# A FORM AND FUNCTION STUDY OF PRECONTACT POTTERY FROM ATLANTIC CANADA

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# A FORM AND FUNCTION STUDY OF PRECONTACT POTTERY FROM ATLANTIC CANADA

BY

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## Abstract

Pottery is an ubiquitous feature of the Woodland period (c. 500 B.C. to A.D. 1500) in northeastern North America. Mobile hunter-gatherer populations in this region used pottery containers despite their fragile nature. Although much work has been done on pottery design, vessel form and function are regrettably under-studied due to the small number of vessels suitable for analysis. Through a detailed analysis of near-complete vessels and sizeable rim sherds from Nova Scotia, New Brunswick, Prince Edward Island, and Western Newfoundland we can begin to see variation in pottery form throughout time, as well as across the region. Once vessel form is established we can begin to address the issue of vessel function and gain a broader perspective as to how these pots were used. Although there is still much work to be done, this research can serve as a starting point to uncover more about the role(s) of pottery among precontact hunter-gatherer populations.

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## Chapter 1: Introduction

A pottery vessel begins life in the mind and hands of the potter, and it is made to suit a specific purpose (or function). My interest in this study is to understand the relationship between form and function in pottery vessels recovered from precontact archaeological contexts in the Atlantic Provinces. Despite the availability of appropriate analytical techniques, precontact pottery in this region has remained under-studied in this realm of research. In fact, pottery use has been largely a mystery since its first consideration in the late 19th century, since mobile populations do not generally move about the landscape with heavy clay pots (Arnold 1985). Ceramic vessels were a large part of aboriginal society for many centuries, but contact period chroniclers found little trace of them. It appears that vessel manufacture in this region became obsolete with the introduction of European metal cookware (Whitehead 1991).

According to James Deetz (1972: 108), archaeology has three major goals: the reconstruction of culture history, the reconstruction of past lifeways, and the identification of the processes of cultural change. Within pottery study, seriation based on changing designs has been used extensively in the past in developing relative chronologies in northeastern North America. Moreover, form and function studies have become important in the reconstruction of these past lifeways and in determining human behaviour through its examination of vessel use. Processes such as invention and innovation in technology, design, and function, inform us on how a culture may have changed over time. With that in mind, this study serves as a broad look at how pottery

vessels may have been manufactured and used during the woodland period of Atlantic Canada. I have gathered vessel data from New Brunswick, Nova Scotia, Newfoundland and Labrador, and Prince Edward Island for a regional analysis through the use of formal and chronological models developed for Atlantic Canada and the northeastern United States, (Bourgeois 1999, Kristmanson, 1992, Newsom 1999, Petersen and Sanger 1991).

In Chapter 2, I delve into the history of ceramic form and function research in Atlantic Canada, beginning with the early bulletins and reports and on to scholarly journal articles. Much of the work completed on pottery vessels comes from site reports (mostly unpublished) and technical bulletins. Pottery, being usually a small percentage of an artifact collection from most sites, usually appears as a section in a larger paper or site report. It was important to gather this diverse information into a single inventory for analysis. I reviewed methods used by researchers to identify vessel forms and more specifically from smaller sherds, as they make up the greater part of this study catalogue. These methods were imperative for my field research. I traveled within eastern Canada to witness pottery manufacture and experience it myself, as well as to examine vessel collections first-hand and record my findings. In chapter 3, I divide the study region into geographical sub-regions and discuss information concerning individual sites and their collections.

Chapters 4, 5 and 6 are devoted to the presentation and analysis of the collected data. In particular, I present a general formal typology and seriation of the collection, thus allowing a somewhat more comprehensive perspective on the vessel forms of Atlantic Canada. Next, I discuss vessel function studies in the region and what they may tell us

about these vessels. Lastly, I offer suggestions for future research for anyone keen on examining the unique nature of vessel use in mobile societies.

## Chapter 2: Pottery Form and Function Research in the Atlantic Provinces

Although pottery was not always at the forefront of archaeological discussions, over time it proved to be a useful temporal indicator for archaeological sites and a discussion point for the daily activity of hunter-gatherer populations. Early works discussing pottery in Atlantic Canada were generally short reports concerning near-complete or reconstructed vessels. Honeyman's discourse with DisBrisay (1879) is one of the first articles to really showcase pottery from the region. They discuss the need for a specific pottery vessel to be restored. Honeyman's letter to the Nova Scotian Institute of Science describes the vessel and its fragments in detail and the discussion centers on how this find may be related to the native populations. Matthew and Kain's (1904) report to the Natural History Society showcased a ceramic vessel donated by a local man, Mr. Duncan London. This particular vessel, first collected at the edge of Maquapit Lake in the Saint John River Valley, New Brunswick, is still on display at the New Brunswick Museum.

These early pottery papers illustrated just how important the activities of the precontact populations were to researchers in the region. They referred to information from these finds as "of more importance to humanity than a record of [society's] wars and conquests," (Matthew and Kain 1904: 346). McIntosh (1909) summed up this early surge of interest in aboriginal pottery as being mainly focused on the design elements in all pottery sherds uncovered in the region to date. His discussion focuses on what tools may have been used to achieve these particular designs and the patterns on each vessel.

Moreover, there was a notable interest in whether or not these designs showed chronological change.

The discussion of precontact pottery, and archaeology itself in eastern Canada, experienced a drop in development that continued for several decades due to the onset of the war years and a multitude of other factors. One exception is Wintemberg's (1942) article on the distribution of precontact pottery across the entire country. He refers to the "Woodland Pattern," which he defines largely through its disassociation with European trade goods and the different decorative treatments on the pottery. In the article Wintemberg also discusses the movement of pottery styles across the landscape and the diffusion of ideas.

Pottery studies were renewed in the 1970s with Davis' (1971) research on the pottery of the Key Hole site in New Brunswick, as an Honour's project at the University of New Brunswick. This was followed by a published report concerning a complete vessel found by local resident Wilbur Sollows in a shell midden near Yarmouth, Nova Scotia (Davis 1974).

Ultimately, it is not until the 1980s that researchers in northeastern North America once again take up the discussion of precontact pottery in earnest. The collection of pottery from excavations and surveys grew substantially during this lull in the literature, resulting in the creation of a typological sequence for Maine and the Maritimes (Petersen and Sanger 1991). This sequence has since been used and modified by various researchers (Bourgeois 1999; Kristmanson 1990, 1992; Newsom 1999; Teal 2001).

**Recent Regional Variation in Ceramic Typology**

The Petersen/Sanger typology broke up a previously three-part chronology into seven temporal groups each associated with specific attributes based on 164 radiocarbon dates in association with pottery sherds and nearly complete vessels throughout Maine, US and the Canadian Maritime provinces (Table 2.1). The sequence focuses on decoration and decoration application as it relates to vessel form. Ceramic decoration and morphological attributes moved through phases. In summary, the first six ceramic periods (or CP 1-6) represent the Woodland Period to contact where CP7 refers to the time during and after contact. Although there is little disagreement on the date ranges represented by each of these 7 divisions among researchers, there is some regional discrepancy on which attributes should be associated with each period (for a more detailed description of the vessel attributes, see Petersen and Sanger 1991).

*CP1 – The Early Woodland Period (ca. 3050-2150 B.P.)* These early vessels are grit-tempered and usually fabric impressed with subsequent smoothing on the exterior. The forms were conoidal and small with an approximately 1-liter capacity. The rims were usually simple and rounded. Although Petersen and Sanger suggest a limited diffusion of this early technology, Kristmanson feels that examples found in her regional study of southwestern Nova Scotia demonstrate a wider geographic range (Kristmanson 1992:62). Furthermore, recent thermoluminescence data from a sherd at the St. Croix site dates a

**Table 2.1. Petersen and Sanger Typology for Ceramics in Maine and the Maritimes**

| Ceramic Period Subdivision (CP) | Temporal Equivalent (ca.) | Alternative Designation (Period) |
|---|---|---|
| CP1 | 3050-2150 B.P. | Early Ceramic (Woodland) |
| CP2 | 2150-1650 B.P. | Early Middle Ceramic (Woodland) |
| CP3 | 1650-1650 B.P. | middle Middle Ceramic (Woodland) |
| CP4 | 1350-950 B.P. | late Middle Ceramic (Woodland) |
| CP5 | 950-650 B.P. | early Late Ceramic (Woodland) |
| CP6 | 650-400 B.P. | late Late Ceramic (Woodland) |
| CP7 | 400-200 B.P. | Contact (Early Historic) Period |

sherd with pseudo-scallop shell (alternately notched) decoration to this period, the earliest yet recorded with this design (Godfrey-Smith et al. 1997: 251).

*CP2 – The Early Middle Woodland Period (2150-1650 B.P.)* Although they share many of the same attributes, CP 2 ceramics differ by their use of other decoration tools besides fabric paddling. Dentate and pseudo-scallop shell stamping is characteristically used to decorate the vessels of this period. Usually this is done with a fairly simple and linear application. Petersen and Sanger also state that drag stamping begins in CP2 although Kristmanson reports no such application in her study region (Kristmanson 1992: 64). The vessel form is similar in this period although the vessels do increase in size (Petersen and Sanger 1991:123). In some areas of Maine and the Maritimes, castellations (or pointed areas on the rim) are also seen in the record. Scraped and channeled surfaces are also seen on pottery from Maine, but it is not as common (Newsom 1995). The Saint

John River sample used by Bourgeois (1999) shows two clusters of different attributes within the previously defined CP2. In response, the author divides the sample into both CP2a (2100 to 1850 B.P.) and CP2b (1850 to 1650 B.P.). The early segment of this period is defined by pottery that is thin-walled and largely undecorated. Those that are decorated show some punctations visible under the rim and a preference for rocker-stamping applications. CP2b is differentiated from the first through specific decoration combinations. Collared rims and trailing are specific to CP2b as well as interior stamping and channeling. Some exterior bossing is also characteristic of this period. There is also a movement away from the undecorated lips on the forms of CP2a. Moreover, the vessel thickness tends to increase during this time and the author notes a more unrestricted orifice as well.

*CP3 – The middle Middle Woodland Period (ca. 1650-1350 B.P.).* Although there is little change between CP2 and CP3 ceramics throughout the study region in terms of decoration, there is a notable increase in vessel wall thickness. This observation tested positively in southwestern Nova Scotia albeit with a diminutive sample size as noted in Kristmanson (1992). There is some record of organic temper beginning to be used but the instances are few. The decorative techniques remain similar to that of CP2 though more-closely applied. Rocker-dentate stamping and application is also said to be the dominant form of decoration during this time period. However, the sample from southwestern Nova Scotia does not reflect this trend (Kristmanson 1992:67). Therefore, the geographic boundaries of this attribute require further testing. Research has also shown cord-

wrapped stick decoration application in the lower Piscataquis river region, which does not normally occur until CP4 in the Petersen/Sanger typology (Newsom 1995).

*CP4 – The Late Middle Woodland Period (ca. 1350-950 B.P.)* In terms of decoration, the most notable change between CP3 and CP4 is the use of cord-wrapped stick decoration techniques. These changes, in conjunction with the increased use in punctations, are definitive of this temporal period. In the Saint John River area, decoration also included an increase in interior bossing (Bourgeois 1999). Form began to change during this period as wall thickness continued increasing and the rim forms became more curved. The vessels enlarged as well to anywhere between 4 to 8 litres (L) in volume. Smaller vessels are also seen during this time suggesting an upsurge in vessel variation. Fabric paddling occurred again briefly in conjunction with limited decoration near the end of CP4. During this time, organic temper was seen in the record, although this was not common in the far northeast of Petersen and Sanger's study area (Petersen and Sanger 1991:134).

*CP5 – Early Late Woodland Period (ca. 950-650 B.P.)* Transition from CP4 to CP5 is fairly smooth though major changes included a decrease in the size of tools used for decoration and an increase in the use of shell temper in pottery manufacture (Petersen and Sanger 1991: 136). The authors suggest shell-tempered pottery tends to be found in association with Z-twist cord-wrapped stick (wound left to right) decoration found largely on coastal sites in the north and interior sites in the south of the study area. Kristmanson finds this correlation unsubstantiated in her research as she finds little spatial relationship in the S (wound right to left) and Z twist decoration with regard to her

sample and no temper significance in the regions temporality (Kristmanson 1992:74). The most significant change in pottery form during this period is the movement from conoidal to globular shapes nearer to the beginning of CP6. Due to the lack of ceramic evidence in association with radiocarbon dates in the Saint John River area of New Brunswick following CP4, the vessels showing these attributes are referred to as dating to CP4/5/6 (Bourgeois 1999).

*CP6 – late Late Woodland Period (ca. 650-400 B.P.)* The most significant changes to note in the transition to CP6 are that globular vessels largely if not completely replace conoidal ones. These globular vessels usually have appliqué collars and/or geometric motifs. Although seen in the westernmost areas of Maine, the bulk of the Maritime Provinces do not have these examples. Moreover, the vessel rims continue to be curved rather than straight. Petersen and Sanger state that vessel walls become much thinner during this time period as the manufacturing of the pottery seems to improve. The walls seem to become thicker near the end of CP6 and into the early parts of CP7. A thinning of the vessels walls is not evidenced by pottery of southwestern Nova Scotia. Kristmanson found that there is not a dramatic thinning of walls that could be seen in her study collection but rather that the rim and lip may become thinner and the walls become gradually thicker near the end of the temporal period. Overall her data shows various changes in wall thickness between CP2 and CP 6 where there is both thinning and thickening visible in the wall with seemingly little patterning thereof (Kristmanson 1992: 76).

*CP7 – Contact (Early Historic) Period (ca. 400-200 B.P.).* The major differentiation between CP6 and CP7 is the influence of European containers on the pottery forms seen in some areas of the New England states. One of the more debatable aspects of this period is the production of ceramics during and after European arrival (Petersen and Sanger 1991). Shortly after the arrival of the Europeans, traditional pottery manufacture had largely been abandoned (Whitehead 1991). The question stands as to how much of the pottery technology remained. This debate continues in the historical documents.

*Summary.* The regional variations seen throughout Maine and the Maritime Provinces are largely related to decoration attributes. One of the more interesting variations in the regional typologies is seen in CP 2 where there are two distinct clusters of pottery types occurring in the Saint John River area of New Brunswick. It is notable however that although there are differences in decoration, the types still fall into the realm of what is found throughout CP2 according to the Petersen/Sanger typology. They simply occur at different times. Likewise, changes seen throughout CP3 and CP4 such as the early introduction in Maine of cord-wrapped stick decoration techniques are still somewhat in accordance with what is found in the typology. Petersen and Sanger were clear in their research that they expected regional variation and that this typology should not be considered a strict unchanging chronology but a discussion on pottery technology throughout the study area (Petersen and Sanger 1991: 117).

**Form and Function**

As evidenced by this brief literature review, there have been few studies published that focus solely on the form and function of ceramics in this region. This is largely due to the previously limited and largely fragmented nature of the pottery recovered. Publications concerning design elements and typology of precontact ceramic vessels have tended to take precedence over those of form and function studies. Pottery vessels have since reached a proportion on a regional level where they can be studied further. There are a number of key studies within the literature that serve the researcher in form and function study regardless of geographic constraints.

Ceramic form and function analysis can assist in answering some crucial questions concerning the social and economic activities of societies in precontact northeastern North America. It has been well established that there is a direct relationship between ceramic vessel form and function (Rice 1987:207, Shepard 1956:224). Studies of this nature can be used to help explore everyday activities within precontact societies (Hally 1986:360). Through detailed analysis of vessels and their fragments, elements of shape can be measured in a way that can be compared and classified (Egloff 1973 Ericson and Stickel 1973:357; Orton et al. 1993; Rice 1987).

The anatomy of a vessel is as complicated as the variety of the pottery being studied. Researchers have identified major vessel attributes over the years resulting in a fairly concise series of diagrams and proportions to assist in classification (Fig. 2.1). These diagrams are especially useful to researchers when considering the variety and dynamic nature of pottery vessels. Now this accumulation of data has allowed researchers

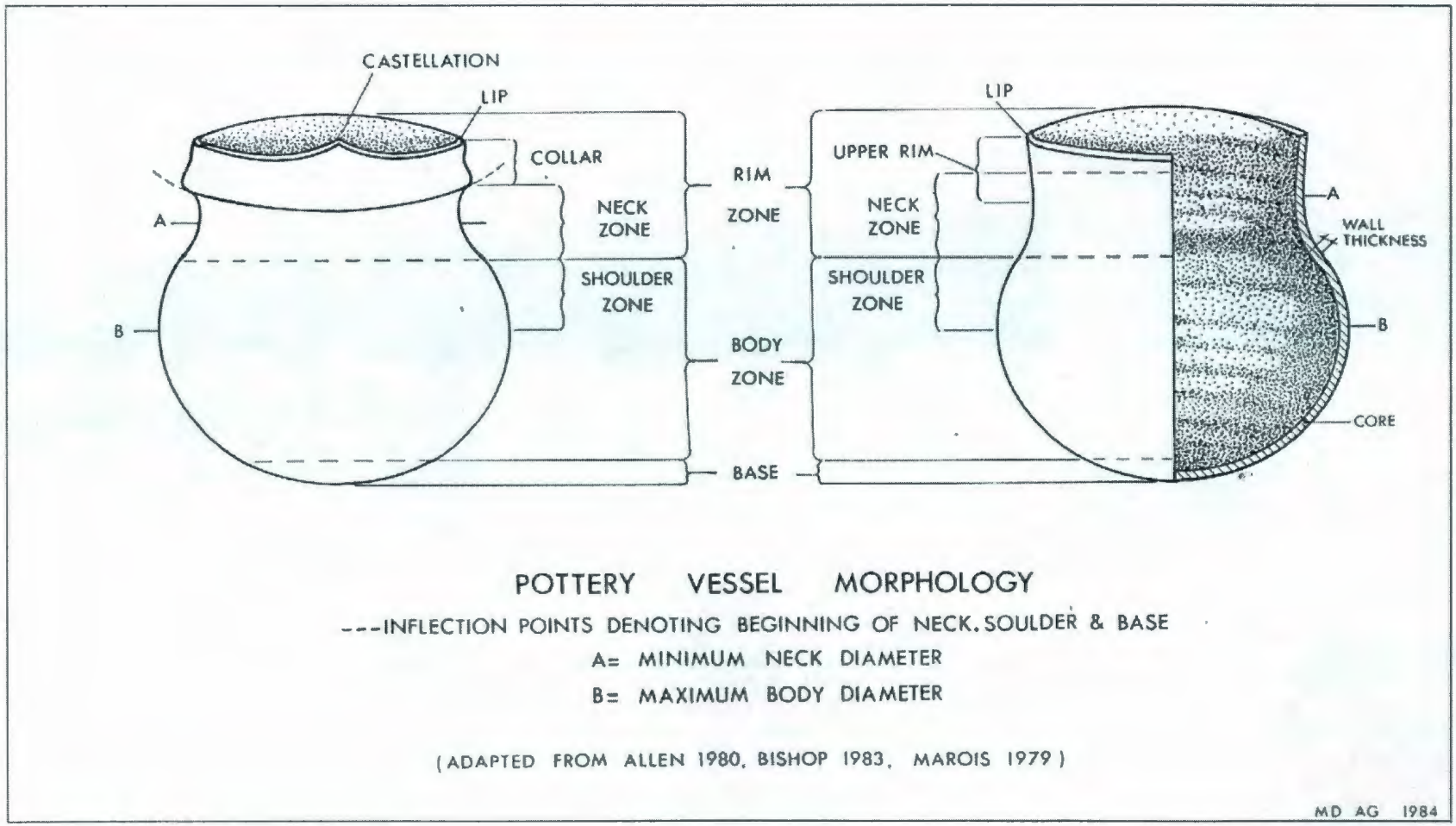


**Fig 2.1 Anatomy of a Vessel** (Deal 1984)

to create classification systems with confidence for their particular projects. Pottery vessels can be grouped as to their expected use (Rice 1987: 212, Orton et al. 1993). However, such descriptions can be too *functionally* descriptive, leading to pre-conceived notions of the vessels, which clouds the view of the researcher (Shepard 1968). Attempts to circumvent this issue have resulted in geometric and contour based procedures for vessel classification.

*Describing the Vessel*

In order to understand the contours of a vessel, researchers use what is referred to as the characteristic points of the vessel (Fig 2.2).

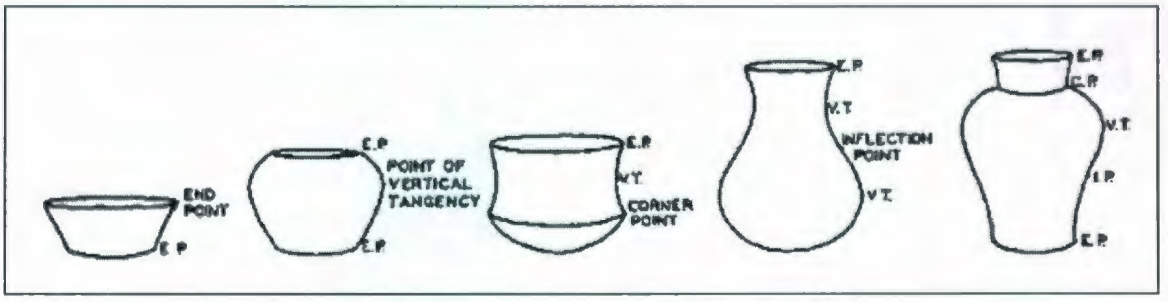


**Fig. 2.2. Characteristic Point on a Vessel** (Shepard 1956: 226).

First initiated by Birkhoff in 1933, these points are, for the most part, extremely visible and useful for classification (Shepard 1968). The points reflect key changes in the main vessel profile (rim and external supports are ignored) and are fairly self-explanatory. The first of these points, the *end points*, serve to identify both the beginning and end of the profile. The *point of vertical tangency* simply indicates a change in the tangent on a

vertical level, such as the apex on a large curve. Next, the *corner points* are those that identify where such a tangent makes a sharp change. For example, where the point of vertical tangency marks a sloping edge on either side, the corner point will be the marker in a strong change in contour. The last of these points, and the one deemed slightly more complicated and less visible to the researcher is the *inflection point.* This is the point on a curve where the profile begins to change direction (Fig 2.3). This point is found between two points of vertical tangency. These points are useful in discussing the dimensions of the vessel and demonstrate a clear way to profile identification and classification through shape classes (Shepard 1968: 227, Rice 1987:218).

Using these points, Shepard divides vessels into two classes based on their profile symmetry, specifically the presence/absence of a vertical axis of revolution. The axis is

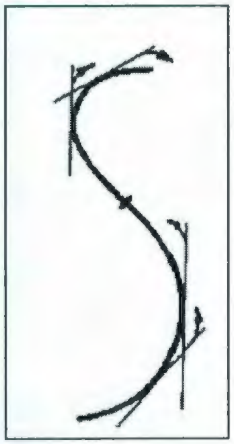

**Fig. 2.3. Inflection Points on a Curve** (Shepard 1956: 226)

present when the vessel's profile does not change during a vertical circular rotation. The most common of these two classes is that which possesses this axis. The restriction of the

orifice is another key point to consider in shape classification. Shepard describes an unrestricted orifice as one that extends beyond the vertical walls of a vessel, whereas a restricted one shows the convergence of the walls. These defining points assist the author in classifying vessels into three groups: The unrestricted vessel, the restricted vessel, and the independent restricted vessel. A vessel neck characterizes the last group. Shepard feels that this part of vessel anatomy is independent of the rest and should therefore be looked at as geometrically separate (Shepard 1968: 230). These groups are then sub-categorized by contour into *simple*, *composite*, *inflected*, and *complex*. Each of these categories is defined by the combination and frequency of the previously discussed characteristics of a vessel. A simple contour is one that has end points and possibly a point of vertical tangency. The composite category is differentiated from the simple by the addition of corner points. Inflected contours have no corner points but will have a visible inflection point and possible point of vertical tangency. The final subcategory, the complex contours have at least two corner points or inflection points in the profile or possibly contains both.

In order to further identify a vessel type within such groups, researchers turn to geometric shapes and surfaces (Fig. 2.4). The most widely used shapes for classification are *sphere*, *ellipsoid*, and *ovaloid*. These shapes or sections of these shapes are combined with the surfaces of *cylinder*, *hyperboloid*, and *cone* to construct the geometric shape of the vessel being classified. These final geometric vessel equivalents are used to determine volume and proportions for the vessel in question (Shepard 1956, Rice 1987). For example, a vessel with a spherical shape is usually described as 'globular' and that sphere

with a hyperboloid or cylinder as the neck could form a jar. Some previous pottery descriptors such as 'tear-dropped shape' would be considered as ellipsoid under this classification (Rice 1987:220). Basic geometric formulae for spheres, cones, and so forth are then used allowing researchers to more completely estimate volume. In order to test this approach, Ericson and Stickel (1973) developed a classification system for ceramic vessels based on the geometry of a vessel and then used standard formulae to obtain vessel capacities. The researchers used a varied sample of modern vessels to test the ability of the geometric approach to properly produce this volumetric data. Once they had established abstract forms for the vessels and calculated the volumes, they compared it to actual volume of the vessel by filling them with water. Overall, they found that the system was indeed reliable. The mean error percentage for the vessel sample was 7.84 percent (Ericson and Stickel 1973:363).

At least half of a vessel profile is required in order to recreate a vessel shape. When a full profile is not present (such as in the case of sherds), this can be recreated through reconstructions and/or profile drawings. This method would assume vessel symmetry (Nelson 1985:311). When the vessel profile is present, one can use methods such as the summed cylinder method to estimate vessel capacity. This methodology can be used when only half of the vessel is present because it involves taking measurements from the vertical bisector of the vessel. The measurements for length are then taken out to the profile curve. These measurements are taken at intervals throughout the height of the vessel. The volume is then calculated for each of the cylinders and the total sum thereof is the volume capacity (Nelson 1985, Rice 1987).

