publications web site is the planned venue for publication. An e-publication provides an opportunity to include many images and highlight the exceptional examples of material culture collected since the mid-1980s. The goal is to refresh the popular 1987 volume *Artifacts of Eighteenth-Century Halifax* and expand the narrative to include the history and tremendous finds dating to the nineteenth century.[3]

Rob Ferguson, recently retired archaeologist from Parks Canada, has also joined the NSM to work with the Curator on the completion of archaeological work that took place in support of the nomination proposal for the Grand Pre Cultural Landscape as a UNESCO World Heritage Site. Five years of field work and research was directed to the archaeological component of the nomination proposal and as a result the archaeological value and significance of the landscape was confirmed and expanded. Elements of Mi'kmaq, Acadian, Planter and nineteenth century domestic settlement were recorded during survey and testing efforts. Sites were found, artifacts collected, soil cores extracted, and aboiteaux were recorded. The nomination, which reflected a long-term multidisciplinary effort, was successful and in June 2012 the UNESCO designation was ceremonially announced. Importantly, an archeological strategy for the cultural landscape was attached to the nomination proposal. Completion of the artifact and soil core analysis and field reports will contribute to a developing resource library for the newly designated property.

Figure 4: Andrea Robichaud of the Mount Alison Dendrochronology lab extracts a core from a section of an aboiteau discovered during nomination proposal work on the Grand Pre marsh. Analysis would determine a date of c.1686 for the artifact. (Image: K. Cottreau-Robins, 2009)

Late in 2012, Dr. Jacob Hanley, Geologist, Department of Geology, Saint Mary's University, joined the NSM as a Research Associate teaming up with the Curator on a research initiative that focuses on pre-contact copper artifacts in the NSM archaeology collection including artifacts from recent mitigation work in Kings County. Following discussions and meetings with Dr. Hanley, the archaeological consultant for the Kings County project, and the archaeology and ethnology staff of the NSM, analysis and data collection on specific artifacts began using laser ablation as the principle method. The research objective is to inform questions of copper sourcing and trade networks linked to copper retrieved from archaeology sites of the pre-contact period. Of greatest appeal with laser ablation is the almost completely non-destructive nature of the method. It is also our contention that laser ablation results in a level of comprehensive and concentrated geological data that can best enlighten long-standing hypotheses concerning copper sources and the archaeological record. A variety of sites in Nova Scotia where copper artifacts have been collected have been

[3] S. Davis, C. Cottreau, and L. Niven, *Artifacts From Eighteenth Century Halifax* (Halifax: Saint Mary's University, Nova Scotia Museum and the City of Halifax), 1987.

added to the study. For comparative analysis, data from native copper sources in the Maritimes, US and Europe will be incorporated. Collaboration with archaeology staff at the University of New Brunswick, in order to expand the study to a regional framework, is also in discussion. Laser ablation is a highly specialized, time-consuming and costly method. The project is supported by a research grant awarded to Dr. Hanley. The grant has provided for use of the new million dollar laser ablation facility at UNB (Geology Dept.), a laser ablation lab technician (Dr. Chris MacFarlane), and SMU undergraduate student support. We anticipate a presentation of the first round of results in the coming year and the publication of two peer reviewed articles, one on method and one on the project itself. The collaborative and interdisciplinary nature of the project has facilitated leading-edge research not before undertaken with the provincial archaeological collection.

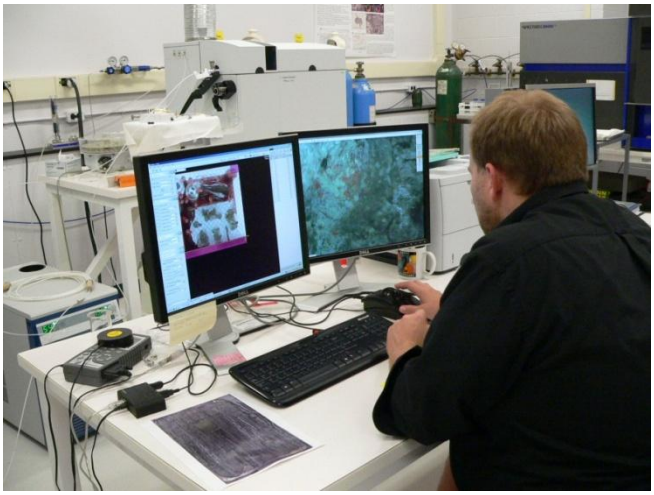

Figure 6: Dr. Jacob Hanley working to find points for ablation on the surface of the copper artifacts. (Image: K. Cottreau-Robins, 2013)

The above is just a snippet of what was a very energetic and stimulating 2012. My appreciation is extended to my fellow curators, particularly Stephen Powell (Assistant Curator and Registrar, Archaeology) and Roger Lewis (Assistant Curator, Ethnology), as well as all collaborators, partners and colleagues who shared their advice and insights. None of this work happens in isolation. Here is to an equally enjoyable 2013! ♦

Figure 5: Left - Laser ablation chamber in the laser ablation lab at UNB Geology Department (Image: K. Cottreau-Robins, 2013)

Editor's Note:
The purpose of this newsletter is to improve communication of research in Nova Scotia between archaeologists and to inform the broader public. A special thanks to all the authors for making this another successful edition of Archaeology in Nova Scotia News.
Stephen Powell, NSM