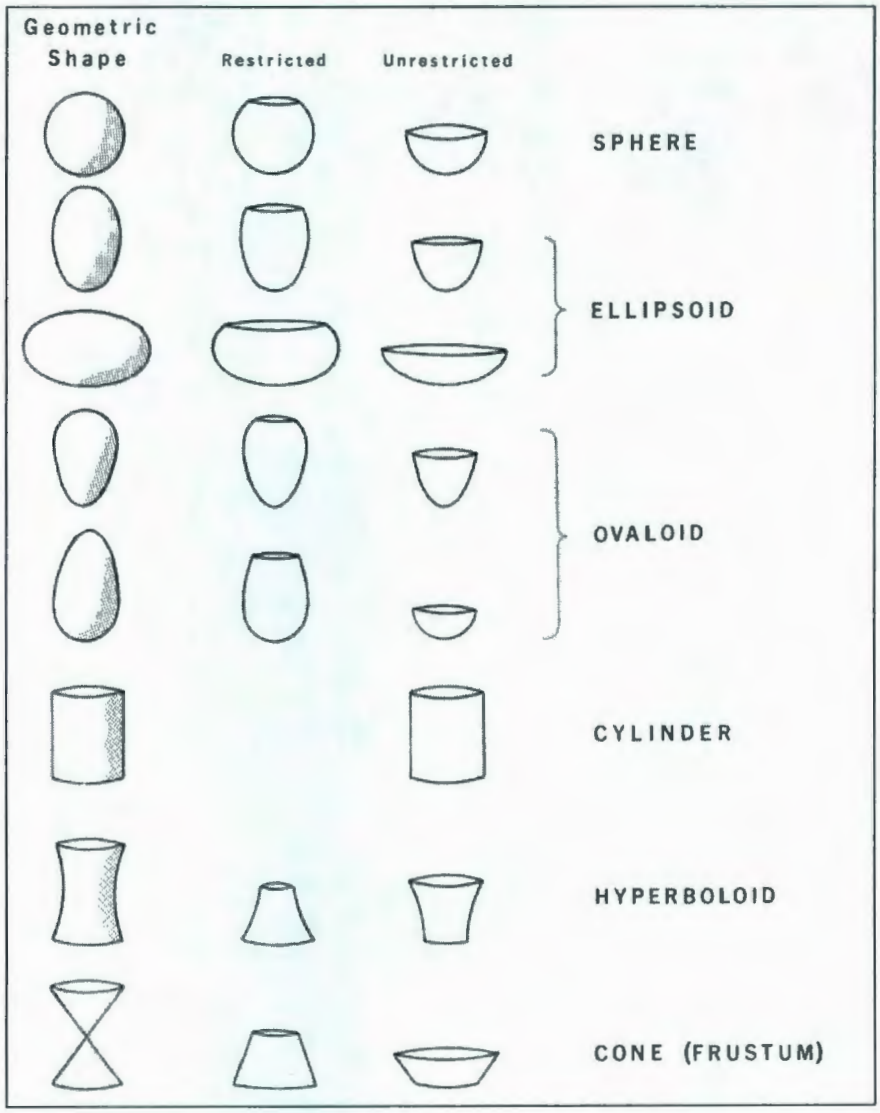


**Fig. 2.4. Geometric Solids and Surfaces** (Rice 1987:219)

This method involves a number of assumptions and although it can be considered useful for more complete profiles, it should be considered on a case-by-case basis.

*Proportion.* Another useful method for classification and description of vessels, in conjunction with the approaches listed previously, is proportionality. This method is simple but can be used effectively. At its most basic level, the proportions of vessel

anatomy are compared to one another to form shape categories. For instance, shallow forms (that is proportionally large orifice in comparison to height) could be classified as plates or dishes (Rice 1987: 216). One can find a number of shape category classifications used for various vessel collections in the literature. However, classifications such as these are use-based and rely heavily on a known function of the vessel. It would be difficult to use these classifications correctly outside of their regional scope but they can be useful for specific comparisons in conjunction with other methods and descriptors such as volume (Rice 1987:217). Overall, inferred use and proportion can be useful for answering a specific research question or for comparing curves and diameters (Shepard 1976; Orton et al 1993).

*Vessels from Sherds*

Vessels can also be investigated for form and function in their fragmented state. Although this has been touched on briefly in this chapter, there are some specific methodologies designed for sherds alone. Using near-complete vessels and sizeable rim sherds, researchers can still group like shapes together to form types as described above. This very basic principle can be complicated when working with an extremely varied collection (Orton et al. 1993). By calculating the geometric proportions of the vessels from the sherds themselves we can infer details such as volume, height, and rim diameter. Then we can quantify the frequency at which certain vessel forms are found within the collection, while at the same time inferring functionality through a series of techniques.

Rims tell the researcher a multitude of things about a vessel. They can be useful in determining size and height as well as use under the proper methodologies. Rims tend to be more diagnostic for form than body or base sherds leading the researcher to discover more about the vessel even when it is severely fragmented. This is especially important in Woodland period archaeological sites, as that is usually the state in which the pottery vessels are found. One of the simplest routes for orifice measurement is the use of a measurement-template (Fig. 2.5). This template consists of a series of curves radiating out from the bottom center of the chart. The rim sherd to be measured is placed rim down and moved from the bottom upwards beginning with the apex of the arc at the 0% marker. Once the curve of the sherd reaches a matching curve on the chart, the diameter shown is recorded in centimeters. This is useful with sizeable rim sherds possessing a diagnostic curve. The percentage markers along the edge of the template also allow the researcher to estimate the percentage of vessel rim represented (Egloff 1973). This methodology is useful but the template assumes perfect vessel symmetry, which can lead to misinterpretation of the measurements (Rice 1987:223). Somewhat asymmetrical rims are likely when working with hand-built vessels so the resulting measurement of the rim is estimation at best. Other factors such as warping under the pressure of the soil prior to excavation and the subjective nature of the analyst can also have an effect on the outcome (Plog 1985:244). Overall it is a useful method with some cautionary provisos.

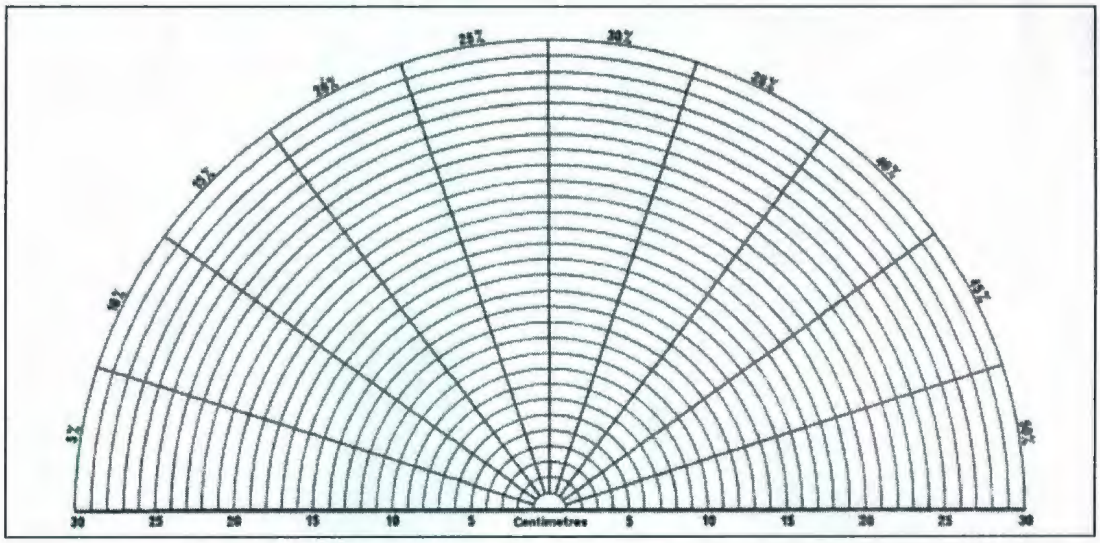

**Fig. 2.5. Template for Sherd Measurement** (Egloff 1973)

These basic concepts of form study are useful for classification and can serve the researcher by simplifying vessel forms allowing for comparisons between vessel collections. By classifying form researchers can identify trends and infer important measurements such as volume that assist in answering many research questions and uncover more about past lifeways (Ericson and Stickel 1973; Hagstrum and Hildebrand 1990: 388). The use of this methodology allows researchers to build a foundation of data on which further research questions such as those regarding vessel function can be built.

*Discovering Vessel Use*

Formal classification techniques allow for a consistency across form and function studies (Ericson and Stickel 1973). They consider not only the methodology of pottery making itself, but also how the potter, or any other individual in the society will use the

final product to their best advantage. By analyzing the form we can work towards inferring the function the vessel served and in turn gain insight into the past society within which the vessels were made. The subsequent conclusions can be used in conjunction with other research conducted in the area of study in order to generate a multi-faceted approach to answering certain research questions. Major avenues to consider when researching vessel function are the use of ethnographic data and inference as well as various geo-science techniques using existing collections.

By looking at ethnographic accounts of vessel use in hunter-gatherer societies, we can deduce functions of ancient pottery as they relate to form. Although geography and temporality are constraints that can be problematic in interpretation, we can draw some parallels between the contemporary and prehistory. The forms themselves will have little differentiation depending on where the vessel was made. The major changes will likely be seen in typology. This relationship can then assist the researcher in interpreting basic vessel function (Arnold 1993: 2-4). This particular method is not as useful in communities where traditional pottery manufacture is no longer practiced yet still seen in the archaeological record. An example of this is Atlantic Canada where pottery manufacture was phased out with the European contact (Whitehead 1991). There are few ethnographic accounts that discuss pottery manufacture and use therefore most information is found through the archaeological record. However, Henrickson and McDonald use modern and ethnographic data from different cultures in their research to exemplify the relationship of vessel form to function. Their observations resulted in a detailed classification of pottery forms they hope allow for cross-cultural application.

> ...[T]he function and morphology of ceramic vessels are related by definite physical properties and that vessels within a functional class are designed and made according to a specifiable set of morphological boundary conditions. (Henrickson and McDonald 1983: 630)

This method can assist others without observational data to look at functional reasons for certain pottery forms. The functional vessels are described in general terms such as *cooking vessel* and *liquid storage vessel* and the authors are cautionary with their results (Henrickson and McDonald 1983:640). Although there will be further variation and there are likely other uses for these vessels as well, a discussion of possible *primary* uses for certain forms are useful to researchers without the ethnographic literature.

Observations concerning vessel use in general can assist in making educated inferences as to what purpose a vessel may have served in the past. For instance, stability is a useful point of reference when considering vessel function. By considering a vessel's center of gravity, researchers can infer what uses that piece could have served. The descriptors of *stable* and *unstable* vessels refer to the low and high centers of gravity respectively (Shepard 1976). This is directly related to the proportion of a vessel discussed earlier. Vessels larger on the bottom than the top are considered stable whereas a spherical vessel with a thin but long cylindrical neck would have a lower center of gravity and therefore be more like to tip over (Fig. 2.6).

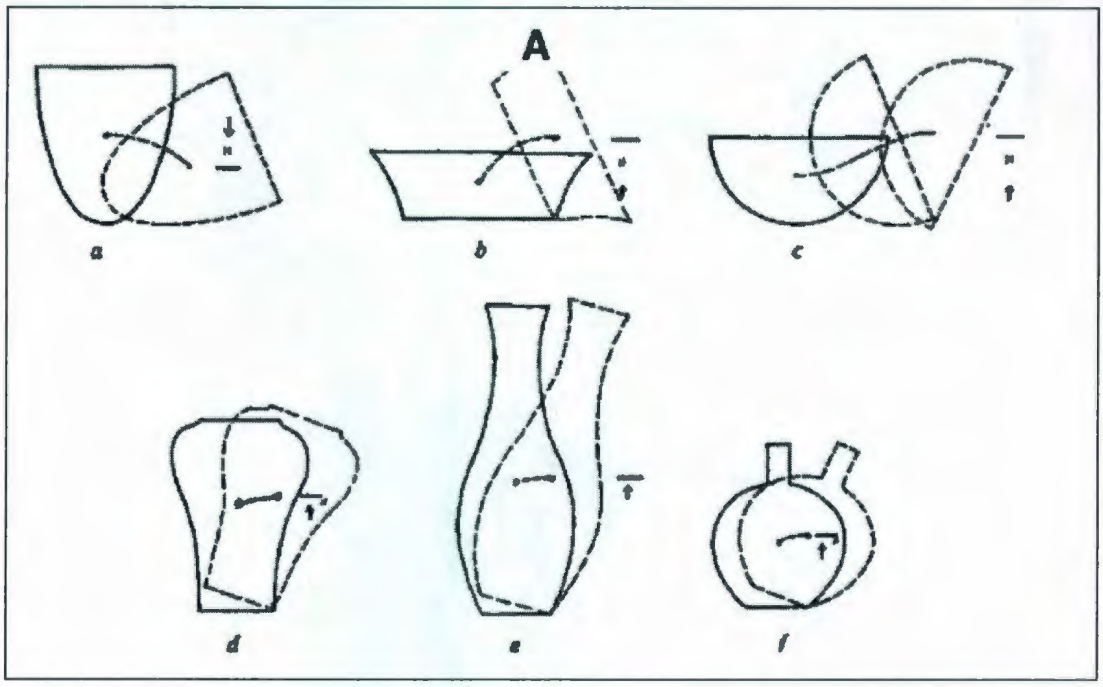


**Fig. 2.6. Stability of a Form**. Each form has its own centre of gravity defined in this image by a single point. The state of the vessel unbalanced is defined by the dotted line. If that center of gravity needs to be raised to tip the vessel or to put it out of balance it is in an adequate 'state of equilibrium' (such as *b-f*). Conversely, figure *a* can easily become unbalanced as it has a high centre of gravity. (Shepard 1956: 237).

When ascertaining the functions of a vessel, accessibility to the contents is definitely of concern. If a vessel has an unrestricted or restricted orifice that will affect how the vessel could be used. These are some of the deliberations of the potter when the vessel was originally made and therefore have a direct link to how the society was planning to use it. This is not to say that a vessel can only be used for one specific function, but this is a factor in how much effort an individual will have to exert to access

a vessel's contents. Other factors in deciding vessel form could include transportation, durability, and weight (Rice 1987:225). Vessel use can also be seen in the location and intensity of worn areas, residue or charring on the vessel. There are formal attributes that result from the manufacture of the vessel itself. Vessel thickness, for example, is a direct result of how large a vessel will be as well as what it is used for. For example, in coiled pottery, the larger the vessel, the thicker the walls tend to be due to load-bearing necessity of the coils during the manufacturing process. As each coil builds on another, the previous ones are holding the weight. Aside from frequent pauses to allow for drying, the vessel needs to be thick walled so as not to collapse under this weight. These thicker-walled vessels are most useful for storage, however, as they don't need to be moved as often. Smaller, thinner walled vessels are likely used more often for cooking as their morphology is better suited to heat distribution (Rice 1987). Hally's (1986) discussion on form and function of vessels in Southwest Georgia identifies vessel morphology that would be strictly related to cooking and preparing food, as well as a multitude of daily activities. The author extensively researched foodways of the current population and inferred use patterns as it related to the precontact vessel morphology. For instance, observations such as scorching or residue on body sherds are indicative of at least some use as a cooking vessel (Hally 1986: 281). The result was a successful application of a plethora of methods concerning classification and form studies to the functional and everyday life of a past society.

Technological advances have also allowed ceramic analysts in this region to implement methods from the physical sciences during their research in form and

function. This includes work in residue analysis, use-wear patterning and thermoluminescence dating techniques (Deal, Morton, and Foulkes 1991; Kristmanson and Deal 1993; Godfrey-Smith, Deal and Kunelius 1997; Deal 2005). The location and intensity of residue and absorption on vessel sherds is useful not just simply for basic analysis, but also for scientific testing. Elemental analysis techniques in the geosciences can uncover what may have been inside the vessel at deposition or what purpose it was used for most often. These methods are outside the scope of this project but are useful for a detailed analysis of pottery contents.

***Summary***

Pottery research concerns a whole host of research methods, only a small part of which has been listed above. In the past, the lack of complete vessels from this region has deterred those interested in investigating this avenue of research. The successful application of research methods such as these to other study regions is encouraging for researchers in northeastern North America. As mentioned elsewhere in the literature, little work in this region has been completed with regard to vessel form and function (Deal et al. 1991). That being said, a growing number of near-complete pots are adding to this archaeological inventory. A greater understanding of vessel form and function in this region will allow researchers to further develop their understanding of the use of the technology by hunter-gatherers in this region and more importantly, uncover greater detail about the culture that used it. Form and function research has been applied to

pottery in other areas of the world with great success and application to this region could be just as rewarding (Orton et al 1993; Rice 1987).

## Chapter 3: Current Research and Methodology

The main goal of this project is to gain a general understanding of the various forms and functions of precontact pottery vessels in the region. During the summer and fall of 2007, I traveled across Atlantic Canada in search of near complete and reconstructed pottery vessels, as well as pottery sherds suitable for this project. Over 1100 photographs and multiple sketches later the research collection has reached a respectable total of 167 specimens suitable for analysis. The pottery collections, representing 28 sites, were housed in eight different locations across eastern Canada. In New Brunswick, I had access to site collections at the Metepenagiag Heritage Park near Miramachi, the New Brunswick Museum in Saint John, and New Brunswick Archaeological Services in Fredericton. When traveling to Nova Scotia I had access to collections stored at the Yarmouth County Museum, as well as the Nova Scotia Museum, and the Parks Canada Trademart building in Halifax. Further collections are housed at the Canadian Museum of Civilizations in Hull and the Department of Archaeology, Memorial University. For some of the comparative samples discussed in the final chapter I also had access to pottery stored at the Rooms museum in St. John's.

### Methodology

I examined each pottery collection to record attributes from near complete vessels as well as substantial sherds. My vessel recording form is illustrated in Figure 3.1.

**Ceramic Vessel Record Form**

Date: _____ Location: _____

Borden No.: _____ Common Name: _____

Catalogue Reference: _____ _____

IMG _____ to _____

Major Attributes

Vessel Height (cm): Rim Description:

Rim Diameter (cm):

Body Diameter (cm): Lip Description:

Volume:

Rim Thickness (mm): Shoulder Description:

Wall Thickness (Rim) (mm):

Wall Thickness (Shoulder) (mm): Temper Type: Grit; Grit/Organic; Organic;

Wall Thickness (Body) (mm): Organic/Grit

Wall Thickness ( ) (mm):

Additional Attribute Descriptions

Castellation Height (mm): Punctate (frequency):

Castellation Angle (nearest degree): Punctate (distance from rim in mm):

Punctate Diameter (mm):

Collar Width (mm):

Collar Thickness (mm): Other:

Use Wear

Residue Intensity: Repair Hole Frequency:

Light / Moderate / Heavy Repair Hole Location:

Repair Hole Diameter (mm):

Residue Intensity: Repair Hole Frequency:

Light / Moderate / Heavy Repair Hole Location:

Repair Hole Diameter (mm):

Residue Location: Other:

Worn Areas:

Decoration

Interior: Exterior:

Rim/Collar:

Sketch

*Rim Profile* *Artifact*

**Figure 3.1. Vessel Record Form**

A substantial sherd is defined as a sherd over five centimeters in total length. If the sherd had a well defined curve contributing to more than 20 percent of the original vessel's total diameter than it was also considered substantial and used in the study. Due to the sheer size of the collections I studied, it was necessary to record the specimens through photographs as well as these attributes in order to reference the vessels later on. This required a photograph recording form (Fig 3.2). To maintain order in the catalogue, the hard copies were then organized by province, collated by Borden number, and given a collection record cover sheet (Fig 3.3). This system allowed me to access the sherds and records relatively smoothly when they needed to be entered into the catalogue.

**Digital Photo Record**

Date: _____ Catalogue Location:_____

Roll _____ IMG_____ to IMG_____

Date Uploaded _____

File Location _____

| Reference | IMG | Description |
|---|---|---|
| | | |
| | | |

**Fig. 3.2. Photograph Recording Form**

**Ceramic Record Form**

Date: _____ Location: _____ IMG_____ to IMG _____

Catalogue Reference(s): _____

Borden Number: _____ Common Name (if applicable): _____

Comments: _____

| Artifact No. | Vessel Height | Rim diameter | Wall thickness (mm) | Interior Deco. | Exterior Deco. | Aspec. or Relative Date | Further Comments |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |

**Fig. 3.3. Ceramic Record Cover Sheet**

## Working Assumptions and Expectations

*Vessel Manufacture in the Precontact Period*

When developing a methodology for discerning height, and as a result volume, for the vessels, I needed to make certain assumptions about the vessel as a whole. In order to properly examine vessel manufacture and the natural changes that occur during the firing process I observed firing methodology firsthand. Geraldine Alain is a ceramicist from northern New Brunswick who has studied pottery methodology from an artisan perspective. She has been working with the local Mi'kmaq community of Metepenagiag for years helping to organize builds and firings for the children of the region. I was able to witness one of these firings and take part in some basic levels of manufacture (see

Appendix A). At the end of the manufacturing session I was better equipped to distinguish what happens to a vessel during a firing, as well as the variety of traces this process leaves on the vessel. This would prove very useful when I looked at use wear patterning of vessels from the archaeological record later on.

In essence, the firing process affects pottery vessels before they are even used for other purposes. For instance, a vessel may receive natural markings during its manufacture. The vessels in this demonstration were coiled, as was likely the practice for most of vessels in this region during the precontact period. Evidence of coil manufacture is visible in a number of studies through the region (Peterson and Sanger 1991, JWEL 2004). Even though these vessels were likely created without the aid of a wheel, I need to also assume symmetry when looking at height and volume of each vessel. These measurements will not be exact because the vessels themselves are not exactly symmetrical. An assumption like this is required when looking at vessel sherds, as some of these elements are simply absent from the archaeological record.

Building up the vessel by pressing coils together requires a certain amount of moisture. This part of the process can result in a slip and creates a very moist surface on the clay once the vessel is worked for a while. This can then create surface patterning on the vessel before it even dries or becomes plastic enough for intended decoration. Some of these marks may diminish during burnishing (smoothing the area with a stone after drying and before firing) but not all (Fig. 3.4a) Moreover, some natural surface charring occurs during the firing process (Fig. 3.4b). This is noticeable on some of the other vessels seen in the archaeological record. Each time a vessel is fired, this is likely also

enhanced. A vessel can spall or crack during the process as well (Fig. 3.4c). This can be a dangerous situation for the individuals too close to the fire but can also result in the destruction of other vessels in the kiln. Those vessels lucky enough to survive the manufacturing, decoration, and firing process can then be used for their intended purposes that we can attempt to see in the archaeological record.

Once the process was complete I was able to observe some of the vessels recreated by Allain. Her collection is extensive with variety in decoration and form. Allain chooses natural products to create her designs hoping to recreate the toolkit used by native groups in the region (Fig 3.5). These vessels range from 'pinch pots' or vessels formed from one piece of clay to large vessels upwards of 25 to 30 centimeters in diameter (Fig. 3.6). Overall, by observing the creation of these pottery vessels I can better distinguish use-wear patterning from other changes resulting from the manufacturing and firing process.

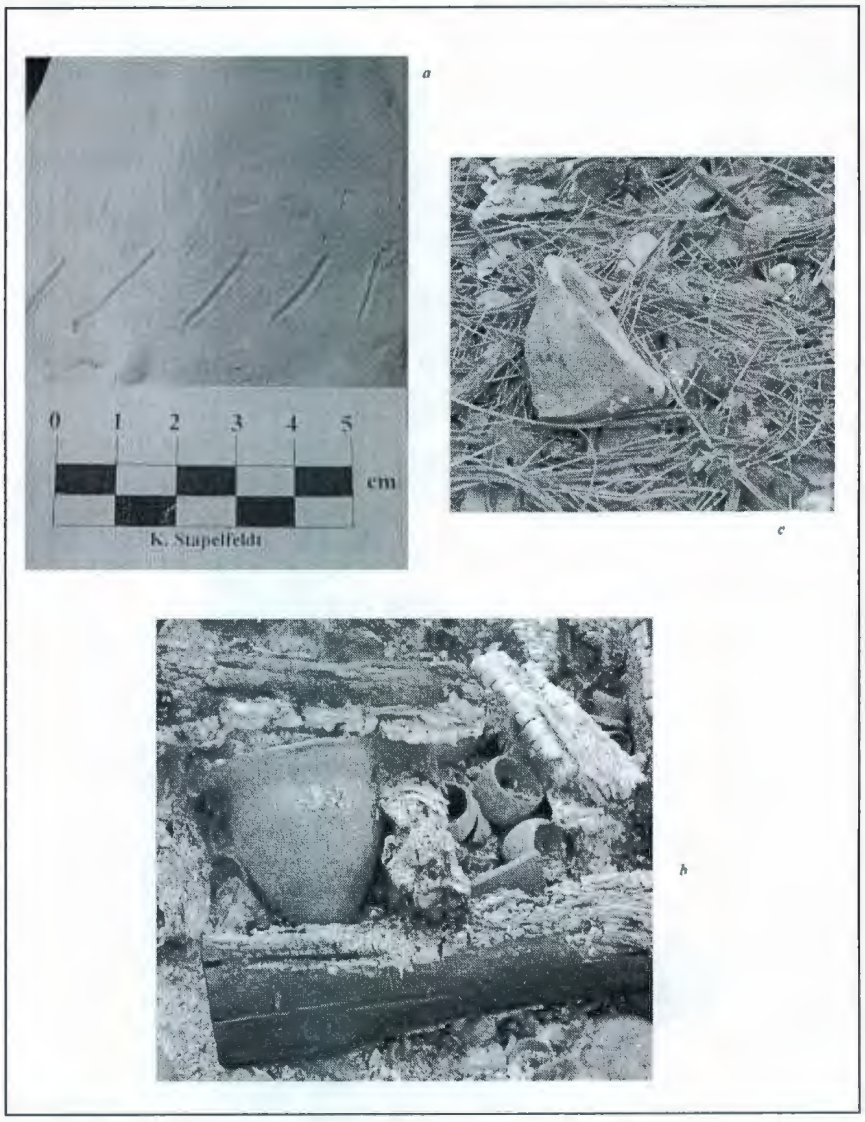


**Fig. 3.4. Selected Effects of Manufacturing**. *a* depicts a vessel prior to firing with obvious surface patterning. *b* shows a vessel in the kiln during the final stages of the firing process. It has begun to char down one side and around the rim. *c.* shows a small vessel that has not fully survived the firing process.

**Fig 3.5 Tools Artist Used for Decoration**. Above: Grooved wood fragment, Below: Section of lobster claw. Two natural tools the artist used for Pseudo-Scalloped Shell designs on traditional-style vessels.

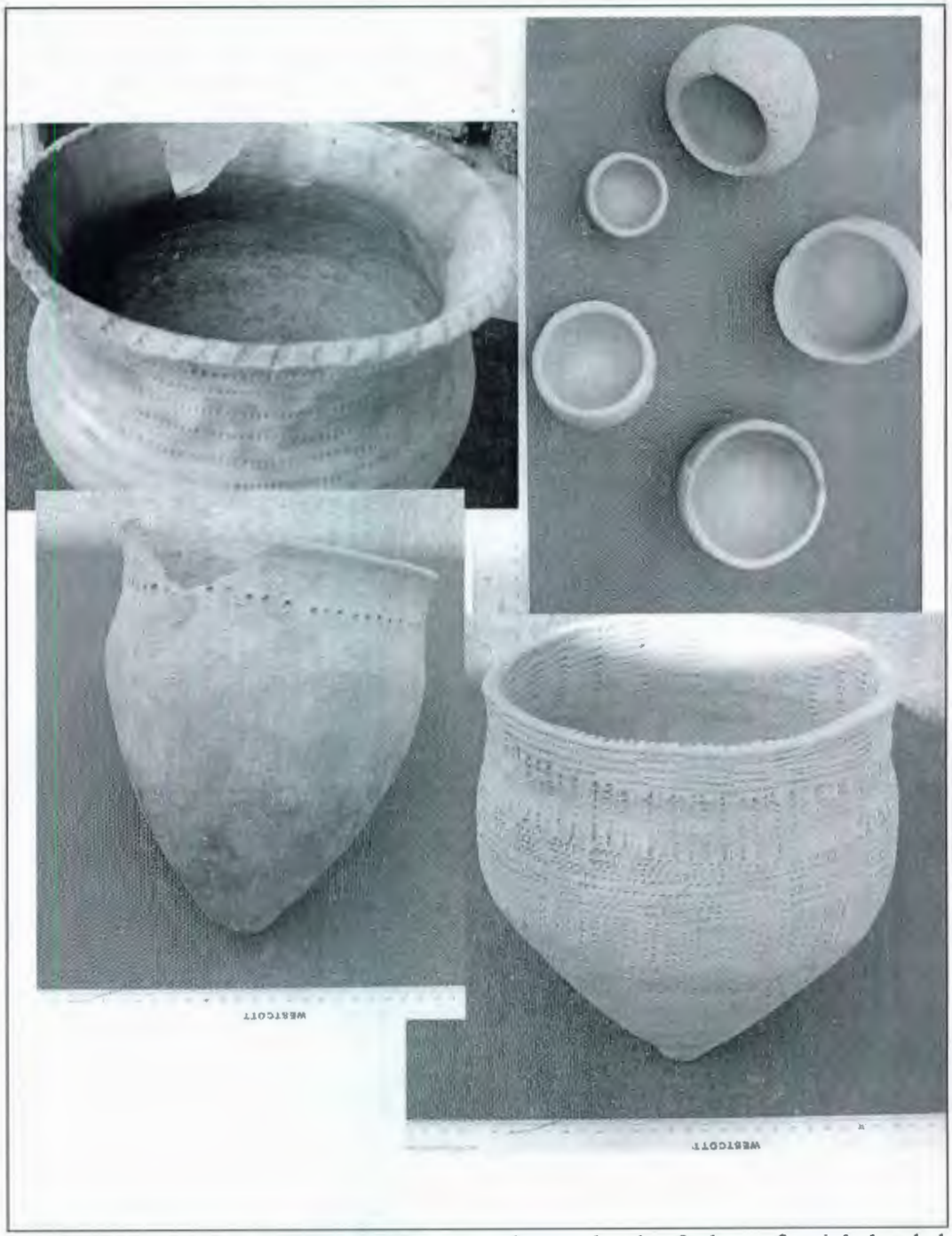

**Fig. 3.6. Traditional-style Vessels**. These vessels were handcrafted out of mainly local clays by the ceramicist and fired in a wood kiln.

*Archaeological Record and Collections*

There were a few assumptions and concessions I needed to make when looking at a collection of this size and proportion, the first of which had to do with scaling down the project size to something manageable for a Master's project. This resulted in defining the size of sherd considered substantial or usable for this study (as defined above). This project is meant to offer a general conception of these precontact vessel forms. As a result, the immense amount of body and base sherds in the archaeological record are outside the scope of this particular project.

Most sherds had already been grouped by vessel at each site location and recorded within the individual catalogue. Each vessel has been assigned its site-specific catalogue data such as *BlDq1: 50* (the Savage Island vessel), which I then used when creating my own catalogue. Where there were no catalogue numbers assigned to the vessels, or one number assigned to what I would define as many vessels, I would introduce my own naming system only as a guide for subsequent catalogue entry. Therefore there is no consistency in the naming style of each vessel or sherd representing a vessel. Some of them are named as numbered vessels within their site group, e.g. *Fulton Island, Vessel 1*. Others are simply catalogue extensions of their Borden numbers e.g. *BlDn-26: 2956-2959*. The photograph record was entered in correspondence with the automatic numbering of the camera images such as *IMG 3010* and can be translated using the photo record forms.

**The Catalogue**

The catalogue grew in many ways over the course of the project. I was able to standardize more information and refine my attribute list as I progressed. The final product contains 45 fields. Some of these fields only pertain to the cataloguing process and its relationship to the photo record. The bulk of them can be grouped into categories as seen on the Ceramic Vessel Record Form. These categories include: *Major Attributes*, *Additional Attribute Descriptions*, *Use Wear*, *Decoration*, and *Sketch*. Not all fields are applicable for every vessel studied. For the non-numeric fields, I included a set of options to choose from. This was an inexact science, but based on attributes successfully used in previous research (Leonard 1996, Orton et al 1993, Rice 1987) (Appendix B)

The Major Attributes section contains fields for *Height*, *Rim Diameter*, *Body Circumference*, all measured in centimeters (cm) and *Volume* measured in litres. *Height* and *Volume* (L) were not often available or discernable at the time of observation and had to be determined at a later date through geometric analysis.

*Rim Thickness*, *Wall Thickness* at the rim, and the body are available fields as well, measured in millimeters (mm). Rim, lip, and shoulder descriptions were standardized. *Temper* was also included but not the size of temper as it was not necessary for this study.

Additional Attribute Descriptions includes a number of applied decoration techniques or possible functional attributes. This section included: *Castellations*, which were recorded by height (mm) and angle (nearest degree to top of rim); *Collar* by width and thickness (mm); and *Punctates* by frequency, distance from rim (mm), and diameter

(mm). An *Other* section was also included if one of the previous sections needed some elaboration or description pertaining to a particular vessel.

The section concerning vessel *Use Wear* was used to record anything seen on the vessel that may be indicative of the vessel's function. This included residue intensity (light, moderate, or heavy) and location on the vessel. If the vessel was deemed to have any repair holes or possible repair holes, the diameter and location thereof was also recorded. I documented any worn areas in this section and their locations. Finally, there is a field for recording any other possible use-wear visible on the vessel.

The last two sections of the form record involve decoration and rim shape. *Decoration* was recorded based on location and type. There are fields for the interior, exterior, and the rim/collar of the vessel to be documented based on standardized attributes. Just below, the *Sketch* area allows for a rim profile if possible, and a sketch of the vessel or vessel sherds and its patterning. This was useful when dealing with geometric patterning or matching the record to its photograph.

Once the applicable form information was entered into the catalogue, I was able to establish other fields. These included general information concerning the catalogue numbers and holding areas. Also, it included *Ceramic Period (CP)* based on information gathered from catalogue sources, radiocarbon dates, and the Petersen/Sanger typology. Geometric analysis resulted in the addition of a *Form Type* field that allows me to discern the height and volume of each vessel as well. Lastly, I was able to connect the vessels to the photograph record through an *Image field or IMG*, which assisted me in connecting

the photographs, sketches from the forms, and the vessel catalogue numbers during later analysis.

## Study Collections

My study collections encompass the four Atlantic Provinces (Fig. 3.7). For discussion, I have organized the sites by their respective regions within each province. I have chosen these regions for ease in describing the environment as it pertains to a group of sites. This will also assist in later descriptions of temporality and the time periods covered by certain areas of each region. This organization is not meant to imply that the people who lived in each region during any particular period were a homogeneous group, or that vessels in each defined area are in any way connected.

### New Brunswick

I studied pottery vessels from 13 sites in New Brunswick. Overall, this province provided the most near complete vessels, with a total of ten specimens. Furthermore, the 13 sites contained 83 of the vessels used in this study. I have located the sites in five different regions: Passamaquoddy Bay, Saint John River Valley (Grand Lake Meadows), Miramichi River, Bay of Fundy, and Chiputnicook-St.Croix.

#### *Passamaquoddy Bay Region*

Passamaquoddy Bay is located off the southern shore of New Brunswick and is surrounded by Northeastern Maine and southwestern Nova Scotia. The Passamaquoddy

Fig. 3.7. Site Locations in Study Region.

**Passamaquoddy Bay Region, NB**
1-Bocabec Digdeguash Point (BgDr-7)
2-Teacher's Cove
3-Ministers Island (BgDs-10)
**Saint John River Valley, NB**
4-Maquapit Lake Area (BlDn-8)
5-Fulton Island (BlDn-12
6-Hazel site (CeDw-3)
7-Meadows site (BlDn-26)
8-Kennebecasis (NB VIII-D)
9-Keyhole site (BlDm-1)
10-Savage Island (BlDq-1)
**Miramachi River**
11- Oxbow site (CfDl-1)
**Shediac Bay**
12-Skull Island (CbDd-1)
**Chiputnicook-St.Croix Drainage, NB**
13-Diggty site (BjDu-17)
14-Mud Lake Stream (BkDw-5)
**Northern Peninsula, NL**
15-Gould site (EeBi-42)
**Southwestern Nova Scotia, NS**
16- Bear River (BdDk-1)
17-Eel Weir (BdDh-6)
18-Port Mouton 1, IV (AlDf-1,3)
19-Port Joli XII (AlDf-2)
20-Commeau Hill site (AkDm-1)
**Mahone Bay, NS**
21-Eisenhauer Shell Heap (BcDc-4)
**Minas Basin Region, NS**
22-Melanson site (BgDb-4, BgDb-5)
23. Clam Cove (BhDc-5)
**Merigomish Harbour and Vicinity, NS**
24-Quarry Island Shellheap (NS VIIIB)
**Cape Breton, NS**
25-Odaskwanokh (BlCf-2)
**Prince Edward Island**
26-MacDonald site (CcCm-12)

Bay Region itself has been the subject of interest and study since 1797, when Judge Robert Pagan and surveyor Thomas Wright visited St. Croix island just north of what is today St. Andrews. In 1883, Matthew (1884) conducted the first modern excavation in the region at the Bocabec site. Since then numerous other sites have been explored (Sanger 1986). Of these, I will discuss three in this study: Bocabec-Digdeguash Point (BgDr7), Minister's Island (BgDs10) and Teacher's Cove (BgDr11).

Bocabec-Digdeguash Point (BgDr-7)

Matthew (1884) originally discussed this site in *Discoveries at a Village of the Stone Age of Bocabec, NB*. The site is located on Phil's Beach, an area that boasts tides from twenty to twenty-five metres during high season. The stratification that resulted from this tidal change resulted in the preservation of multiple layers of occupation. The layers of interest to this research fall above a layer plentiful in bone harpoons. Matthew noted that pottery from the lower levels seemed to be impressed with a square or angular point whereas the artifacts from the upper layers favoured rounder implements (Matthew 1884: 17). The area has been examined since this time period and much movement has occurred with the collection. The collection has been mixed with different sites through re-cataloguing and much provenience is lost. That being said, a re-examination of the artifacts has provided fresh perspective on the occupations in the site area (Bishop 1983).

Although there are no known radiocarbon dates in association with these pottery vessels, artifact association provides two separate occupations for the site. One occurs at 2000 B.P. and the other at 900 B.P. (Bishop 1983: 15). The decoration and size of the one

usable sample places the vessel in CP4 which corresponds with the later occupation. The vessel in question has a rim diameter of 19 centimeters and an average wall thickness of approximately 10 millimeters. The rim is constricted with a rounded lip moving out from a wide shoulder. This vessel has punctations that emboss through to the other side and cord-wrapped stick decoration in geometric patterning. Both punctuations and cord-wrapped stick technology are definitive of CP4 (late middle Ceramic Period). This vessel when complete, would be approximately 8 L in volume and no larger than 13.7 L.

Teacher's Cove (BgDr-11)

This site is located between the present-day towns of St. Andrew's and St. George. Davis (1978) has completed the most comprehensive work on the site He identified two separate cultural components at the Teacher's Cove site. The first component was associated with a number of diagnostic projectile points but did not include any evidence of shellfish exploitation. The second component demonstrated evidence of shellfish exploitation, as well as pottery use. The temporal range for the site is thought to be 2350 to 500 years ago with continuous occupation. These dates fall in the range of CP2 to CP6, or the middle to late Ceramic Period.

A radiocarbon date of 1635+/-60 is generally associated with grit-tempered pottery of various decorations giving us a classification of CP3 for many vessels uncovered (Petersen and Sanger 1991). Two vessels from this site were used in this study. The first vessel falls within CP3, and is grit-tempered with a rocker-dentate application. The completed vessel would be approximately 1.9 L and no larger than 2.7 L. The second

vessel is likely a CP4 vessel, as it has cord-wrapped stick impressions in a geometric pattern not associated with the aforementioned date. Its volume would be approximately 8.6 L but no larger than12.3 L.

Ministers Island (BgDs-10)

This island is located off the southern coast of New Brunswick moving out into Passamaquoddy Bay, north of St. Andrew's. The site itself is located on the western side of the island facing the mainland. Pottery sherds from this site have not been well documented and remain to be studied in depth. Sanger collected a number of artifacts from the site and subsequently submitted them to the Canadian Museum of Civilization in 1970. There are also a number of artifacts collected in 1962 and 1967 in the museum holdings. The four specimens examined for this study provided a wealth of variety in their attributes. The smallest vessel, at 16 centimeters in diameter, had an appliqué collar, flat flaring rim profile, and no lip. The grit-tempered vessel was decorated with dentate stamping with a rocker application. Based on these attributes, most notably the existence of a collar, decoration, and the overall rim type, I would place the vessel in CP3. The next vessel has been identified as *Vessel 94*. It is the only one of the group currently held at the Department of Archaeology, Memorial University. This vessel is also grit-tempered and has an overall rim diameter estimation of 20 centimeters. The vessel has a flared rim and rounded lip with 6 identifiable punctuates in two horizontal lines at the neck. The vessel was decorated with a cord-wrapped stick in a linear application. This vessel would date approximately to the CP4 period. The third vessel in the group has a rim diameter of

approximately 21 centimeters. The vessel is organic/grit tempered with a flared and rounded rim. The outside of the vessel is decorated with a geometric application of cord-wrapped stick impressions. This would place the vessel in CP4 as well. The last vessel studied in this group is the largest by far. The vessel has a rim diameter of approximately 24 centimeters. The rim is flat with a rounded lip. This is the only vessel in the group with a pseudo-scallop shell design. The stamp is applied using a rocker technique across the rim suggesting a CP3 date. These vessels range in volume from approximately 3.1 L to 8.6 L. The smallest vessel could be no larger than 5.6 L and the largest no greater than 12.3 L.

***Saint John River Valley***

Bordered by the present day cities of Edmunston in the north and Saint John in the south, the Saint John River Valley has been an integral part of the landscape and nearby populations for centuries. The area is historically associated with the Maliseet (or Wolastoqiyik) people (Bourgeois 1999). Archaeological interest in this area dates to 1884 when Matthew discussed the region along with a broader view of New Brunswick pottery. Of the numerous sites uncovered during its impressive archaeological history, I will discuss six. It is important to note that Bourgeois' work in 1999 separates Ceramic Period 2 into both an 'a' and 'b' distinction. For the purposes of this study and to remain consistent with other areas of Atlantic Canada that have not had such detailed work, I will be maintaining CP2 for all.

The sites to discuss are as follows: Maquapit Lake Area, Fulton Island (BlDn-12),

Hazel site (CeDw-3), Meadows site (BlDn-26), Hazel site (CeDw-3), Key Hole site (BlDm-1), Savage Island (BlDq-1), and the Kennebecasis Vessel.

Maquapit Lake Area: Ring Island and Surrounding Area (BlDn-8)

The first site to discuss, the Maquapit Lake Area, is a bit of a misnomer. This name is given to Ring Island and the artifacts indirectly associated with them. It is unclear whether or not some artifacts considered as Ring Island do in fact have that direct association with the Ring Island Borden association of BlDn-8 (Bourgeois 1999: 27). Therefore, in the interest of open research and to utilize as many vessels as possible, I have used the term Maquapit Lake Area.

Duncan London surveyed the shores of Maquapit Lake as early as 1904 uncovering artifacts and acquiring them from members of the community. As context is somewhat of an issue in these early periods of archaeology, we can only assume general association for some of these artifacts from Ring Island, and not specific depth or site location. One of the most impressive finds from this region is the near complete vessel uncovered by London himself and donated to the New Brunswick Historic Society (Matthew and Kain 1904). Prior to this find, most believed that pottery vessels were flat bottomed and not rounded or conoidal. The vessel, currently stored at the New Brunswick Museum in Saint John, opened a new door for pottery study in the region.

This conoidal vessel is grit-tempered, with a large castellation on one side. It has wide shoulders and a constricted neck leading out to its flared rim. It is 30.8 centimeters tall, has a rim diameter of approximately 26.5 centimeters, and has a rim thickness of 9

millimeters. This vessel has an approximate volume of 8.8 L and could be no larger than around 17 L. The vessel has approximately three punctuations although one might be the result of a repair. The vessel is decorated with a pseudo-scallop shell decoration applied with rocker and/or geometric patterns. There are also striations visible on the interior of the vessel. The work is fine and the vessel has been preserved remarkably. The vessel likely dates to CP3, as the decoration was rocker-stamped.

The other vessels from this site area have attributes that point them mainly to CP2 and CP3. Most vessels are decorated with pseudo-scallop shell and dentate forms with linear and rocker applications. There is one vessel (BlDn8: 5335) that is decorated with linear cord-wrapped stick impressions. This could be a transitional piece moving into CP4. The vessel volumes are various ranging approximately from as small as 0.6 L to as large as 13 L. It should be noted that some CP3 vessels have been recognized to have this form of decoration in the lower Piscataquis river region of Maine (Newsom 1995). Overall, due to these factors along with the collar application and vessel wall-thickness, the vessel has been identified as CP3.

Fulton Island (BlDn-12)

This site is located in the center of the Grand Lake river system. The survey conducted on the Grand Lake region in 1971 resulted in the identification of 31 archaeological sites. The Fulton Island site is one of four sites identified on the island during that survey. The annual flooding of the region has resulted in incredible preservation and stratification of the site and its materials. The collection is so well

stratified that Bourgeois considers it "central to the Saint John River sequence," during its development (Bourgeois 1999:29). The site itself consists of several short-term occupations by small groups from approximately 3000 years to roughly 1600 B.P. This time frame would fall into that of the Early to Middle Ceramic Period or CP1 to CP3. This range is supported by eight radiocarbon dates collected from the many strata of the site. The excavated material suggests a site occupation during the summer and fall months.

The pottery from the site is quite fragmented but there has been at least one incredible reconstruction. Vessel 6 is a near-complete vessel currently residing in the New Brunswick Museum. The conoidal vessel is 30 centimeters high with a rim diameter of 22.3 centimeters. The vessel has a volume of approximately 7.2 L and no larger than 13.1 L. The walls are quite thick with 12 mm being the maximum thickness at the rim. It is grit-tempered with wide shoulders leading to a maximum body circumference of 74.8 centimeters. The vessel is decorated with dentate stamping rocked across the body of the vessel, as well as the rim itself. There are five indentations around the perimeter of the vessel at the rim. They alternate from punctuated to embossed, sometimes puncturing the surface of the opposite side. There are also striations visible on the interior of the vessel. Overall the vessel exhibits all of the attributes associated with CP2. The remainder of the Fulton island vessels observed in this project are attributed to this range as well.

Hazel site (CeDw-3)

There is not much written on the Hazel site itself. Bourgeois discusses it briefly in

his unpublished MA thesis. The site is located at the mouth of the Tobique River in the Grand Lake system. The collection consists of one near complete vessel discovered during a 1982 survey of the region. The vessel is likely globular with a rim diameter of 20 centimeters. The bottom of the vessel is incomplete so an exact height and shape is indiscernible from the vessel itself. Judging from a similarly-shaped vessel, I can approximate the height to around 21 centimeters. The volume can then be approximated to 10 L. The vessel has a constricted mouth and thin walls. Unfortunately an exact measurement of the vessel walls could not be completed. The outside of the vessel is decorated using cord-wrapped stick in a geometric application. It has a series of punctations around the rim as well. This vessel can be attributed to CP4 based on its form and decoration.

Meadows site (BlDn-26)

Dignam and Associates Consulting (DAC) identified this site in 1998 during archeological monitoring. The area in question, near Jemseg, was surveyed prior to construction of a bridge across the Saint John River. There are three radiocarbon dates returned for this site. The three samples span CP2 and CP3 dating as early as 1780+/- 40 years B.P. and as late as 1590 +/- 40 years B.P.

The vessels range from 15 to 20 centimeters in rim diameter. The wall thickness is between seven and eight millimeters thickening to approximately 10 millimeters at the shoulder of the vessel. All vessels are grit-tempered. They are narrow at the shoulder and flare at the rim. Two of the three vessels, those attributed to CP2, are decorated with

pseudo-scalloped shell motifs in a geometric pattern. The remaining vessel, attributed to CP3 is decorated with a dentate stamp in a linear fashion. These vessels range in volume from as small as around 2 L to as large as 13 L.

Kennebecasis (NB VIII-D)

Local diver Peter Oxley found this vessel in 2001 near the town of Rothesay at the bottom of the Kennebecasis River. The original vessel is stored at the Canadian Museum of Civilization in Hull, Quebec and a replica is on display at the New Brunswick Museum in Saint John.

The grit-tempered, ovaloid vessel has a scallop-edged rim that flares from narrow shoulders. It has a height of 23 centimeters and a rim diameter of 19 centimeters. The body circumference of the vessel is comparatively small at only 60 centimeters. The vessel would only hold about 3 L or at most 7 L. The vessel is decorated in pseudo-scalloped shell stamping rocked across the bulk of the vessel and stamped in a geometric fashion near the rim. The rim also has one solitary punctate. It is difficult to say whether or not this pattern continues, as the original rim is not complete. The walls are approximately 9 millimeters thick at the rim but that is variable considering the scalloped edging. This vessel can be placed in CP2 based on these attributes.

Key Hole site (BlDm-1)

The Key Hole site is located on the western shore of Grand Lake. Artifacts from this site have been collected since the beginning of the twentieth century. There are over

2000 pottery fragments and sherds collected from this area (Bourgeois 1999). The site was originally discussed in William McIntosh's submission to the Natural History Society in 1909. A. Gordon Leavitt and McIntosh collected 1100 pottery fragments at Key Hole (referred to in this particular article as Princess Park) during 1904 and McIntosh returned to recover 800 more the following summer. The area is flooded each year and preserves little context (McIntosh 1909) so relative dating is not possible. The authors describe the temper of the collection as various, observing both shell and grit as inclusions. As I was not able to discern temper for a number of these artifacts, the best I can assume is that they fall under either grit or shell temper, or a combination of the two.

Six of the vessels uncovered at the site are included in this study. The rim diameters range from 12 to 25 centimeters. The rim thickness varies from six to 10 millimeters. The largest of the vessels has the thickest vessel wall. The vessels range in volume from around 1.9 L to as high as 14 L. Most of the vessels have rounded lips and flared rims with a couple of exceptions. The smallest of the vessels at 12 centimeters in diameter was the only one in the group to have a collar. Most vessels have dentate stamping in a linear form but one vessel, the largest, has pseudo-scalloped shell designs in a rocker application. Some of the vessels also show punctuations and incised lines as part of the decorative process. Overall the attributes for these vessels point to CP2 and CP3.

Savage Island (BlDq-1)

Savage Island is the spot find for the Savage Island vessel. In 1996, during a survey of the region, David Keenlyside observed a large vessel eroding out of the bank of the

Saint John River approximately 10 kilometers from the current city of Fredericton (Bourgeois 1999). This vessel has since been reconstructed and resides at the Canadian Museum of Civilization. The discovery of other artifacts from the area around the find point to what is likely a site that spans the early Middle Woodland period up to and including the contact period of the region, CP2 to CP6 (Bourgeois 1999:35).

This particular vessel is a mix of grit and organic temper. It is approximately 19.5 centimeters high with a rim diameter of 17 centimeters. The body of the vessel is approximately 26.4 centimeters giving the entire vessel an elliptical shape. The wall is approximately ten millimeters thick at the rim, which flares from the vessel's wide shoulders. The volume of this vessel is approximately 5.6 L and could be no larger than 7.2 L. The rim is rounded and decorated with punctuates embossing the outside of the vessel. The upper two-thirds of the vessel is decorated with pseudo-scalloped shell in a geometric and linear application. One of the other vessels found in association with this vessel was AMS dated to 2130 +/- 60 which would place it in CP2 (Keenlyside 1998). This date also seems logical for the Savage Island vessel based on attributes and association.

***Miramichi River***

The Miramichi River runs through the northeastern and central areas of New Brunswick. Approximately 25000 square kilometers of New Brunswick drain with the aid of this river and its two main branches and tributaries. The river collects in the Miramachi Bay with the head of tide above the present day community of Metepenagiag

Mi'kmaq First Nation. The river is rich in natural resources as is evidenced by human use of the area for centuries. Only one site in my study is from this region, the Oxbow site (CfDl-1).

Oxbow site (CfDl-1)

The Oxbow site, so named for its position on the first bend of the Little Southwest Miramichi, is a highly stratified site. The site is located on the land of the Metepenagiag Mi'kmaq First Nation. Community member and elder, the late Joseph Augustine, was the first to describe its location to archaeologists. During periods of high water, the site itself becomes inundated resulting in a build-up of sediment. During low water levels the area is perfect for fishing.

This environment yields excellent preservation of artifacts such as pottery. Furthermore, the multiple strata were ideal for discovering more about pottery in Atlantic Canada. The site was initially tested in 1977 revealing an "undisturbed and culturally stratified Maritime Woodland period living area," (Allen 2005: 9). Excavations began in the season of 1978 and continued in 1979. Further excavations did not continue until 1984. There are a number of radiocarbon dates associated with this site. Thin walled ceramic vessel sherds were directly associated with the date of 2480 +/- 105 B.P. A hearth containing pottery was also dated to 2640 +/- 50 B.P. and 2600 +/- 60 B.P. There are numerous dates overall associated with this site placing the earliest date (the above 2640 +/- 50 B.P.) in the middle of the early ceramic period. The latest accepted dates (1080 +/- 90 BP) were associated with cord-wrapped stick decorated pottery, bringing the

vessel into CP4. Most of the collection I observed came from CP2. One vessel (CfDl1: 1943) did present attributes, markedly decoration, associated with CP4.

The collection of 30 vessels used in this study from the Oxbow site range in rim diameter from 8 to 25 centimeters showing a great variety in size. One vessel (CfDl-1: 1943) was one of the two near complete vessels associated with Oxbow. The reconstructed vessel has cord-wrapped stick decoration applied in a geometric and rocker fashion. The grit and organic-tempered vessel has wide shoulders and a constricted rim. It is 24.5 centimeters tall, has a rim diameter of 18 centimeters and a body circumference of 79.5 centimeters. The volume of the vessel would be approximately 9 to 12 L. The walls of this particular vessel are between six to eight millimeters thick. It has a castellation at an angle of 110 degrees. Judging from these attributes, I would place this vessel at CP4, the end of the Middle Woodland period. The second vessel (CfDl1: 1673) has grit and organic inclusions. It is 20.5 centimeters tall, has a rim diameter of approximately16.2 centimeters, and has a body circumference of 62 centimeters. The thickness of the vessel varies considerably from five to nine millimeters. The vessel rim is flared with a flat lip and wide shoulders. This vessel is smaller and could range in volume from 4 to 6 L. This vessel also has a castellation though it is one-sided and considerably less obtuse at 95 degrees. This vessel is decorated with pseudo-scalloped shell impressions applied in both rocker and linear fashion depending on the location on the vessel. This vessel is placed in CP3 based on these attributes.

### *Shediac Bay*

Shediac Bay is a sub-basin of the Northumberland Strait located on the eastern shore of New Brunswick. The coastal region is rich in natural marine resources and as such has been occupied for centuries. There are several locations on the beaches of Shediac Island, located in the center of Shediac Bay, where natural clay could be found. Allain's research throughout New Brunswick on natural clay sources proved useful here as she was able to obtain buckets of clay at low tide to run tests, and build coiled pots suitable for firing (Leonard 1996:108).

### Skull Island (CbDd-1)

Skull Island is located on the edge of Shediac Bay. The Skull Island site features a burial pit where approximately nine vessels were interred along with the individuals. Many of the vessel sherds found were tempered with shell as opposed to grit and decorated with cord-wrapped stick. From the collection as a whole, Leonard conducted a series of experiments examining building methods, function, size, and more. These aspects of Leonard's work will be discussed later in the document and therefore not dwelled on here.

Overall, there are six near complete and reconstructed vessels from this site used in this project. The vessels themselves are diverse in both size and form. They are alike in that they are conoidal vessels with a shell-temper. The vessels range in rim diameter from 16.5 centimeters to 27 centimeters. The vessel height ranges from 22 centimeters to 38 centimeters. The wall thicknesses were not recorded. The volume is quite various as well

starting at 5.1 L to as large as 14.3 L. Leonard calculated these vessel volumes through the summed cylinders method, which is quite accurate and effective. Each vessel was decorated with cord-wrapped stick impressions as previously mentioned. It was applied with a variety of punctations, geometric patterns, and indentations. The interior of each vessel was decorated with surface combing. A radiocarbon date of 680 +/- 70 B.P. returned in association with these vessels places them near the end of CP5, which raises a question about their conoidal shape. Petersen and Sanger suggest that vessels from this time period tend to move towards more globular shapes. The Skull Island results are likely due to inter-regional variation as noted by Leonard and much like what is seen in other areas of Maine and the Maritimes (Bourgeois 1999; Leonard 1996:114, Newsom 1999).

***Chiputnicook-St. Croix Drainage***

The Chiptunicook-St. Croix river drainage system lies north of Passamaquoddy Bay. As this waterway lies in the interior of the province, it has not received the attention from archaeological survey as has its coastal counterparts (Deal 1984:3). The region received a brief surge of interest in the 1950s following the discovery of a 'red ochre' cemetery but it was short-lived. Most artifacts were in the hands of private collectors as the area was largely the property of private owners. Sanger, while working for the Archaeological Survey of Canada, examined these collections and the region as a whole in 1971 and designated 37 sites on Spednic Lake (Deal 1984:4). When the area was deemed a National Recreation area in 1981, there were concerns that the increased

tourism would affect known and potential sites in the region. During the survey the following year, eight more sites were located. Of the three sites recommended for further excavation, I will be discussing two: Diggity (BjDu-17) and Mud Lake Stream (BkDw-5).

Diggity site (BjDu-17)

The Diggity site is located on Spednic Lake in the southwestern part of the province. Spednic Lake drains into the St. Croix River as part of the Chiputnicook-St.Croix drainage system. The site was discovered during an archaeological survey in the Chiputnicook area prior to the establishment of a wilderness park. The time period for this site would range from the end of CP3 and CP4. This is based on the radiocarbon date of 1220 B.P (Deal 1984:107).

The reconstructed rim used for this project is known simply as vessel one or catalogue number 159. The vessel was large with a rim diameter of approximately 25 centimeters. The walls were relatively thin with a rim thickness of between five and seven millimeters. The grit-tempered vessel has wide shoulders leading to a constricting rim. The volume of this vessel could be as large as 16.8 L based on geometric proportion analysis. The vessel rim is decorated with a series of punctates around the outside likely made with the end of the decorative tool used on the vessel itself. The vessel is decorated with pseudo-scallop shell motifs in a linear application. The upper interior of the vessel even has the same linear application. The use of punctations would point this vessel toward CP4 but the use of pseudo-scallop shell decoration would place this vessel in the

later part of CP3.

Mud Lake Stream (BkDw-5)

This site is located on the eastern bank of Mud Lake Stream, a water body that drains into Spednic Lake. Mud Lake Stream and Spednic Lake seem to have held an important role for trade routes in the protohistoric period. This particular stream is located on the border between Canada and the United States. Collector Bliss Goodwin of the local community first identified and surface collected the site. It was bordenized by David Sanger in 1972 (Deal 1986). The site itself was not excavated or tested until 1982. Excavation continued through 1983 and 1984. The site covers the late archaic and early woodland period as well as the protohistoric period. The site was possibly used continuously since 4000 B.P. (Deal 1986:88).

Three of the 34 vessels uncovered from Mud Lake stream are used within this study. The rim diameters range from six to 13 centimeters with the rim thickness ranging from as low as six millimeters to as high as 14. These grit-tempered vessels have wide shoulders coming up to a flared rim and rounded lip. The vessels are small, ranging in volume from as small as 0.2 L to as large as 1.4 L. Two of the vessels have a series of punctates around the rim. All three vessels are decorated with cord-wrapped stick motifs applied in both geometric and linear fashions. These attributes place the vessels in CP4.

## Newfoundland and Labrador

### *Northern Peninsula*

The Great Northern Peninsula is part of the island of Newfoundland. The area is rich in archaeological sites both from the precontact and historic periods. Due to a number of factors, pottery from the Woodland period has not survived in great number anywhere on the island. However, the Gould site (EeBi-42) on this particular peninsula encourages further exploration as an exception to that rule.

#### Gould site (EeBi-42)

Excavations at the Gould site in Port au Choix by M. Teal and M.A. P. Renouf have uncovered nearly 300 pottery sherds making it the "largest collection of ceramics north of the Gulf of St. Lawrence" (Teal 2001: 104). The site, privately owned by John Gould was excavated mostly during 1999, but some previous excavation also occurred in 1997 (Teal 2001). The Gould site is part of the Cow Head Complex dated to 2000 to 1500 B.P. Port au Choix appears to have been a preferred location in prehistory having been occupied for over 4000 years. The area is close to both terrestrial and marine resources making it ideal for habitation. The bulk of the 284 pottery sherds came from a large depression known as Feature 280. This particular activity area has been occupied longer than the others and has the youngest material culture of the site as a whole. Radiocarbon dates from the charcoal within the layer lining the depression falls in the youngest part of the Cow Head Complex (1500 +/- 40 B.P.) (Beta 134156). Previously,

results indicated a minimum vessel count for the Gould site to be approximately seven, but recent reinterpretation and discussion brings that number down to three (Teal, 2008, pers. comm.).

The rim sherds are grit-tempered, very delicate, and range in rim diameter from approximately 14 to 19 centimeters. The vessels range from as small as 1.5 L to as large as around 7.5 L. All of the rims studied had no visible lip but they had a rounded edge and a small flare. They are decorated with mainly dentate impressions in linear and geometric forms. One of the vessels uncovered has an interesting ridge extending from the apex of the castellation down into the neck of the vessel. As the attributes and radiocarbon date suggest, the vessels are dated to approximately CP3.

**Nova Scotia**

I studied vessels from twelve sites in Nova Scotia. Overall these sites covered a vast range of time periods from CP2 to CP5, and provided the study with a total of 76 vessels for analysis. Of these, only one had a discernable height though a few more, such as those from Eel Weir (BbDh-6), could be considered nearly complete.

I have separated the sites into the following five regions: Southwestern Nova Scotia, Mahone Bay, Minas Basin Region, Merigomish Harbour and Vicinity, and Cape Breton.

***Southwestern Nova Scotia***

Kristmanson intensively studied this region in her Master's research (1992). This

region as I am defining it, encompasses as far northward as the Bear River site (BdDk-1) only. The other sites under discussion are Eel Weir (BbDh-6), Port Mouton 1 (AlDf-1), Port Mouton IV (AlDf-3), Port Joli XII (AlDf-2), and Commeau Hill (AkDm-1).

Bear River (BdDk-1)

This site is located at the mouth of the Bear River on the northwestern coast of the province near the Bay of Fundy. The site area is milder than the coast as it is a protected inlet (Connolly 1977). It was excavated from 1957 to 1959 by an avocational archaeologist named J.S. Erskine. He returned for further excavation in 1966. Prior to Connolly's report (1977) approximately one quarter to one half of the site had been previously excavated. The artifacts themselves are housed at the Nova Scotia Museum with a small amount held at the Canadian Museum of Civilization.

Bear River allowed for the addition of 34 more vessels to the study. The vessels range in rim diameter from nine to 17 centimeters. The rim thickness varies from as thin as four to as thick as 10 millimeters. There is a wide variety in the style of the vessels, ranging from straight flat rims with wide shoulders to rounded flared rims with narrow shoulders. The vessels range in volume from approximately 0.6 L to 18 L. Only one vessel possessed a castellation. The vessels have a mix of grit and organic tempers favouring a mix of both. The vessels had decorations of pseudo-scalloped shell, cord-wrapped stick, and linear dentate, showing a large temporal range as well.

The pottery had no *in situ* measurements and the previous reports stated simply that the features were said to resemble Bourque's designation of Eaton Wares, which would

place them at approximately 200 A.D. (Bourque 1971). Kristmanson notes a ceramic period of 2125 +/- 65 in general association with ceramics on this site (Kristmanson 1992). These two dates correspond fairly well, placing the vessels as early as CP2. As discussed above, the vessel attributes point to use of the site until as recently as CP4.

Eel Weir (BbDh-6)

Eel Weir is a collection of sites along the Mersey River through Kejimkujik National Park. An archaeological survey conducted by Parks Canada in 1972 first uncovered these sites. Since that time, there have been mitigative excavations taking place in areas of the site (1979 and 1980). This was then followed by another survey that helped in redefining the sites along the Mersey River in 1982 (Kristmanson 1992:40). The two vessels for use in this study, 9B49X1-1 and 9B32E14, are from Eel Weir IV.

Vessel 9B49X1-1 is a grit-tempered vessel with a rim diameter of 22 centimeters. The walls are approximately seven millimeters thick. The vessel rim flares slightly from wide shoulders and has a rounded lip. Judging from the reconstructed portion of the artifact, the completed vessel was likely ovaloid in shape. The vessel volume could be anywhere from 16.3 L to 19.5 L. The vessel was found in a shallow pit directly associated with the radiocarbon date of 830 B.P. +/- 190 (Beta 8128). There were no other artifacts associated with it (Ferguson pers. comm. 2008). This would put the vessel in the context of CP5.

A park warden found the second vessel, 9B32E14-1, in the river during low tide, just in front of the site. There is no context for the vessel and no radiocarbon date as it

was pulled from the riverbed. This is a grit and organic-tempered vessel with a rim diameter of approximately 15 centimeters. The vessel could range anywhere from 3.6 L to 5.2 L. The vessel has a constricted rim with no lip. The vessel is ovaloid with wide shoulders and fairly thin walls at five millimeters. This particular vessel is decorated with dentate impressions rocked across the body and face of the rim. Given the vessels attributes and lack of punctations I would place it in CP2.

Port Mouton I (AlDf-1) and Port Mouton IV (AlDf-3)

As these sites are located in close vicinity and have some cross-mended artifacts, I am examining them together. They are located in Port Mouton Harbor in Nova Scotia. This body of water is located on the southwestern shore of the province. The site is located on a stretch of land in Jones Cove. Theirau discovered this site and Erskine initially excavated it in 1966 (Kristmanson 1992, Erskine, n.d.). The site featured a large shell midden and produced many surface finds. The lower levels of the site produced ceramic artifacts and the upper levels held mainly stone flakes and a few small projectile points (Erskine n.d.).

Port Mouton IV produced the bulk of the vessels used from this area in the project. All vessels are held at the Canadian Museum of Civilization. Four of the vessels are directly attributed to AlDf-3 with one listed as a cross-mend between AlDf-1 and AlDf-3. The one vessel associated with AlDf-1 was a cross-mend between the two sites. The vessels have rim diameters spanning 12 to 16 centimeters with one vessel's rim diameter being indeterminable. These vessels range in volume from 1.9 L to 3.6 L. The vessels are

mostly grit-tempered with some organic inclusions and only one showed punctations of any kind. The vessels from this group displayed a wide variety of forms and decoration. It is likely that the vessels span from CP2 to CP5 based on attributes. Kristmanson also states that vessels from these sites in general span CP2 to CP7 (Kristmanson 1992:55)

The vessel associated with AlDf-1 and cross-mended with AlDf-3 has a sizeable rim diameter at 24 centimeters with a thick wall of 8 millimeters. The vessel could range from 14.8 L to as high as 21 L. The rim of the vessel is constricted and has a rounded lip. The temper is likely a mix of grit and organic inclusions. The vessel's exterior is decorated with incised lines and pointed stylus applications. The majority of the decoration is done with dentate stamping in a linear application. The site returned a radiocarbon date of 2640 +/- 70 B.P that according to Kristmanson was originally believed to be too early. Kristmanson concludes, and this author agrees, that the time period is suited to the vessels found. This radiocarbon date corresponds with CP2.

Port Joli XII (AlDf-2)

Port Joli is located at Scotch Point in Port Joli Harbour. This particular site was one of many found during a survey conducted in 1958 and 1959 (Erskine 1959). Port Joli Harbour is one of the deep harbours located on the line between Queens and Shelburne counties in southwestern Nova Scotia (Erskine 1959:344). The two vessels used in this project had approximately the same rim diameter, 15 centimeters. They varied in almost every other detail. Together, the vessels range in volume from approximately 3.9 L to 5.2 L. The first vessel, AlDf-2: 12, was a straight rimmed vessel with no lip. The rim was

decorated with two rows of punctates and linear cord-wrapped stick designs. The second vessel AlDf2: 14,15 had a flared rim with a rounded lip. It had two punctates far from the rim of the vessel and the rest of the rim was decorated in cord-wrapped stick impressions with rocked and geometric applications. Both of these vessels have attributes placing them in approximately CP5.

Commeau Hill site (AkDm-1)

The Commeau Hill site produced the only near complete reconstructed vessel in the province available for study. This shell-midden site is located at the south end of Turnip Island (Kristmanson 1992). The vessel itself was a spot-find by community member Wilbur Sollows and donated to the Yarmouth County Museum, where it is currently on display. Sollows recovered the vessel from the shell-midden in a "context which suggested to him that the vessel had been deliberately broken" (Davis 1974:4). Interestingly the greater number of pottery sherds were found in concentration with a large stone in the center. The vessel itself is approximately16 centimeters in rim diameter and roughly 17 centimeters in height. The form of the vessel is quite globular with a constricted rim and wide shoulders. The volume of the vessel is approximated to 5.5 L. The vessel is grit-tempered with thin walls of approximately 8 millimeters with a series of punctates decorating the rim. The rim of the vessel is decorated in a geometric pattern. The body of the vessel has at least one possible repair hole (Davis 1974). The interior of the vessel appears to have been decorated with a series of striations as well. Overall the decoration and the form attributes of this vessel point the Late Woodland period. The

vessel can be dated to approximately CP5.

### *Mahone Bay*

Mahone Bay is located just west of the city of Halifax on the southern coast of the province. There are a number of shell-middens identified in this region of Lunenburg County. Of particular interest to this project is the midden known as the Eisenhauer Shellheap, or BcDc-4.

#### Eisenhauer Shellheap (BcDc-4)

Construction crews uncovered this site in 1908 while working on a new road through the region. About one quarter of the midden was removed before crews noticed the layer of shells in the bank. The site was likely a temporary camp occupied during the warmer seasons. Also, the percentage of pottery uncovered from this midden was higher than that of any other artifact (Smith and Wintemberg 1973:112). Of the pottery uncovered, three vessels were used in this project. One of the vessels used has the unique position of being the smallest in the collection.

At a mere five centimeters in rim diameter, this vessel is likely made from one small piece of clay pinched to form a cup with perhaps one or two additional coils. The rim is approximately five to six millimeters thick and the vessel rim itself is constricted possessing no lip. The volume of this vessel is approximately 0.2 L. Approximately one quarter to a third of the vessel has been preserved. Through the breaks we can see that the vessel is grit tempered with some organic inclusions as well. The outside of the vessel is

decorated with a series of punctates around the rim and cord-wrapped stick in linear application across the body. This vessel is unique to the collection and can probably tell us quite a bit about pottery use in future study. Given the vessel attributes I would place this vessel in approximately CP4.

### *Minas Basin Region*

The Minas Basin region has long caught the attention of archaeological researchers. Avocational archaeologists such as Erskine have worked in the region since 1957 (Nash and Stewart 1990). Since 1988, this region of Nova Scotia as a whole has experienced ongoing research on the archaeology of the precontact and contact periods (Deal 1988; Godfrey Smith et al. 1997, Nash et al. 1991). The region has many natural resources as its ties to the Bay of Fundy help provide a rich variety of flora and fauna. I will discuss only three of the sites registered in this region: the Melanson site (BgDb-4), Cemetery (BgDb-5) and Clam Cove (BhDc-5). Melanson and Cemetery will be discussed together as they fall into the same region.

#### Melanson site (BgDb-4) and Cemetery (BgDb-5)

The Melanson site covers many Borden designations (BgDb-2, BgDb-3, BgDb-4, BgDb-5, BgDb-7). Within this is also the Cemetery site (BgDb-5) (Kristmanson 1992). This site is located in the Gaspereau River in King's County, Nova Scotia. The site's location is not only close to resources of the Gaspereau River, but also close to lithic sources (Scots Bay chalcedony and White Rock quartzite) and Cape Blomidon, a location

on North Mountain, which is the home of Glooscap (Nash and Stewart 1990:iii). The site's catchment area extends to approximately ten kilometers. George MacDonald's 1965 excavations uncovered most of the pottery from the site. Kristmanson used attribute analysis to arrange these vessels and classify them. Through analysis of the material culture of the site as a whole, researchers have placed it in the Middle to Late Ceramic period spanning the last 2000 years. Overall there were 53 vessels uncovered from the Melanson site. Ten of the vessels under designation of BgDb-4 are examined here along with twelve vessels, under designation of BgDb-5, or Cemetery site.

Radiocarbon dates found in general and direct association with artifacts from these two Borden designations place the site in CP2 and CP5-6. Kristmanson states the date of 1760 +/- 60 B.P. (Beta-17908) is found in general association with BgDb-4. Vessel decorations associated with this date are pseudo-scallop shell, cord-wrapped stick, and dentate decorated vessels. This also involved flared rims, rounded lips, and many different kinds of temper (Kristmanson 1992:51). Most of the ten vessels in association with this Borden designation were cord-wrapped stick decorated in both linear and geometric applications. The rim diameters ranged from nine centimeters to as large as 29 centimeters. This site produced the largest vessel of the study. BgDb-4 vessels ranged in volume from approximately 0.8 L to as large as 26.2 L. The associated attributes found by Kristmanson corresponded well with the attributes of the vessels within this study. The designation of BgDb5 was generally associated with 730+/- 20 B.P. (Alpha-3157). The vessels tended to be dentate stamped, decorated with punctates, incised lines, and also pseudo-scallop shell decorations. This would place the vessels in CP5. The vessels

associated with BgDb-5 for this project reflected that as well. Rim diameters ranged from nine to 18 centimeters. These vessels also ranged from 0.5 L to 9.9 L in volume.

Clam Cove (BhDc-5)

Clam Cove is located on Cape Split. This stretch of land is located between the Bay of Fundy and the Minas Basin. The site was likely used as a camping area en route from Melanson to gather chalcedony and foodstuffs (Halwas 2006). A charcoal sample associated with one of the two vessels from this site returned a date of 2170 +/- 140 BP (Beta-4925). That would place the vessel in CP3 (Kristmanson 1992:54). Attributes from the dentate stamped vessel used in this project would place the vessel directly in that time period. The vessel has a flared rim and rounded lip, which would correspond with CP3 as well. This vessel has an approximate volume of approximately 1.4 L. The other vessel used in this study has a different set of attributes. The vessel rim is straight and possibly constricted with wide shoulders giving it a more spherical shape. The vessel volume is approximately 6.3 L. It is decorated with cord-wrapped stick in geometric as well as linear patterns and a row of punctations under the rim. It is more likely for this vessel, based on attributes, to be part of CP4 rather than CP3. It could be a transitional vessel. Cord-wrapped stick could have a regional variation as well, as noted in Maine (Newsom 1999).

***Merigomish Harbour and Vicinity***

The Merigomish Harbour is located on the Northumberland Strait on the northern coast of the province facing Prince Edward Island. There are a number of known shell-

middens in the region. Smith and Wintemberg reported at least 18 as of 1973. For this particular project, only the Quarry Island shell-midden is discussed (NS VIIIB:988 a,b,c).

Quarry Island Shellheap (NS VIIIB: 988a,b, c)

This shell-midden is known as Shellheap A (Smith and Wintemberg 1973). Quarry Island is in an area with a major tidal flow. At low tide one can walk completely around the island. When the researchers located the midden for excavation they found it had been partly eroded and disturbed. Some of the vessels found in the midden had been created without coiling, according to researchers. The authors also noted that vessel temper was largely made of grit and shell.

The one vessel from Quarry Island used in this project has an approximated rim diameter of 15 centimeters. The vessel volume is approximately 3.6 L. The walls are quite thick at nine millimeters. The rim of the vessel is neither constricted nor flared; it is fairly straight ending in a rounded lip. The vessel is decorated with two lines of punctations under the rim and cord-wrapped stick decoration on the exterior. The interior of the vessel has a series of incised lines. Although there is no context available for this vessel, the attributes would place it in the range of CP4.

***Cape Breton***

There has been little work completed on pottery from Cape Breton Island. Only one site is available for discussion: Odaskwanokh (BlCf-2).

Odaskwanokh (BlCf-2)

Much of what we know about this site comes from Erskine's observations beginning in 1958. This site is located in Little Narrows in Inverness County. The site, likely a campsite, is located on a sand spit peninsula. Only small fragments of pottery were uncovered. The only context observable was that the pottery was found at a lower depth than the bipointed spearpoints (Erskine n.d.).

Three vessels have since been uncovered from that site location. The vessels range in rim diameter from nine to 15 centimeters. One vessel has two rows of punctations visible under the rim. All vessels are decorated in cord-wrapped stick designs in geometric, linear and rocker applications. Petersen and Sanger cite a range of CP5 to CP6 for these vessels (Petersen and Sanger 1991:147). This is possible considering the range in wall thickness from five to 11 as well as the mainly constricted rims and mixed temper.

**Prince Edward Island**

MacDonald site (CcCm-12)

Very few sites on Prince Edward Island have produced precontact ceramics of a sizeable nature. As it stands, the only vessel used for this project comes from the MacDonald site. This site is located on the coast near the eastern point of the island. The vessel is approximately 14 centimeters in rim diameter. The volume of this vessel is approximately 1.5 L. The walls are seven millimeters thick at the rim. The rim itself is slightly constricted with a slightly rounded lip. The shoulders are wide giving the

impression of an ovaloid vessel. The vessel itself is mainly grit tempered with some other possible inclusions. Keenlyside dates the site itself at approximately A.D. 800 to 1000. This would place the vessel in the range of CP4 (1350 B.P. to 950 B.P.). Judging from the vessel's attributes, it corresponds well with these dates (Keenlyside 1983).

## Chapter 4. Comparative Analysis of Forms

This research is intended to gather information previously scattered among unpublished dissertations, published articles, and field notes. By moving throughout various cataloguing techniques, time periods, and contexts I have put together a fair summation of what is seen in precontact pottery forms in Atlantic Canada. By studying the regional pottery as a single collection, I was able to investigate temporal and geographic patterning in vessel forms. The following chapter describes my analytical methods, including how I formulated approximate measurements and volumes from small sherds.

### Rendering Vessels and Volume

As described earlier in my methodology, I recorded both photographs and attributes for each vessel in the study. I used these images and data to develop rim profile drawings for each vessel. These line drawings made it easier to do a formal comparison of vessels of different size. This was achieved using photo-editing software with layering technology. This ensured a form directly extracted from the vessel photograph itself.

Choosing vessels on which I could base the whole collection proved to be quite a challenge. Traditional geometric analysis of elliptical vessels assumes complete forms and requires a number of additional measurements from the vessel (Orton et al. 1991, Shepard 1956, Rice 1987). As most of these measurements were unavailable to me I

turned to the vessels in the collection that are both varied in shape and accurately tested for volume. Leonard's work on Skull Island was a perfect candidate (Leonard 1996). The Skull Island vessels have a variety of elliptical forms and are tested for volume using the summed-cylinders method, which is more accurate than other methods (Rice 1987:222). As for the spherical vessel, the choice lay in the solitary vessel from the Commeau Hill site, which already had a known volume (Davis 1974). In the end, I selected seven vessels to serve as "type-vessels" for my analysis (see below).

Elliptical vessels make up most of the collection. An elliptical formula requires a known small horizontal axis. Not possessing such a measurement in the Leonard thesis, I used the known values to solve for the unknown. As a caveat, this is not to suggest that there are only seven formal varieties of vessels in the archaeological record of Atlantic Canada. I am simply using this method as an approximation, searching for the best fit (Fig. 4.1).

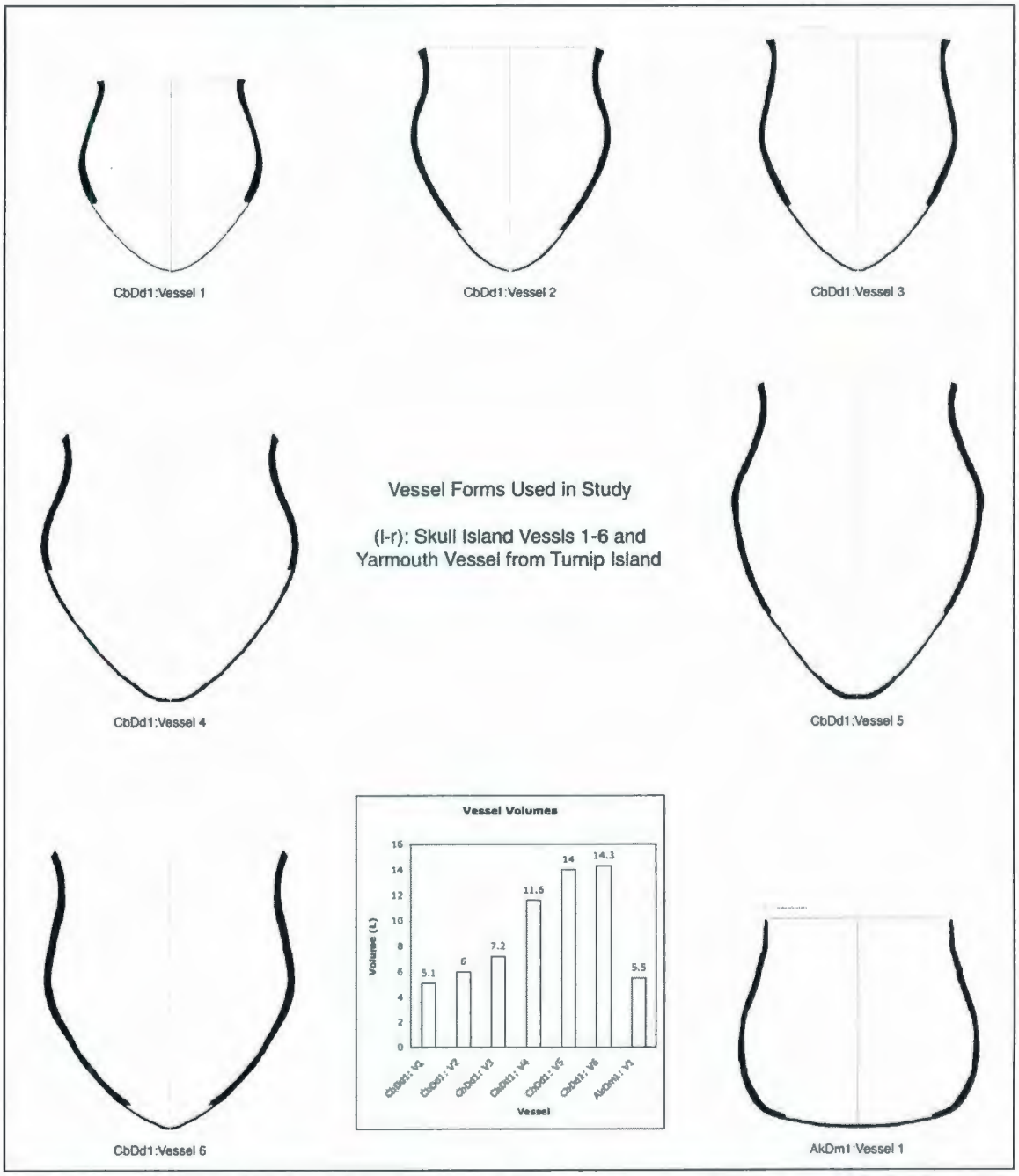


**Fig 4.1. Vessel Form and Volume.** Line drawings of forms used in study (After Leonard 1996, Rice 1987)

Each vessel has a set of ratios that distinguishes it from the other; the most obvious of which are the ratio of body diameter to rim diameter, and rim diameter to

height. I discerned proportions for each vessel based on these ratios. This made a total of seven sets of proportions (Table 4.1).

**Table 4.1**. Proportional Ratios by Type-Vessel

| | Height | Body Diameter (BD) | Rim Diameter (RD) | Ratio H/BD | Ratio RD/BD |
|---|---|---|---|---|---|
| CbDd1: V1 | 22 | 21 | 16.5 | 1.0 : 1 | 0.8 : 1 |
| CbDd1: V2 | 26.5 | 22.4 | 21.3 | 1.2 : 1 | 1.0 : 1 |
| CbDd1: V3 | 27.1 | 22.7 | 20.3 | 1.2 : 1 | 0.9 : 1 |
| CbDd1: V4 | 31.8 | 29.2 | 25 | 1.1 : 1 | 0.9 : 1 |
| CbDd1: V5 | 38 | 28.5 | 22.4 | 1.3 : 1 | 0.8 : 1 |
| CbDd1: V6 | 33 | 28.2 | 27 | 1.2 : 1 | 1.0 : 1 |
| AkDm1: V1 | 17 | 21.9 | 16 | 0.8 : 1 | 0.7 : 1 |

Using these proportions I am able to approximate height and body diameter for like vessel shapes. This can then be used to find a fairly accurate volume for each vessel, even sherds.

Using the known volumes of each of the six vessels, I calculated what the spherical volume for the vessel would be using the following formula: $V_s = 4/3 \prod r^3$ This is calculated where $r$ is the radius of the vessel body, not the rim. I then calculated the percentage in volume change from a sphere to an ellipse using the following calculation:

$$\frac{\text{Known Volume} - \text{Spherical Volume}}{\text{Known Volume}} \times 100$$

The *Known Volume* refers to the volume calculated by Leonard using the summed-cylinders method (Leonard 1996). The *Spherical Volume* refers to the results when calculating the vessel as a sphere using the same measurements. In most cases, the vessel gained volume when adjusted to a sphere from an ellipse; in one case it lost volume. I could then use this resulting factor to change the calculated spherical volumes to approximate elliptical volumes based on the shape of the vessel in question. In order to provide a higher level of accuracy for the spherical vessel from Commeau Hill I used the same method on its known volume, with favourable results (Table 4.2).

A number of the vessels have fairly large variants between elliptical and spherical volumes. In order to provide an outer range for the vessel volumes, I also calculated the vessel as a cylinder using the height and body diameter of the vessel. This is used to demonstrate the absolute maximum volume it could possess. This formula is: $V_c = \prod r^2 h$. This formula is calculated where $r$ represents the radius of the vessel body, not the rim, and $h$ refers to the height of the vessel. The resulting formula was applied to all vessels in the catalogue including spherical ones, in order to provide the outer range for volume. By using these formulas I obtained the missing measurements for each remaining vessel and as a result, the approximate volume range as well (Appendix C).

**Table 4.2.** Type-Vessel Correction Factors

| | Known Volume (L) | Spherical Volume (L) | Correction Factor (%) |
|---|---|---|---|
| CbDd1: V1 | 5.1 | 4.8 | 4.9 |
| CbDd1: V2 | 6 | 5.9 | 1.9 |
| CbDd1: V3 | 7.2 | 6.1 | 14.9 |
| CbDd1: V4 | 11.6 | 13.0 | -12.3 |
| CbDd1: V5 | 14 | 12.1 | 13.4 |
| CbDd1: V6 | 14.3 | 11.7 | 17.9 |
| AkDm1: V1 | 5.5 | 5.5 | 0 |

Overall, by employing a variety of approaches: geometric analysis, type forms approach, and proportional analysis, I hope to gain a better understanding of the vessels recovered from archaeological contexts in this region.

## Vessel Forms

Each type-vessel was given a name relevant to its shape. Skull Island vessels one through six were given the formal types *ellipse* one through six, respectively. The vessel from Commeau Hill was given the designation of *sphere*. This was to create consistency in the catalogue. The remainder of this section will be used to describe each formal type in detail. The addition of the scale is based on typical vessel proportion studies (Rice 1987:216). Normally these are done on a scale of fifths. As these vessel forms and their series' are not as specific in their measurements, I have opted to use a scale of quarters.

This scale will assist in vessel description and to help note differences among the vessel shapes.

Some of the vessels in the catalogue were not included in this analysis. Approximately 22 vessels had indeterminable rim diameters or were too small to be accurately measured. This brings the number of vessels in this aspect of the project from 167 to 146.

**Ellipse 1 (Fig 4.2)**

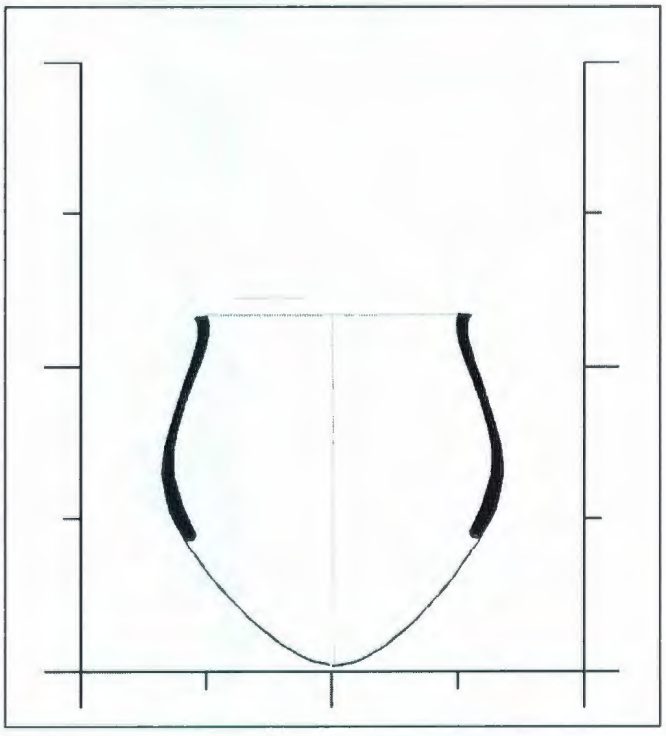

**Fig 4.2. Ellipse 1**

This vessel form has a height only slightly larger than its width. The inflection point of the shoulder is roughly halfway up the vessels' curve resulting in a slightly more constricted neck. Overall, it is the closest elliptical form to the spherical shape seen at Commeau Hill. This is also by far the most common shape in the catalogue as well. When the associated rims were oriented vertically, the resulting angle was parallel to that which is seen here. The vessels range in volume from as low as approximately 0.2 L to as high as 26.3 L. The smallest volume belongs to a vessel 6 centimeters in rim diameter whereas the largest volume belongs to a vessel approximately 29 centimeters in rim diameter.

Over half of the vessels, or 57.8 percent, identified as Ellipse 1 came from New Brunswick sites (Table 4.3). This translates to a total of 37 of 64 vessels. Vessels from Nova Scotia sites made up most of the remainder at almost 40 percent. The remaining percentage is represented by vessels from Newfoundland and Labrador.

**Table 4.3:** Distribution of Ellipse 1 by Province

| Province | No. of Ellipse 1 | % of Total |
|---|---|---|
| NB | 37 | 57.8% |
| NL | 2 | 3.1% |
| NS | 25 | 39.1% |
| PEI | 0 | 0.0% |
| Total | 64 | 100.0% |

Some of the more complete or reconstructed vessels from New Brunswick are included in this first formal group. Two vessels from the Oxbow site (CfDl-1: 1673, 1943) were included as well as the vessel from Savage Island (BlDq1: 50). Although they are not all identical, the vessel curve of and the proportions are most closely matched to this form (Fig 4.3).

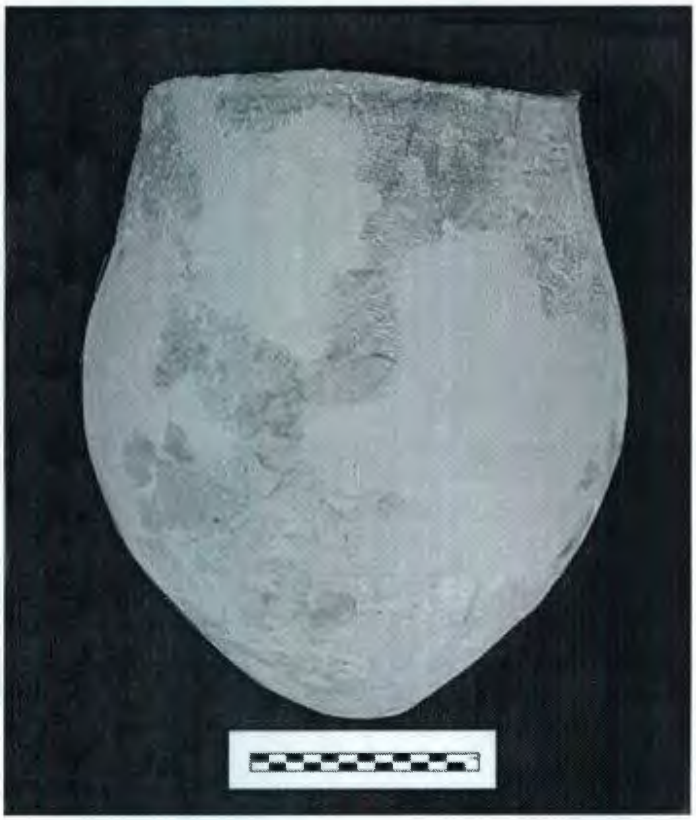

**Fig 4.3. Oxbow site (CfDl-1: 1943).** This vessel has a rim diameter of 18 centimeters and a height of 24.5 centimeters. The approximate volume of this vessel is 9 L and could be no larger than 12 L. CP4.

Nova Scotia had the second-most vessels represented at 39.1 percent or 25 vessels. These vessels also included one of the more complete vessels in the collection. One of the two vessels from the Eel Weir site (BbDh-6: 9B49X1-1) was identified as part of this category (Fig 4.4). This is not a fully reconstructed vessel. However, the sherd is sizeable and shows a distinctive curve. The drawing of the curve shown in Figure 4.4 is part of an original drawing by Rion Microys for Parks Canada (Ferguson 2008, pers. comm.).

**Fig 4.4. Eel Weir site (BbDh-6: 9B49X1-1)**. This vessel has a rim diameter of 15 centimeters. The vessel height is roughly 18.8 centimeters. The approximate volume of the vessel is 4 L and could be no larger than 5 L. CP2.

Two of the three vessels from the Gould site (EeBi-42) in the catalogue were also identified with this form. The vessels from Gould site are quite fragmented, but these two vessels had fairly distinctive curves. One vessel has an additional curve at the neck that is not seen in the other formal types either. The vessels from Gould site also possess decoration unique to the catalogue: a ridge along the castellation (Fig 4.5). I think more research on this particular vessel is needed to provide a more accurate assessment.

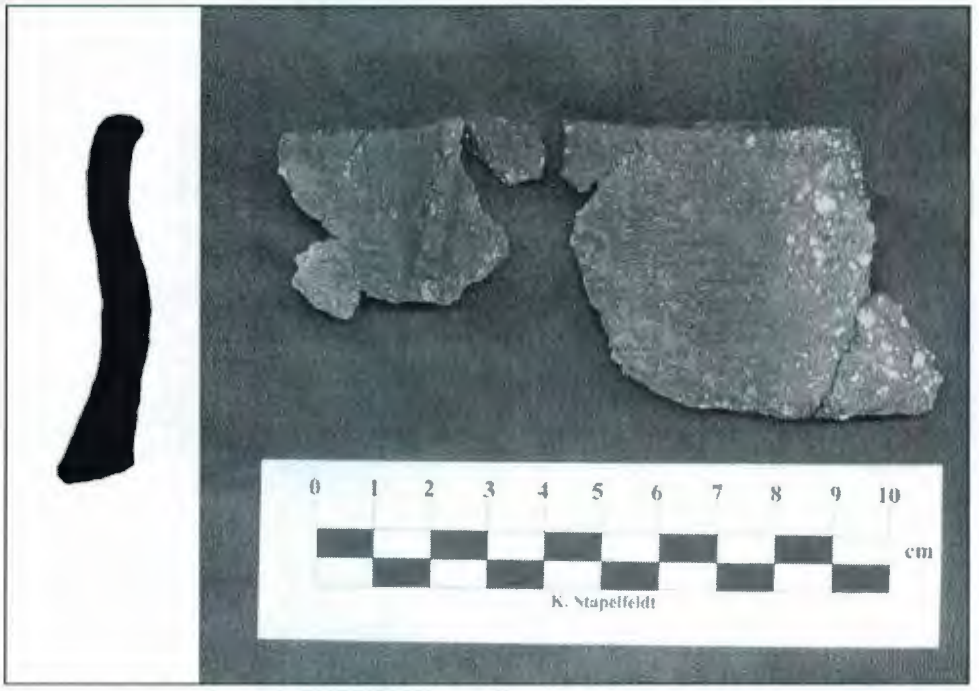


**Fig 4.5. Gould site (EeBi-42: V1)** This vessel has a rim diameter of 16 centimeters and a height of 20 centimeters. The approximate volume is 7 L and could be no larger than 11 L. CP3.

This is the most widespread form covering three of the four provinces and multiple sites within most provinces (Table 4.4). The vessels from these sites have a wide temporal range as well spanning CP2 to CP5.

**Table 4.4**. Distribution of Ellipse 1 by Site

| Province | Borden Number | Site Name | CP |
|---|---|---|---|
| NB | BjDu-17 | Diggity site | 4 |
| | BlDn-12 | Fulton Island | 2 |
| | BlDm-1 | Keyhole site | 2, 3 |
| | BlDn-8 | Maquapit Lake Area | 2 |
| | BlDn-26 | Meadows site | 2 |
| | BgDs-10 | Minister's Island | 3,4 |
| | BkDw-5 | Mud Lake Stream | 4 |
| | CfDl-1 | Oxbow site | 2,3,4 |
| | BlDq-1 | Savage Island | 2 |
| | CbDd-1 | Skull Island | 5 |
| | BgDr-11 | Teacher's Cove | 3,4 |
| NL | EeBi-42 | Gould site | 3 |
| NS | BdDk-1 | Bear River | 2,3,4 |
| | BgDb-5 | Cemetery site | 5 |
| | BbDh-6 | Eel Weir | 2 |
| | BgDb-4 | Melanson site | 2 |
| | AlDf-1 | Port Mouton I | 3 |
| | AlDf-3 | Port Mouton IV | 3,4 |
| | NS VIIIB | Quarry Island Shellheap | 4 |

Overall, this vessel form seems to be widely distributed temporally and geographically based on the findings in this study.

Approximately one half of the vessels assigned to this form showed signs of use (Table 4.5). These signs varied from some absorption or light residue to heavy residue and worn areas directly under the rim of the vessel.

**Table 4.5**. Ellipse 1 Use Wear by Province

| Province | Showing Use | % of Sample | % of Ellipse 1 |
|---|---|---|---|
| NB | 15 | 46.9% | 23.4% |
| NL | 2 | 6.3% | 3.1% |
| NS | 15 | 46.9% | 23.4% |
| Total | 32 | 100.0% | 50.0% |

These vessels were split fairly evenly between sites from New Brunswick and Nova Scotia. All three of the vessels from the Gould site in Newfoundland and Labrador had heavy residues, including the two vessels in this formal group.

**Ellipse 2 (Fig 4.6)**

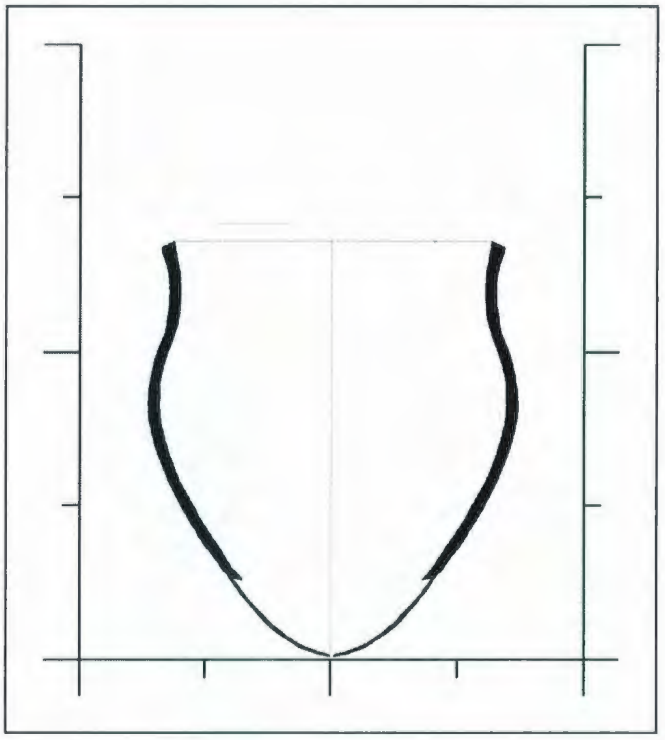

**Fig 4.6. Ellipse 2**

This vessel is distinctive for its high shoulders and flared rim. The inflection point at the shoulder of the vessel is not as drastic as in the other forms. The widest point of the vessel occurs three-quarters of the way up the vessel's curve. This vessel has a more distinctive ellipsoid shape in comparison to the Ellipse 1 form. The vessels associated with this form vary in their decorations, their rim shapes, and in some cases, the flare of the rim itself. This form ranges in rim diameter from 10 to 27 centimeters. The volumes range from 0.5 L to 10.5 L.

Most of the vessels defined as Ellipse 2 hail from New Brunswick sites (Table 4.6). Nova Scotia sites represent a third of that amount or 21.4 percent. The remaining percentage is divided between Newfoundland and Labrador and Prince Edward Island.

**Table 4.6**. Distribution of Ellipse 2 by Province

| Province | No. of Ellipse 2 | % of Total |
|---|---|---|
| NB | 9 | 64.3% |
| NS | 3 | 21.4% |
| PEI | 1 | 7.1% |
| NL | 1 | 7.1% |
| Total | 14 | 100.0% |

Approximately 64.3 percent of Ellipse 2 forms, or a total of 9 vessels of the 14, came from New Brunswick. One of the more complete vessels from New Brunswick made up part of this form group. A reconstructed vessel from Fulton Island (BlDn-12:V6) falls into the proportions for the Ellipse 2 form. This vessel shows the height in the shoulders and the distinctive narrow ellipse of the form (Fig 4.7).

**Fig 4.7. Fulton Island (BlDn-12:V6).** Rim diameter of 22.3 centimeters and a height of 29.5 centimeters. Approximate volume is 7 L and no larger than 13 L. CP2,

Approximately 21.4 percent of vessels in this formal group are from Nova Scotia sites. Of these vessels, none are reconstructed. One of the more sizeable rim sherds used for analysis comes from Clam Cove (Bhdc-5: vessel 3) located in the Minas Basin region (Fig. 4.8). This vessel exhibits linear dentate decoration and has an extensive curvature

that matches that seen in the above form. The decoration, along with an associated radiocarbon date of 2170 +/- 140 BP, suggests an early CP2 placement.

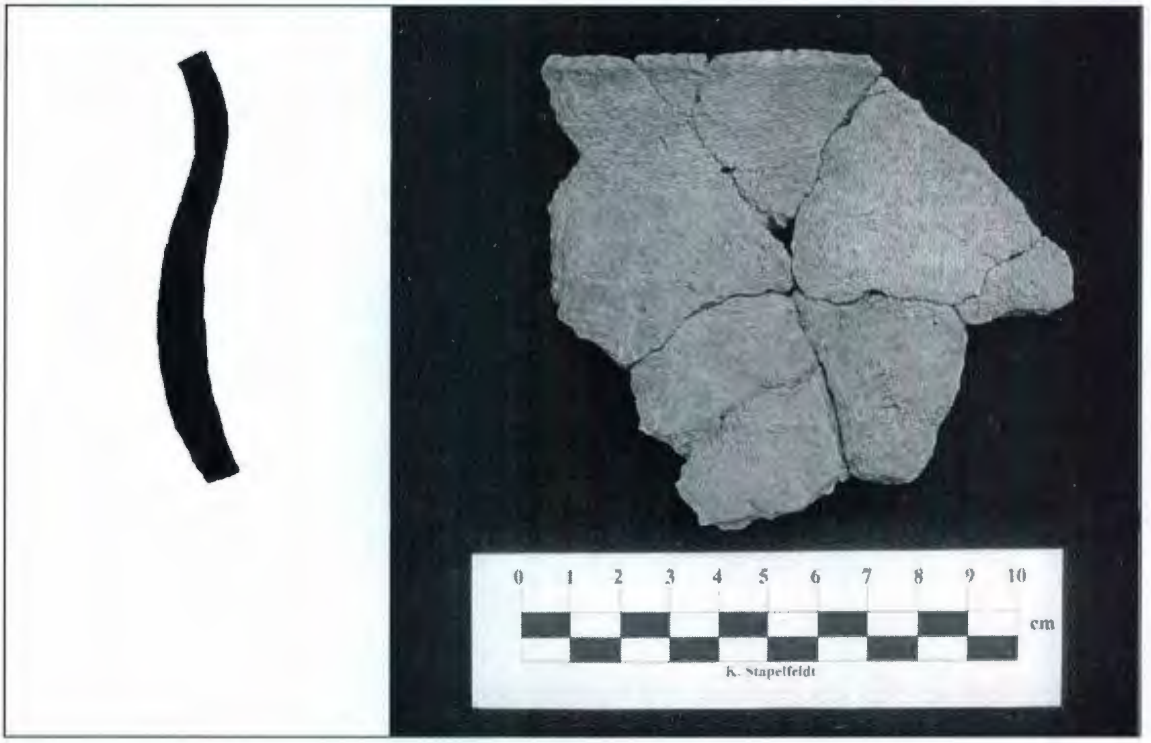


**Fig 4.8. Clam Cove (BhDc-5: vessel 3).** Rim diameter is 13 centimeters. The height of this vessel is approximately 15.6 centimeters. Approximate volume is 1.4 L and no larger than 2.1 L. CP2.

In the whole of this catalogue, there is one vessel from Prince Edward Island. Most vessels are highly fragmented and cannot be used for this study. This vessel belongs to this specific vessel type and represents 7.1% of the Ellipse 2 collection (Fig 4.9). The vessel in question comes from the MacDonald site on the eastern point of the island. It is

represented by a sizeable rim sherd and accompanied by a drawing from Keenlyside's report in a local magazine (Keenlyside 1983).

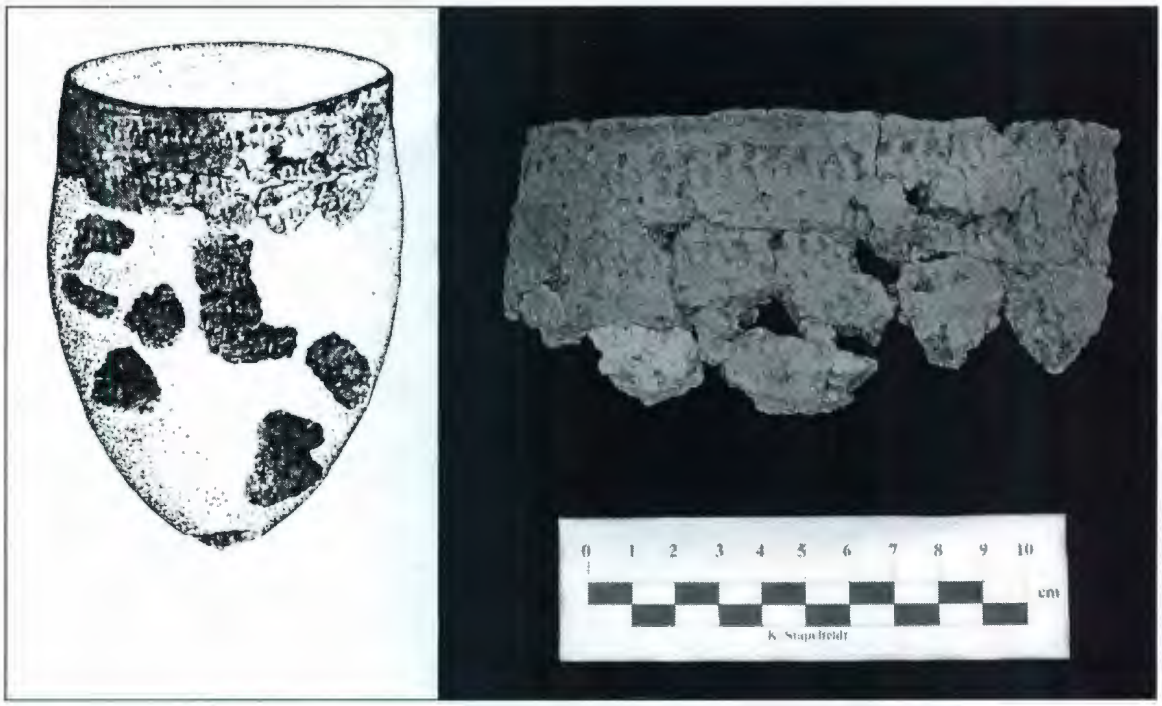


**Fig. 4.9. MacDonald site (CcCm-12)**. Rim diameter is 14 centimeters. The height of the vessel is approximately 16.8 centimeters. The approximate volume is 1.5 L and no larger than 2.6 L. CP4.

The remaining 7.1 percent of the form group is represented by a vessel from the Gould site (EeBi-42: tagged) in Newfoundland and Labrador (Fig 4.10). This vessel had no designation but was clearly marked separately from the other two vessels. This vessel is different in both decoration style and curvature.

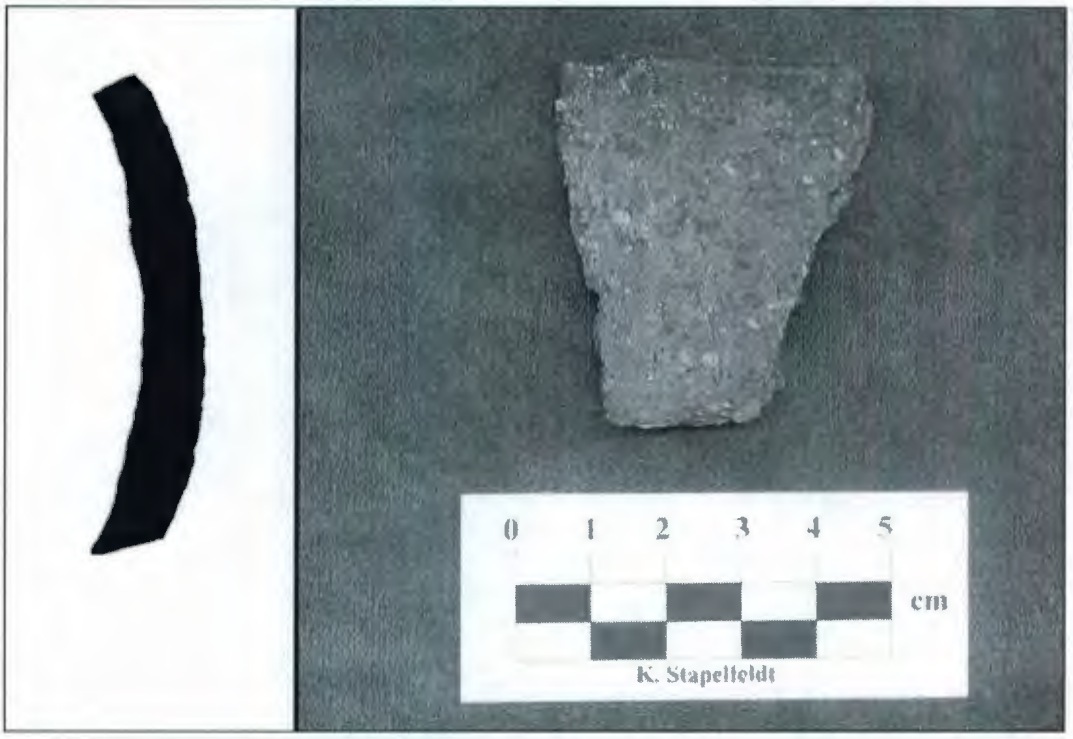


**Fig 4.10. Gould site (EeBi-42: tagged).** Rim Diameter of 14 centimeters. Vessel height is approximately 16.8 centimeters. The approximate volume of the vessel is 1.5 L and no larger than 2.6 L. CP3.

This vessel collection spans the same time periods as the first type group. The vessels cover from CP2 to CP5 with no gaps. The vessel is not as widely spread in terms of vessels size but it is widely spread geographically.

Ellipse 2 vessels represent a wide time frame, from CP2 to CP5. The sample used is considerably smaller than the previous form. All four Atlantic Provinces are

represented in this sample as well. The lone vessel from the MacDonald site is shown in this group and represents the only vessel from CP4. Most vessels appear to be from CP2.

**Table 4.7**. Distribution of Ellipse 2 by Site

| Province | Borden | Site Name | CP |
|---|---|---|---|
| NB | BlDn-12 | Fulton Island | 2 |
| | CfDl-1 | Oxbow site | 2,3 |
| | CbDd-1 | Skull Island | 5 |
| NL | EeBi-42 | Gould site | 3 |
| NS | BdDk-1 | Bear River | 2 |
| | BgDb-5 | Cemetery | 5 |
| | BhDc-5 | Clam Cove | 2 |
| PEI | CcCm-12 | MacDonald site | 4 |

Over half of the sample (eight of the 14 vessels) exhibited vessel some form of use wear (Table 4.8).

**Table 4.8**. Ellipse 2 Use Wear by Province

| Province | Signs of Use | % of Sample | % of Ellipse 2 |
|---|---|---|---|
| NB | 4 | 50.0% | 28.6% |
| NL | 1 | 12.5% | 7.1% |
| NS | 2 | 25.0% | 14.3% |
| PEI | 1 | 12.5% | 7.1% |
| Total | 8 | 100.0% | 57.1% |

The largest percentages of these vessels are from New Brunswick sites, with 28.6 percent showing use. New Brunswick vessels also accounted for half of the vessels that exhibit use marks. Ellipse 2 vessels from Nova Scotia sites represented approximately 14.3 percent of the entire type sample and they represented a quarter of the vessels that showed use. The remaining percentages are from the Gould site of Newfoundland and Labrador and from the MacDonald site on Prince Edward Island.

**Ellipse 3 (Fig 4.11)**

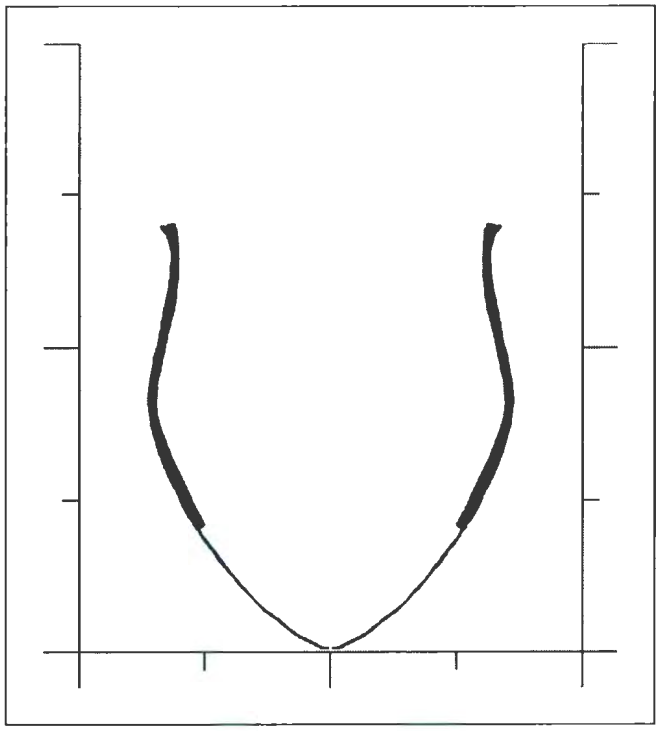

**Fig 4.11. Ellipse 3**

This vessel group has low-set shoulders on a narrow body shape. The inflection point of the shoulder is set less than half of the way up the side of the vessel. The curve is distinctively sharp at the shoulders and base giving it a characteristic curve. The vessels in this group range in rim diameter from nine to 23 centimeters. The vessel volumes in this group range from less than a litre (0.6 L) to approximately 10 L.

This particular form is seen only in vessels from New Brunswick and Nova Scotia (Table 4.9). Nine of the 15 vessels, or 60 percent, of the ellipse 3 sample are from New Brunswick sites. The remaining 40 percent are from sites in Nova Scotia.

**Table 4.9**. Distribution of Ellipse 3 by Province

| Province | No. of Ellipse 3 | % of Total |
|---|---|---|
| NB | 9 | 60.0% |
| NL | 0 | 0.0% |
| NS | 6 | 40.0% |
| PEI | 0 | 0.0% |
| Total | 15 | 100.0% |

Of these sites, the vessel from Kennebecasis is by far the most complete (Fig 4.12). This vessel (NB-VIII-D: 42) demonstrates the sharp angles seen in Figure 4.11. This vessel is one of the smallest of the near complete vessels and demonstrates a distinctive scalloped-edge rim.

**Fig 4.12. Kennebecasis Vessel (NB VIII-D: 42).** This vessel has a rim diameter of 19 centimeters. Height is 23 centimeters. The approximate volume of the vessel is 3.1 L and no larger than 6.6 L. CP2.

The remaining six vessels are from sites in Nova Scotia. One particular vessel from the Cemetery site (BgDb-5) is representative of what can be seen on the vessel sherds that assist in identifying these vessels (Fig 4.13).

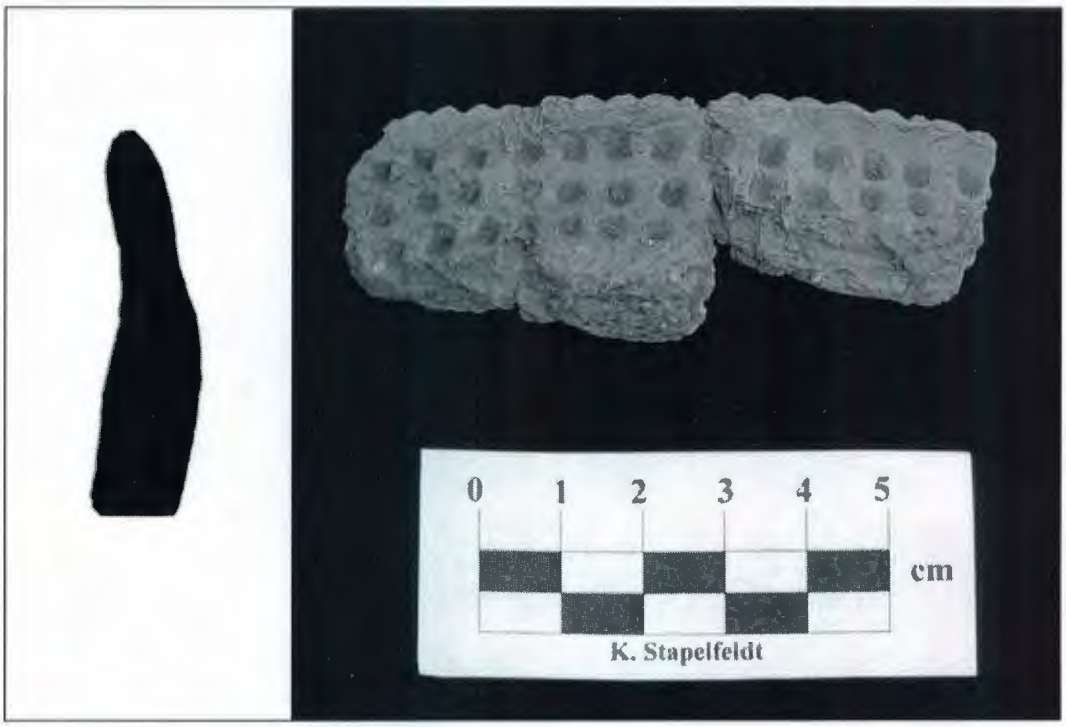


**Fig 4.13. Cemetery site (BgDb-5: 43f).** This vessel has a rim diameter of 11 centimeters. Vessel height is approximately 14.7 centimeters. The approximate volume is 2.8 L and can be no larger than 3.5 L. CP5.

Temporally, Ellipse 3 is associated with CP2 to CP5 though most vessels fall within CP2 (Table 4.10). These forms in Nova Scotia are almost exclusively connected with CP2 vessels. New Brunswick sites are somewhat more varied although the vessels tend to fall within CP2.

**Table 4.10**. Distribution of Ellipse 3 by Site

| Province | Borden | Site Name | CP |
|---|---|---|---|
| NB | BlDn-12 | Fulton Island | 2 |
| | NB-VIII-D | Kennebecasis | 2 |
| | BlDn-8 | Maquapit Lake Area | 3 |
| | BgDs-10 | Ministers Island | 4 |
| | CfDl-1 | Oxbow | 2,3 |
| | CbDd-1 | Skull Island | 5 |
| NS | BdDk-1 | Bear River | 2 |
| | BgDb-5 | Cemetery | 5 |
| | AlDf-3 | Port Mouton IV | 2 |

Approximately 4 of the 15 vessels, or only 26.7 percent of this form group demonstrate any sign of vessel use (Table 4.11). Three of the four vessels are from New Brunswick while the remaining vessel is from Nova Scotia.

**Table 4.11**. Ellipse 3 Use Wear by Province

| Province | Signs of Use | % of Sample | % of Ellipse 3 |
|---|---|---|---|
| NB | 3 | 75.0% | 20.0% |
| NS | 1 | 25.0% | 6.7% |
| Total | 4 | 100.0% | 26.7% |

These vessels were not as widely distributed geographically as the previous two forms. Temporally the vessel forms are related more with CP2 vessels than any other ceramic period. Also, just over one quarter of these vessels showed signs of vessel use.

**Ellipse 4 (Fig 4.14)**

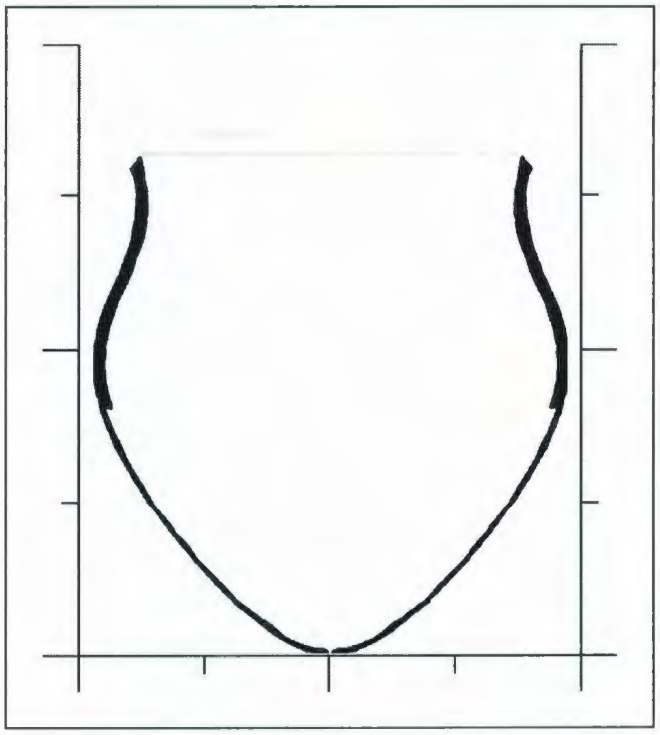

**Fig. 4.14. Ellipse 4**

This vessel form has high-set shoulders and a flared rim. This is the widest form in the collection, usually relating to much larger vessels, although there is one with a rim diameter less than 10 centimeters. The base of the vessel is more pointed than rounded which shows the vessel as weighted closer to the top of the vessel. The inflection point

for the shoulder is only about halfway up the height of the vessel, but due to the size of the shoulders themselves, the curve continues almost to the rim. The vessels associated with this form vary in their rim flares, but all have this wide curving shoulder that carries most of the volume. These vessels vary in rim diameter from nine to 26.5 centimeters. The volumes range from 0.5 L to 11.6 L.

Over one half, or 58.8 percent, of this formal group are from New Brunswick sites (Table 4.12). The remaining 41.2 percent are from Nova Scotia. This form has no examples from the provinces of Prince Edward Island and Newfoundland and Labrador.

**Table 4.12**. Distribution of Ellipse 4 by Province

| Province | No. of Ellipse 4 | % of Total |
|---|---|---|
| NB | 10 | 58.8% |
| NL | 0 | 0.0% |
| NS | 7 | 41.2% |
| PEI | 0 | 0.0% |
| Total | 17 | 100.0% |

Of the vessels from New Brunswick, the most complete was recovered from Maquapit Lake near Ring Island (Fig 4.15). This vessel has the wide shoulders and flared rim proportional to that seen here with one exception. The vessel rim of this vessel shows an extremely flared castellation to each side.

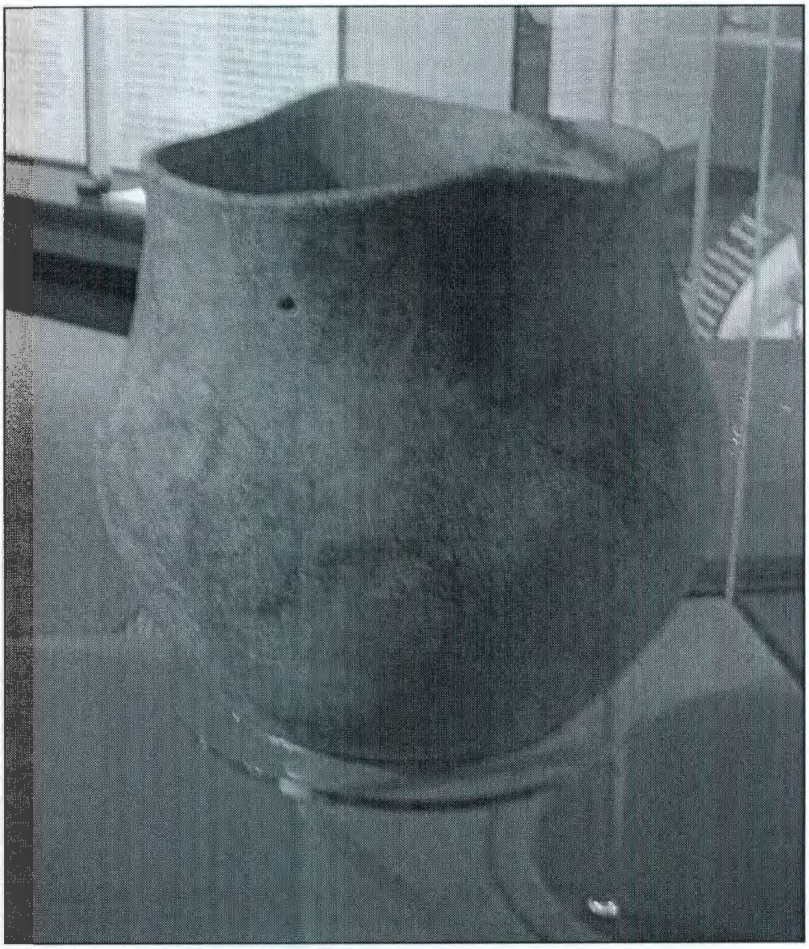

**Fig 4.15 Maquapit Lake Vessel (BlDn-8: Vessel 1)**. The rim diameter of this vessel is 26.5 centimeters. The height is 30.8 centimeters. Approximate volume for this vessel is 8.8 L and no larger than 17.3 L. CP3

One of the vessels from Nova Scotia depicts some elements of this form in the extreme. The vessel from Eisenhauer Shellheap (BcDc-4:114) is an appropriate representation of the shoulder curve though the neck is not as flared as some of the other vessels in the group (Fig 4.16).


**Fig. 4.16. Eisenhauer Shell Heap (BcDc-4:114).** This vessel has a rim diameter of 19 centimeters and a height of approximately 23.2 centimeters. The volume is approximately 4.3 L and could be no larger than 8.1 L.

Overall, this particular form dates from CP2 to CP5 (Table 4.13). This form is generally associated with Middle to Late Woodland Period sites. The vessels in the study are widely spread across New Brunswick but only appear in three sites in Nova Scotia.

A total of 47.1 percent of all Ellipse 4 forms, or four of the 18 associated with this form, had visible signs of use (Table 4.14). These vessel batches were evenly separated between the two provinces of New Brunswick and Nova Scotia.

**Table 4.13**. Distribution of Ellipse 4 by Site

| Province | Borden | Site Name | CP |
|---|---|---|---|
| NB | BlDm-1 | Keyhole site | 3 |
| | BlDn-8 | Maquapit Lake Area | 2,3 |
| | BlDn-26 | Meadows site | 3 |
| | BgDs-10 | Minister's Island | 4 |
| | BkDw-5 | Mud Lake Stream | 4 |
| | CfDl-1 | Oxbow site | 2 |
| | CbDd-1 | Skull Island | 5 |
| NS | BdDk-1 | Bear River | 2 |
| | BgDb-5 | Cemetery | 5 |
| | BcDc-4 | Eisenhauer Shellheap | 4 |

**Table 4.14**. Ellipse 4 Use Wear by Province

| Province | Signs of Use | % of Sample | % of Ellipse 4 |
|---|---|---|---|
| NB | 4 | 50.0% | 23.5% |
| NS | 4 | 50.0% | 23.5% |
| Total | 8 | 100.0% | 47.1% |

This form shows a distinct lean towards to the middle and late Woodland periods of the region appearing mostly in CP3 to CP5. The vessels associated with this form were recovered only in the provinces of New Brunswick and Nova Scotia. Also, less than half of these vessels show use wear on the surface, but those that do are not found more often in one province than the other.

**Ellipse 5 (Fig 4.17)**

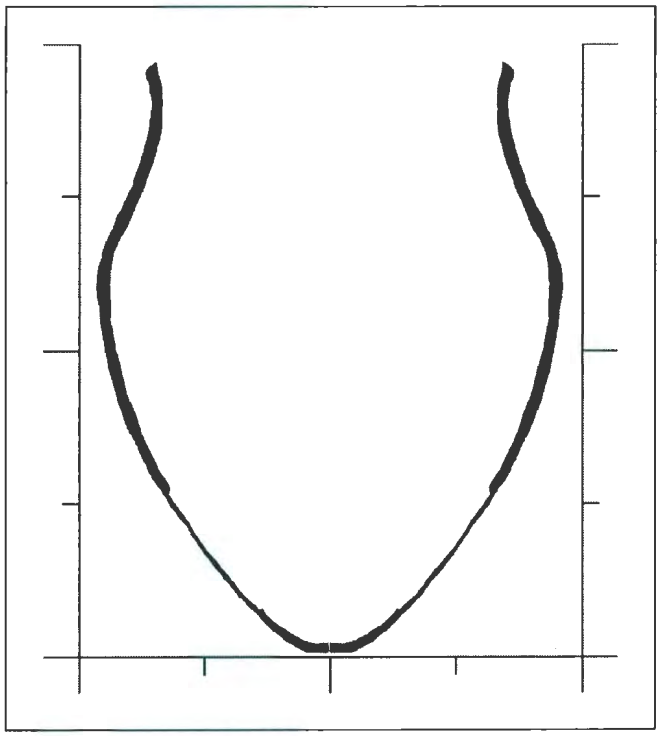

**Fig 4.17**. Ellipse 5

This form is the largest in the collection. The inflection point on the shoulders of this vessel is almost three-quarters of the height of the vessel and the body diameter is just as large. This vessel form has the most constricted neck of the forms as it represents at approximately half of the vessel's body diameter. The rims on these vessels tend to flare smoothly in contrast to the sharp angle of the shoulder. This form ranges in rim diameter from nine to 25 centimeters. The vessel volume ranges from 0.8 to 18.1 L.

This form is not found in association with the vessels from Newfoundland or Prince Edward Island. The 18 vessels connected with Ellipse 5 are divided equally between New Brunswick and Nova Scotia at 50 percent (Table 4.15).

**Table 4.15**. Distribution of Ellipse 5 by Province

| Province | No. of Ellipse 5 | % of Total |
|---|---|---|
| NB | 9 | 50.0% |
| NL | 0 | 0.0% |
| NS | 9 | 50.0% |
| PEI | 0 | 0.0% |
| Total | 18 | 100.0% |

One of the vessels from this group is from the Fulton Island site (BlDn-8: V8) in the Grand Lake Meadows area of New Brunswick (Fig. 4.18). This vessel curve clearly shows the sharp curve on the shoulder. This particular example has a more constricted neck and rounded lip.

Another example can be found from the Melanson site in Nova Scotia (BgDb-4:143). This vessel sherd represents both the flare of the vessel rim on the type-vessel and it's continuation to an extreme angle on the shoulder (Fig 4.19). The angle of the curve suggests the rim flare is but a small percentage of what will be occurring at the shoulder of this particular vessel.


**Fig 4.18. Fulton Island (BlDn-8: V8).** This vessel has a rim diameter of 21 centimeters and a height of 34.1 centimeters. The approximate volume of the vessel is 10.7 L and could be no larger than 18.5 L. CP2


**Fig 4.19. Melanson site (BgDb-4: 143).** This vessel has a rim diameter of 22 centimeters and a height of around 35.8 centimeters. The vessel has an approximate volume of 12.4 L and could be no larger than 21.2 L. CP2.

This vessel form is mostly seen in the middle Ceramic Period or CP2 to CP3 (Table 4.16). Throughout New Brunswick the vessel are divided among twice as many sites as those vessels from Nova Scotia. In general, this vessel form is seen from CP2 to CP5.

**Table 4.16**. Distribution of Ellipse 5 by Site

| Province | Borden | Site Name | CP |
|---|---|---|---|
| NB | BgDr-7 | Bocabec Digdeguash Point | 4 |
| | BlDn-12 | Fulton Island | 2 |
| | BlDm-1 | Keyhole site | 2 |
| | BlDn-8 | Maquapit Lake Area | 2 |
| | CfDl-1 | Oxbow site | 3 |
| | CbDd-1 | Skull Island | 5 |
| NS | BdDk-1 | Bear River | 2,3 |
| | BgDb-4 | Melanson site | 2 |
| | AlDf-2 | Port Joli XII | 5 |

Over half (61.1 percent) of the Ellipse 5 group showed signs of use. (Table 4.17). This percentage translates to approximately 11 of 18 vessels. This amount is divided almost evenly between New Brunswick and Nova Scotia sites.

**Table 4.17**. Ellipse 5 Use Wear by Province

| Province | Signs of Use | % of Sample | % of Ellipse 5 |
|---|---|---|---|
| NB | 6 | 54.5% | 33.3% |
| NS | 5 | 45.5% | 27.8% |
| Total | 11 | 100.0% | 61.1% |

Overall, Ellipse 5 vessels are the tallest in the collection. The vessels associated with it are found in New Brunswick and Nova Scotia and mostly during the middle Woodland period (CP 2 to CP3). Most of these vessels show some sign of use.

**Ellipse 6 (Fig.4.20)**

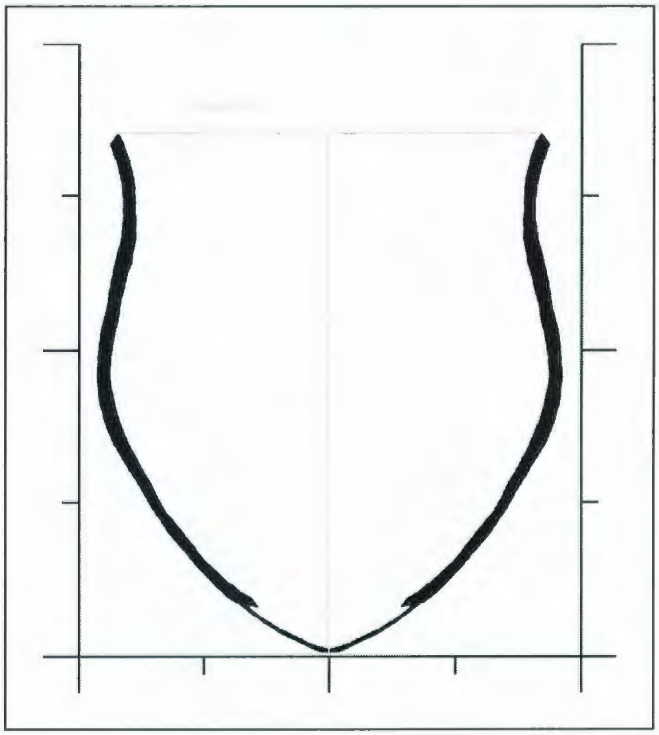

**Fig. 4.20**. Ellipse 6

This vessel form is second-largest in the collection both in terms of height and width. The body diameter of this vessel is comparable with its rim diameter. The shoulders are lower-set on the curve resulting in an inflection point approximately just under halfway up the height of the vessel. This form shows a clear curve at the neck but the diameter at the neck accounts for just over three quarters of the body diameter as well. This results in a form with less defined points in comparison with the other forms in the vessel collection. This form ranges in rim diameter from 15 to 27 centimeters. The volume of the vessel ranges from 2.1 to 14.3 L.

This form is seen almost exclusively in Nova Scotia with a total of 83.3 percent or 5 of the 6 vessels coming from these sites (Table 4.18). One vessel, the vessel from Skull Island in New Brunswick accounts for the remaining 16.7 percent. Newfoundland and Labrador sites are not part of this formal group.

**Table 4.18.** Distribution of Ellipse 6 by Province

| Province | No. of Ellipse 6 | % of Total |
|---|---|---|
| NB | 1 | 16.7% |
| NL | 0 | 0.0% |
| NS | 5 | 83.3% |
| PEI | 0 | 0.0% |
| Total | 6 | 100.0% |

One vessel from the Bear River site (BdDk-1: 151a) is an appropriate example of the rim profile seen in this form (Fig 4.21). The sherd is small but the profile shows a distinct curve akin to that seen in Vessel 6 from Skull Island. The vessel demonstrates the gradual slope of the flare to a shoulder likely low-set in the body. This vessel, and the other from Bear River (BdDk-1: 229c) are the smallest in the Ellipse 6 collection at 15 centimeters in diameter.

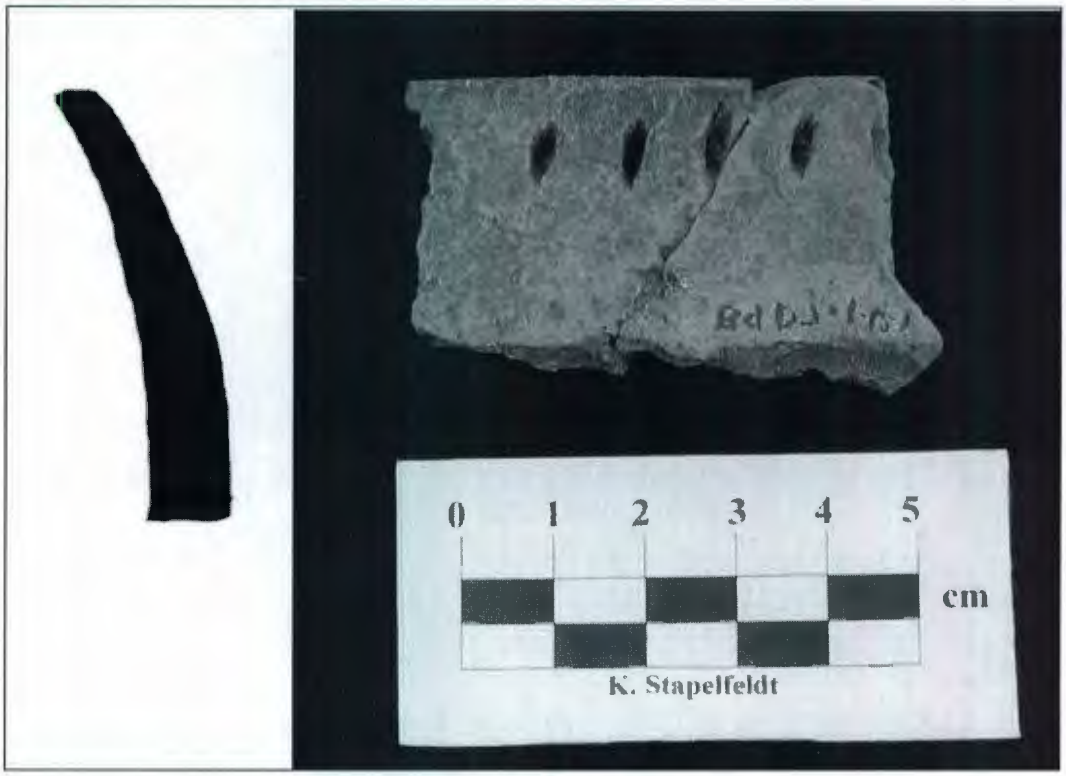


**Fig 4.21. Bear River (BdDk-1: 151a[1]).** This vessel has a rim diameter of 15 centimeters and an approximate height of 18 centimeters. The volume of the vessel is around 2.1 L and no larger than 3.2 L. CP3.

The second example is from the Melanson site (BgDb-4: V2). This vessel has a larger sample and thus shows more of the vessels' curvature (Fig.4.22). The vessel curve shows a distinct low set shoulder and a flare to match the body diameter of the vessel. The pseudo-scallop shell decoration puts this vessel in an earlier time period the previous specimen, but you can see markedly similar curves at the rim.

[1] The image shows the erroneous previous Borden number of BdDj-1, which has since been changed to the current, more accurate, BdDk-1.


**Fig 4.22. Melanson site (BgDb-4: V2).** The rim diameter of this vessel is 17 centimeters and the height is approximately 20.4 centimeters. The volume of this vessel would be around 3 and no larger than 4.6 L. CP2.

Most of the vessels in this collection are generally associated with Late Woodland period dates. Out of the five sites with Ellipse 6 vessels, three of them are associated with CP5. This would not be as great of a difference were the sample size larger. As such, the remaining vessels are from CP2 and CP3. This vessel grouping is much more difficult to characterize, as the sample size is small. Overall the vessels come from CP2, 3 and 5, with no CP4 vessels present.

**Table 4.19**. Distribution of Ellipse 6 by Site

| Province | Borden | Site Name | CP |
|---|---|---|---|
| NB | CbDd-1 | Skull Island | 5 |
| NS | BdDk-1 | Bear River | 2,3 |
| | BgDb-5 | Cemetery | 5 |
| | BgDb-4 | Melanson site | 2 |
| | AlDf-3 | Port Mouton IV | 5 |

All but one of the Nova Scotia vessels showed signs of use. This makes for a total of 83.3 percent of the Ellipse 6 collection or five of the six vessels present (Table 4.20). As most of this formal collection was from Nova Scotia, it is understandable that 80 percent of the vessels showing use are also from those sites.

**Table 4.20**. Ellipse 6 Use Wear by Province

| Province | Signs of Use | % of Sample | % of Ellipse 6 |
|---|---|---|---|
| NB | 1 | 20.0% | 16.7% |
| NS | 4 | 80.0% | 66.7% |
| Total | 5 | 100.0% | 83.3% |

Generally, the vessels from this group are from CP 2,3 and 5 with slightly more Ellipse 6 identified vessels associated with CP5. Most of these vessels show signs of use.

**Sphere (Fig 4.23)**

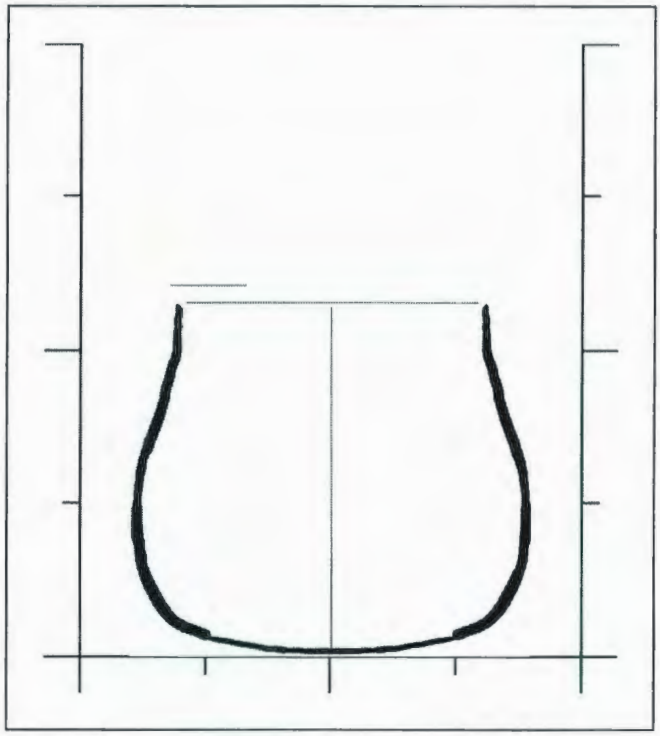

**Fig 4.23**. Sphere

This vessel is the only spherical form in the catalogue. The vessels associated with this form are variable in size with the smallest being five centimeters in diameter. This vessel form is essentially a sphere with a small spherical segment removed from the top. Approximate volume is based on near spherical proportions. These vessels have constricted rims usually with no lip and are rounded at the bottom. The rim diameters vary from the aforementioned five-centimeter diameter to 22 centimeters. The volumes of these vessels range from 0.2 to 16.3 L.

These forms are mostly found in association with sites from Nova Scotia. Sites from this province made up approximately 75 percent of the vessels associated with this form (Table 4.21). The remaining 25 percent of vessels are from New Brunswick. Sites from Newfoundland and Labrador, as well as Prince Edward Island, were not linked with this form.

**Table 4.21**. Distribution of Spherical Vessels by Province

| Province | No. of Ellipse 6 | % of Total |
|---|---|---|
| NB | 3 | 25.0% |
| NL | 0 | 0.0% |
| NS | 9 | 75.0% |
| PEI | 0 | 0.0% |
| Total | 12 | 100.0% |

The type-vessel for this spherical form is from Commeau Hill (AkDm-1: V1) in Nova Scotia (Fig 4.24). Interestingly, a vessel from the Hazel site (CeDw-3: V1) in New Brunswick is closely akin to this vessel in size, shape and decoration (Fig 4.25[2]). To compare, they are both decorated in cord-wrapped stick applied in a geometric pattern and have similar wall-thicknesses. One of the only points where they differ is in the rim diameter where Hazel is larger by four centimeters.

[2] This image is courtesy of New Brunswick Archaeology Services in Fredericton, NB.

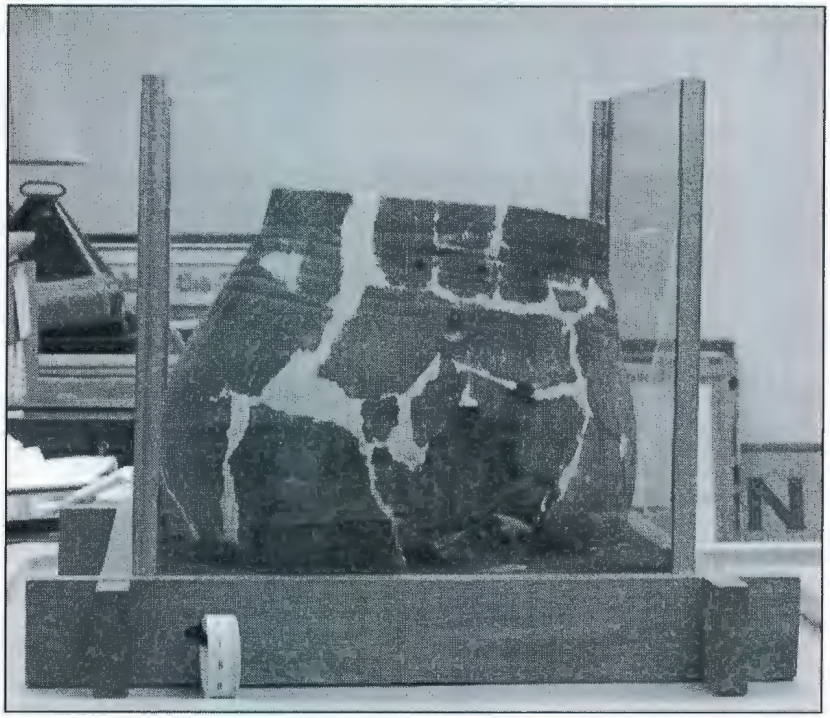

**Fig 4.24. Commeau Hill (AkDm-1: V1).** This vessel has a rim diameter of 16 centimeters and a height of 17 centimeters. The approximate vessel volume is 5.5 L. CP5.

**Fig 4.25. Hazel site (CeDw-3:V1).** This vessel has a rim diameter of 20 centimeters and an approximate height of 21.3 centimeters. The approximate volume of this vessel is 10.7 L.

These vessels are from the larger end of the spectrum. One vessel from the Eisenhauer Shellheap (BcDc-4: 267ac) is of interest as the smallest in both the formal group and the catalogue as whole (Fig 4.26). This vessel is only five centimeters in diameter and holds just under a cup of liquid. It is decorated simply around the edge with cord-wrapped stick impressions and punctates. Fortunately a good portion of it is preserved in order to see the curve clearly.

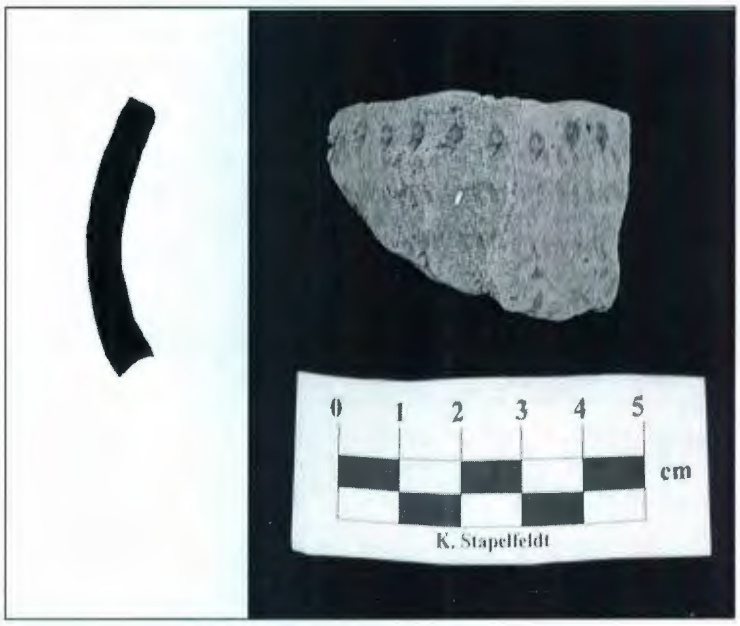


**Fig. 4.26. Eisenhauer Shellheap (BcDc-4: 267ac).** This vessel has a rim diameter of 5 centimeters and a height of approximately 5.7 centimeters. The approximate volume of the vessel is 0.2 L or 200 mililitres. CP4.

Another example of this vessel form is from the Bear River site in Nova Scotia (BdDk-1: none (d)). This vessel has the same constricted rim form that is seen in the previous two

examples (Fig. 4.27). The vessel has a larger rim diameter, but could not be extensively tested as it was quite delicate.


**Fig 4.27. Bear River (BdDk-1: none (d)).** This vessel has a rim diameter of 13 centimeters and a height of around 13.8 centimeters. The vessel volume is approximately 2.9 L. CP3.

As is expected, most vessels associated with a spherical shape tend to be also associated with the late Middle to the later part of the Woodland period (CP4 to CP5). There are only a limited number of sites where the vessels are associated with the early to middle part of the middle Woodland Period (CP2 and CP3). The vessels are more widespread geographically in Nova Scotia. In New Brunswick the three vessels identified

as spherical are divided among two sites, which is in contrast to the nine vessels among seven sites in Nova Scotia.

**Table 4.22**. Distribution of Spherical Vessels by Site

| Province | Borden | Site Name | CP |
|---|---|---|---|
| NB | CeDw-3 | Hazel site | 4 |
| | CfDl-1 | Oxbow site | 2 |
| NS | BdDk-1 | Bear River | 3 |
| | BhDc-5 | Clam Cove | 4 |
| | BbDh-6 | Eel Weir | 5 |
| | BcDc-4 | Eisenhauer Shellheap | 4 |
| | BgDb-4 | Melanson site | 2 |
| | AlDf-2 | Port Joli XII | 5 |
| | AkDm-1 | Commeau Hill | 5 |

None of the spherical vessels from New Brunswick exhibit use wear, and only 25 percent of all spherical vessels from Nova Scotia showed any signs of use.

**Table 4.23**. Spherical Vessel Use Wear by Province

| Province | Signs of Use | % of Sample | % of Group |
|---|---|---|---|
| NB | 0 | 0.0% | 0.0% |
| NS | 3 | 100.0% | 25.0% |
| Total | 3 | 100.0% | 25.0% |

Three-quarters of all vessels associated with this form were from Nova Scotia. Overall, most vessels were from the later part of the Middle Woodland period or the early late woodland period. Spherical forms were present in vessels dated from CP2 to CP5 but most were from CP4 and CP5. Of these vessels only 25 percent of the group presented any signs of use, none of which were from New Brunswick.

## Form Seriation of Collection

One of the main goals of any seriation is to recognize changes in artifact creation and use (Braun 1983, Orton et al 1993, Rice 1987, Sinopoli 1991). I performed a very basic seriation of the formal collection in order to look at change within the study collection (Fig 4.28). I compared the vessel formal group proportions by the time periods established through the work of Petersen and Sanger (1991). It should be noted that this seriation is obviously skewed in a small part by the sheer imbalance in the size of each formal collection. Specifically, the vessels identified as Ellipse 1 holds a much larger proportion of the seriation data by ceramic period as it collectively represents almost half of the collection (i.e., 43.8 percent).

As was noted in the previous section, most forms were from the range of CP2 to CP5. In fact, CP1, CP6, and CP7 are not even represented in this study. Furthermore, the early part of the Middle Ceramic period tends to be the most weighted in this collection, with a total of sixty-seven specimens. Most of the vessels in the collection are in the Ellipse 1 group. As we move through the chart, certain patterns emerge. There are

definite trends to be seen in the popularity of certain forms in the collection. Ellipse 1 has the apex of its popularity during CP2 and CP4, Ellipse 2 and Ellipse 5 are most seen in CP3. The spherical shape is most seen in CP4, but is still in use during CP5. During CP5, three of the vessel forms reach the height of their proportions in this collection: Ellipse 3, 4, and 6. Ellipse 6 in particularly interesting because none of the vessels I studied in this group could be identified with CP4.

What concerns us now is what the patterns signify. As this is such a small collection, it would be difficult to make any sweeping judgments based on one seriation of formal types. Overall, these vessels are following a logical pattern that has been seen in previous typologies, whereby the spherical forms tend to surge in popularity towards the end of the Woodland Period (Bourgeois 1999, Petersen and Sanger 1991). That being said, seeing a distinct pattern in Ellipse 4 is quite interesting as it shows this form may be more reliable than the others. This set of elliptical forms is mainly useful for discovering volume and should not be used in its current state as any specific chronological indicator, as is evident here. The elliptical forms, aside from Ellipse 4 and to a certain extent Ellipse 1, do not indicate any really significant ebb and flow of formal styles over time, however; in general, we might expect to see a greater variety in vessel forms in CP5 assemblages.

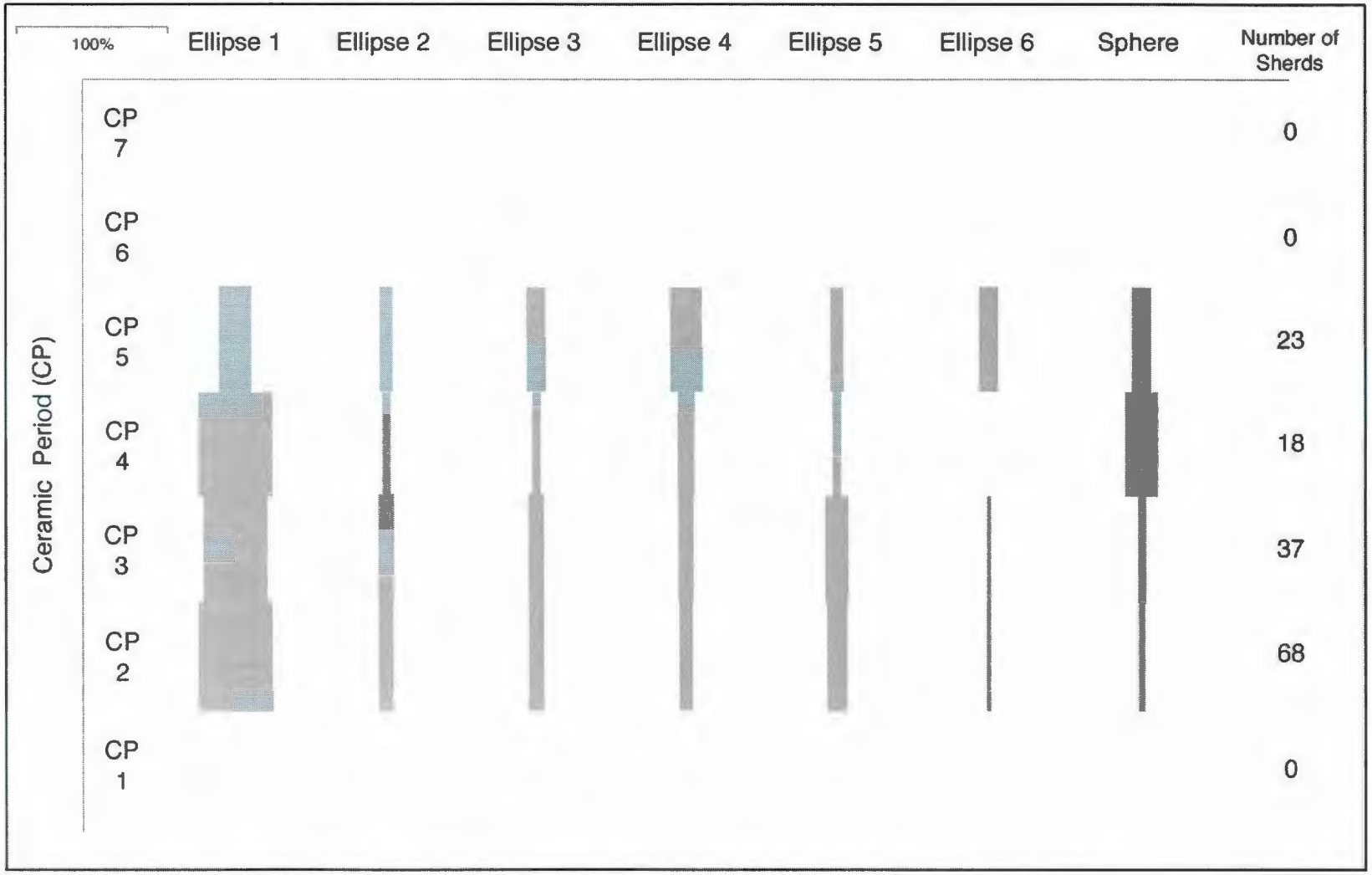


Fig 4.28. Seriation of Formal Types by Ceramic Period (Stapelfeldt 2009)

## Chapter 5: Vessel Function in the Atlantic Provinces

Vessel function is undeniably linked to form as pottery vessels are principally used as containers (Arnold 1985; Braun 1983; Deal et al. 1991; Hally 1986; Orton et al. 1991; Rice 1987; Taché et al. 2008). In order to understand the function of any one particular vessel we need to consider what aspects of a vessel will hint at its original use. Researchers have created an extensive list of things to consider when looking at vessel use. One important aspect of the relationship between form and function is whether or not the vessel is the correct body shape for its perceived task. The relative size or volume of the vessel is another important element. We must also consider the vessels' socioeconomic role, which has only recently become an important topic in the Northeast (Taché et al. 2008). The following chapter will outline elements of vessel function revealed in this study. In particular, I will be discussing vessel size, vessel use wear, and finally, the vessel as a social implement.

### Vessel Size

A vessel begins with its most basic element, namely, clay. Contrary to that statement, that 'basic' element is anything but simplistic. Some studies on clay sourcing have yielded very useful information about the vessels from which they are made (Allain 1984; Arnold 1993). Allain's work in New Brunswick generated information on several small clay deposits in the province. Through sampling and testing several clay sources, she discovered that most clays in the province could be worked with to create usable

vessels. Allain used these clays to build and decorate replicas of precontact vessels which she fired the vessels in a wood kiln, manufacturing at least 25 specimens (Allain, pers. com. 2007). Some of these vessels were more porous than others due to the natural grog or temper in the clay and therefore were not suitable for holding liquids (and conversely, more useful to hold dry goods). For example, Allain created a set of small vessels approximately five to nine centimeters in diameter that she hoped to use for drinking cups (Fig5.1), but after multiple firings, they were still too porous to hold liquids.

**Fig. 5.1. Drinking Cups from G. Allain.** These vessels range in rim diameter from five to nine centimeters. These vessels could possibly be treated and then used for drinking.

As a coiled vessel is manufactured, each coil acts as structural support for the coil before it to ensure the vessel holds together under its own weight (Rice 1987: 227). As a result, larger vessels trend toward thicker vessel walls. In this study, the average thickness of any one vessel wall does not always correspond with a larger volume, but there is definitely a pattern emerging in this sample (Fig 5.2).

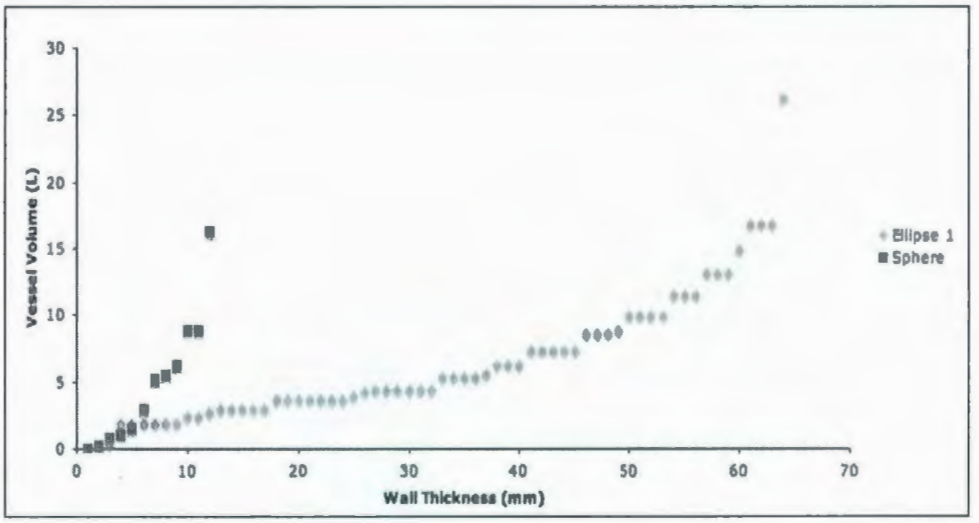


**Fig 5.2. Vessel Wall Thickness by Volume**. Each point on the graph translates to the average wall thickness of a particular vessel (x) and the volume of the same vessel (y). I have used the Ellipse 1 and Spherical forms in this example. This scatter plot shows there is indeed correlation between wall thickness and volume.

Vessel thickness is not always a necessity, however, as the composition of the wall can and will affect its strength. Vessel walls of stronger material can be subsequently thinned out and consolidated yielding a lighter vessel.

The precise composition of the vessel wall concerns elements such as temper, moisture, and the original strength of the clay mineral being used. Through various methods of processing, vessel walls can be thinned dramatically. Vessels found in Atlantic Canada are mostly tempered with grit, organic, or shell inclusions. Temper is not a particular concern for this study and will not be delved into here at any great length. Nonetheless, it is important to state that tempering with shell can be extremely complicated during manufacturing. Also, the archaeologist cannot always identify the temper of the artifact. Shell-tempered vessels tend to be devoid of shell when recovered by archaeologists. They are usually recognized by their porous texture with large visible holes where shell had previously been (Allen 1981). Some vessel tempers were quite difficult to discern. Mostly the vessels were grit and organic tempers with no particular pattern emerging. The one notable exception is that vessels with shell tempering or shell inclusions tended to be found on coastal, or near-coastal, sites such as Skull Island (CbDd-1) and the Melanson site (BgDb-4).

**Vessel Use Wear**

A vessel's life history begins with its manufacture. Cultural biography indicates that a vessel will have many 'lives' prior to the archaeologist recovering it from a site (Holtorf 2002, Koptyoff 1986). The vessel will be affected by each of these stages in its life cycle and some of these after-effects will leave traces. There are many signs of use that will hint at what the vessel had been used for in the past. A vessel created to serve only one function could serve several in the course of its lifetime (Deal 1982). If we

consider a simplification of these varied uses, we can begin to see characteristics and patterns that will tell use more about a vessel's *general* use (Table 5.1). This table can assist researchers in narrowing down the very basic morphology and vessel use (Rice 1987: Table 7.2). Simply put, a vessel needed primarily for cooking will not be as highly decorated as a serving vessel and have more sooting on the exterior from being placed in the fire. Based on shape, residue, and use wear, a fair number of the vessels from this study region were likely used as cooking vessels. As Linton states:

> "The effective cooking pot must have a mouth large enough to prevent explosive boiling over and to permit of stirring its contents, but as the same time small enough, relative to the pot's capacity and heating surface, to prevent it from boiling dry every few minutes." (Linton 1944: 370).

As we can see in the vessel shapes, there are many forms that fit this broad mould. What needs to be explored now is ways we can separate vessels used mainly for cooking from vessels of other uses.

Rice states that cooking vessels tend to be more limited in their decoration then vessels serving other functions. (Rice 1987: 238). The vessels in this catalogue are usually only decorated across the upper third to upper two-thirds of the vessel. This can be seen on the larger vessels such as the vessel from Savage Island (BlDq1: 50) that is decorated with pseudo-scalloped shell in geometric patterns as well as punctations around the rim (Fig. 5.3).

Table 5.1. Predicted Archaeological Correlates of Vessel Function *Source: Rice 1987.*

| Functional Category | Shape | Material | Surface Treatment and Decoration | Depositional Context | Frequency | Clues |
|---|---|---|---|---|---|---|
| Storage vessels | Restricted forms, orifice modified for pouring or closure; appendages for suspension or movement (tipping) | Variable (possible concern for low porosity) | Variable for display or messages; slip or glaze to reduce permeability | Dwellings (sometimes set into ground); trash middens | Low (low replacement); may be reuse of broken or old vessels | Residues of stored goods in pores |
| Cooking pots | Rounded, conical, globular, unrestricted; generally lacking angles | Coarse and porous, thin walls, thermal shock resistant | Little to none; surface roughening for handling ease | Dwellings, trash middens; rarely in special deposits (e.g., burials) | High (frequent replacement) | Patterns of exterior sooting or blackening; burned contents |
| Food preparation (without heat) | Unrestricted forms, simple shapes | Emphasis on mechanical strength; relatively coarse, dense | Variable; generally low | Dwellings, trash middens | Moderate? | Internal wear; abrasion or pitting |
| Serving | Unrestricted for easy access; often with handles; flat bases or supports for stability | May be fine | Generally high, for display or symbolic roles | Dwellings, trash middens, special deposits (burials, caches) | High (frequent use and replacement) | Sizes correspond to individual servings or group size |
| Transport | Convenient for stacking; handles; lightweight; restricted orifice | Emphasis on mechanical strength; dense, hard | Variable, generally low; slip or glaze to reduce permeability | Trash middens, nondomestic (market) areas | Variable | Uniform size or multiple units of size; residues of contents |

**Fig 5.3. Savage Island (BlDq1: 50).** Typical decoration field on a pottery vessel from this collection.

One of the other defining points for a cooking vessel is the presence of residue on the interior of the vessel and sooting on the exterior. These attributes are present on a number of the vessels in this collection. Overall, 51 percent of the collection showed some sign of residue. This percentage does not include absorption or all use wear (Fig 5.4). These proportions are based on percentage and not numerical counts, although the counts will undoubtedly have an effect on the outcome. The largest percentage of vessels showing use in the collection is from the Ellipse 1 form group.

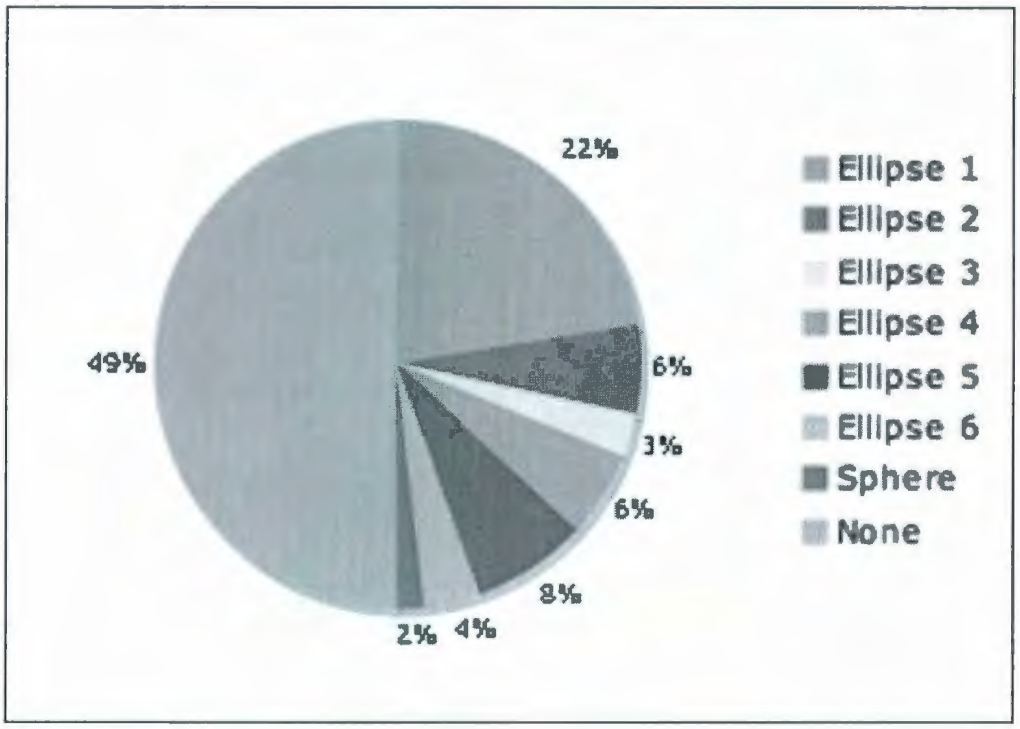


**Fig 5.4. Vessels with Residue**. This chart shows proportions of vessel forms showing evidence of use in the research collection. Over half of the vessels had some form of residue.

A recent study focused on the residue found in vessels from the early Ceramic Period (CP1) in Northeastern North America (Taché et al. 2008). This pottery, *Vinette 1*, possesses simple conoidal shapes and is found throughout the region in very small quantities. There is no constriction at the neck and they seem to have been used primarily for cooking. The researchers state that the size of the vessel will likely correspond to what is being cooked inside it. The smaller vessels were likely used for processing seeds or nuts and the larger ones for processing the bones of land mammals and certain steps in shellfish processing. Some of the larger vessels could also have been used for storage.

These early vessels did not achieve the width and breadth of later vessels, but had a variety of sizes, on a smaller scale. These vessels were likely used for a variety of foods. (Taché et al. 2008:79). The results were based on the use of puyrolysis gas chromatography/mass spectrometry methods. Researchers have used these methods, as well as isotope analysis to identify residues in vessels from New Brunswick (Deal et. al. 1991, Deal 2005). These researchers test both the adhering residue and absorbed materials in the vessel walls in order to identify the fatty acids associated with each vessel tested. The results from these studies suggest these vessels were used for cooking a wide variety of foodstuffs. In particular, the researchers found that Vessel 3 from Fulton Island, which is also used in this study, was likely used to prepare terrestrial mammal (Deal 1991: 187). Overall, the vessels from the New Brunswick study in particular showed residues of terrestrial mammals, fish, and plant remains. Research projects such as these are integral to discovering more about the foodways of precontact groups in Atlantic Canada (Taché et al. 2008).

Although the vessel forms in this study do not possess handles or the like, there are certain morphological attributes that can tell us about their usage. Some vessels in the collection possess a flared castellation (Fig. 5.5). Two vessels that exhibit this attribute are from Oxbow (CfDl-1:1673) and Maquapit Lake (BlDn-8: Vessel 1). These vessels do not have any residue on the interior, which would suggest a use for cooking. The flared castellations may well have served as spouts and the vessels for the temporary storage of liquids. The sooting on the exterior of the Oxbow vessel could be a result of the initial firing process during manufacture or even post-abandonment burning, as the interior

remains clear of residue. Residue testing methods like those used above could provide answers as what these vessels, and others with similar features, might have held.

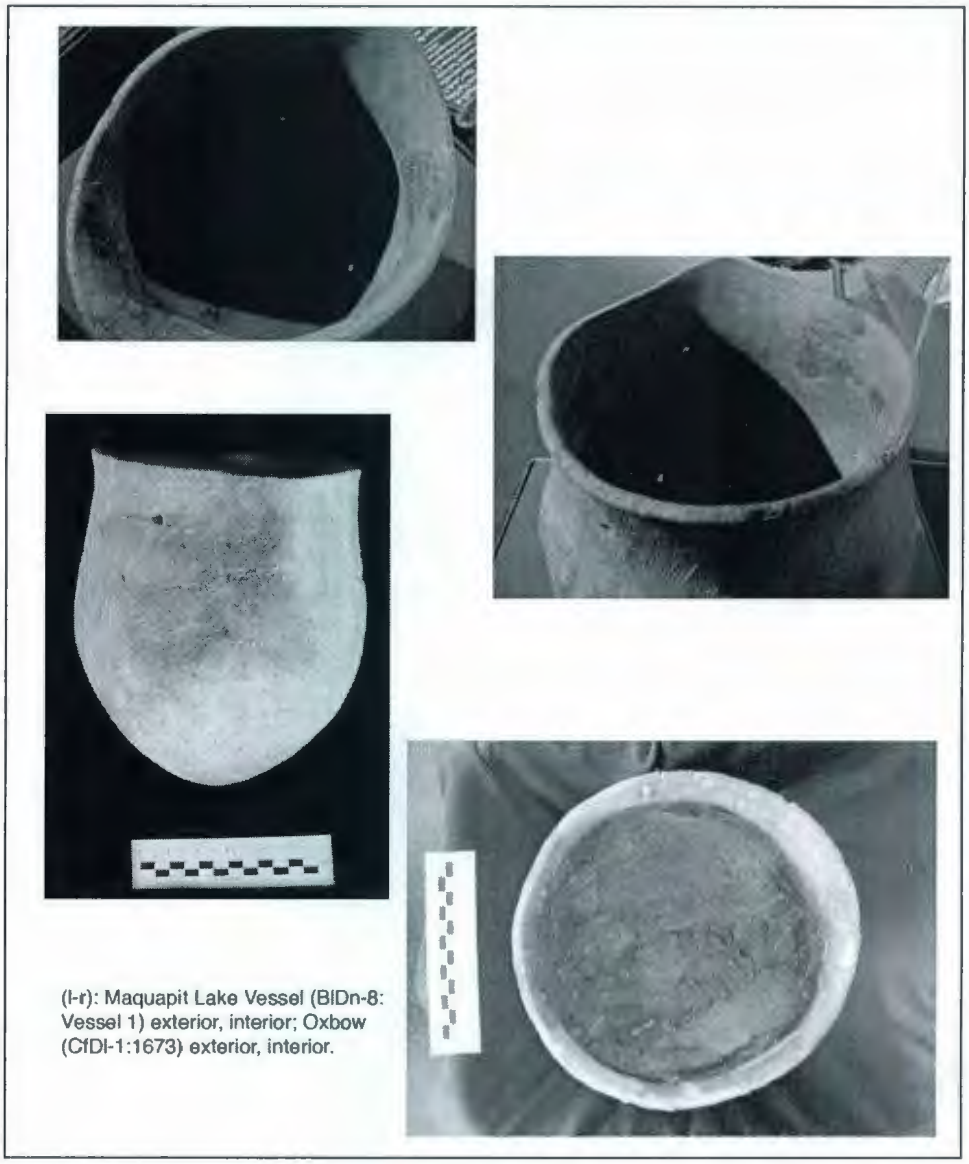


**Fig. 5.5. Possible Spout Characteristic**. The castellations seen here flare out on both sides on the Maquapit Lake Vessel and only on one side in the case of the Oxbow vessel. The interior of the vessel is clear of visible residue, though the exterior of the Oxbow vessel is charred.

**Vessel as a Social Implement**

During the Woodland period aboriginal populations are believed to have moved across the landscape in seasonal rounds. With such a subsistence strategy, one may assume that the need for making and using large heavy pottery vessels to be minimal (Arnold 1985). Pottery vessels were not a necessary commodity for processing nuts, or bone, or even meat. There were a number of other vessel choices and preservation methods available to the people of the precontact period, but the benefits outweighed any mobility issues (Deal et al. 1991, Taché et al. 2008). Pottery is primarily seen as a tool, and as such could be used to fulfill a number of functions better and more efficiently than other containers (Deal et al. 1991: 176, Skibo and Feinman 1999: 172-173). The use of pottery for boiling and cooking food means cooking requires less attention than the use of the stone boiling technique in wooden troughs, watertight baskets or stone bowls. With pottery vessels, the cook has time to move about the camp tending to other tasks and social obligations, while strengthening the flames as needed (Skibo and Feinman 1999). It is likely that the larger vessels were not carried about, at all, but cached at campsites with other items to be retrieved at the next visit (Deal et al. 1991, Skibo and Feinman 1999, Taché et al. 2008).

Although there can be no singular answer to why vessels were adopted by mobile communities, social factors likely played an important role in this development. Researchers cite funerary contexts for Vinette 1 as a prime example of vessels carrying

social power (Taché et al. 2008). Similarly, the Shediac Island vessels were recovered from a Late Woodland burial context (Leonard 1996).

**Summary**

It is difficult, if not impossible, to assign one particular function to a specific vessel. Certainly there are groups of like-forms that served similar tasks, but each vessel, particularly in this area of the world where all vessels are hand-built, has its own unique life history. Using residue analysis and studying morphological elements of these vessels can help us answer socioeconomic questions. By reconnecting the pottery with the people who created it, we will begin to see a vessel's social function in the lifeways of precontact communities.

## Chapter 6: Discussion

Pottery research methods have been revolutionized since the discourse of Honeyman and DisBrisay in1879 and the paper by Matthew and Kain in 1904, yet we are still asking the same basic questions, such as who made these vessels, how they were used and what their role was in society. These questions push us to try new applications that haven't previously been considered. These questions cannot be answered by one project. In fact, the answers are constantly changing with every newly uncovered site and with innovations in vessel study methodologies. For example, the vessel forms we work with from one site do not necessarily have the same purpose or social role at another. This project is merely skimming the surface of a complex topic. The key in working on a study of form and function is the word 'function': purpose. Taché and others state that we need to be "moving beyond pottery as a typological marker and exploring the relationship of this technological innovation with foods and foodways" (Taché et al. 2008). This way, the people are brought back into the equation and the vessel lives on to tell a story.

I came into this project with specific goals. In retrospect, I have uncovered valuable information and, as is usual in research projects, identified more questions in the process. One of my research goals was to look at the techniques used in pottery manufacture and to see visible changes and differences in methods across the region. Working with a ceramicist who specializes in wood firing, I observed one particular method of coil manufacture, in which vessels are built from the base up. During the study I was also introduced to a coiling method from eastern Ontario used by the Laurel

Culture, in which the pots are created from the rim toward the base (Budak 1985). The time period for the Laurel Culture is consistent with the Early and Middle Woodland periods in the Atlantic region. This suggests that our assumptions about the construction methods used in the Atlantic region may be wrong, or that more than one coiling method may have been used. In fact, other differences may have existed in manufacturing methods across Atlantic Canada.

Secondly, my goal was to establish a series of formal types for the pottery vessels of this region. The reconstructed vessels themselves were quite variable in their rim profiles, but were overall ellipsoid or spherical in shape. By using the basic form as a guide, I was able to judge mainly by shoulder placement, what type of ellipse or sphere we were studying. Using this method I estimated volume for the vessels and sherds in the catalogue. It should be noted that the sites with larger collections yield more variety in formal type. The sites with the most variety include Fulton Island (BlDn-12) and Oxbow (CfDl-1) in New Brunswick and Bear River (BdDk-1) in Nova Scotia.

This study also points to certain gaps in the archaeological record concerning pottery in this region. In particular, more research needs to be focused on the northeastern part of Nova Scotia, along the southern coast of Nova Scotia and on Cape Breton Island. Another region noticeably in need of research is Prince Edward Island. More research on pottery could be done in the province of Newfoundland and Labrador as well.

Seeing the same vessel form and decoration in two sites from different provinces does not seem to be uncommon in this region. For instance, the vessels from the Hazel site in New Brunswick (CeDw-3) and Comeau Hill (AkDm-1) in Nova Scotia were very

similar in their decoration and their shape. The spread of these pottery styles and manufacturing techniques should be researched further. The first recorded rim sherd on the island of Newfoundland was found at L'Anse a Flamme in southwestern Newfoundland during the 1980 field season. That vessel has since been dated to 1320+/-40 B.P. placing it in CP3 to CP4. It was found *in situ* associated with Dorset material and resembled pottery vessels from southern Ontario, with a collar and chevron motif (Penney 1981). There are other pottery finds from western Newfoundland and southern Labrador, but more research would be needed to include them in this type of study. Some vessels from southern Labrador, kept in the Rooms museum, appear at first glance to be from southern Ontario.

This project did not find great changes in vessel form over time, but has solidified some previous assertions. In particular, vessel forms seem to move into spherical or more globular forms, on average, during the later part of the Woodland period, and in general become more variable. Also, wall thickness tends to increase with the volume of a vessel. This result is in agreement with the pottery studies from other regions.

By implementing more study of vessel function in this region, we could learn more about intra-regional variation and thereby helping to recreate the past lifeways of the groups who lived here. Residue analysis has already begun to uncover information about Vinette 1 pottery use in eastern Canada and how social implications may have had a stronger role in the emergence of pottery as technology in this region (Taché et al. 2008). Moreover, work from New Brunswick has yielded information about specific dietary habits and vessel use in that province (Deal et al. 1991, Deal 2005). Research shows that

vessels with cooking traces were likely used to cook a wide variety of foods, usually corresponding to the size of the vessel. Smaller vessels were likely used for nuts and bone processing and larger ones for cooking larger game. For example, the Fulton Island vessel used to cook terrestrial mammal (BlDn-12: Vessel 3) is from a larger group in the catalogue with a rim diameter of approximately 27 centimeters. Arnold states that pottery-use trends higher in more sedentary social groups (Arnold 1985). Further research could include how dietary habits change between mobile groups and those of more sedentary populations. Residue analysis could assist in answering these questions, and would likely stir up a few more.

This research has served to group together vessel information previously found in diverse sources. Hopefully, it will serve as a catalyst for more comprehensive study on form and function in this region and how it relates to group mobility. Future pottery research could include more experimental archaeology regarding residues and clay sourcing, as well as aid in the search for social connections among archaeological populations across eastern Canada.

## Appendix A

## Firing Vessels at Metepenagiag New Brunswick

Cleaning out the fire pit the day before the children arrive for the vessel firing.

Once the firepit was cleaned, we could return to build the fire for the base of the kiln.

The two lower photos show vessels warming by the fire prior to baking.

The vessels move closer to the fire slowly to avoid breaking or spalling. If the vessel heats up too quickly it will get damaged. The lower photo shows the kiln beginning to be built over the coals and vessels. No support is needed as the logs do not put any pressure directly on any one vessel.

While the vessels cook, the clay is being prepared for future firings. These natural clays have been ripening for 20 years. In order use them again they must be crumbled and left to dry (as seen in the lower left) and saturated again to bring back the correct consistency.

By learning about pottery from a ceramicist, observing, and taking part in the process I feel I gained an extraordinary insight into fire kilns and coil manufacturing. The community was very supportive and watching the children reclaim a traditional art form was a very satisfying experience.

## Appendix B

## Vessel Attribute Listing

| | Attributes | Options | type |
|---|---|---|---|
| A | Borden/Site Identification | unlimited | text |
| B | Common Name | unlimited | text |
| C | Province | NB,NS,PEI,NL | text |
| D | Catalogue Reference | unlimited | text |
| E | Catalogue Holdings | NBM, NB Arch, Metep., NS Museum, TM Building, Y Museum, | text |
| F | Ceramic Period | 1,2,3,4,5,6,7 | numeric |
| G | Form Type | Ellipse 1-6, Sphere | Alpha-numeric |
| H | Height(cm) | unlimited | numeric |
| I | Rim Diameter(cm) | unlimited | numeric |
| J | Body Diameter (cm) | unlimited | numeric |
| K | Known Volume | unlimited | Numeric |
| L | Volume (Sphere) | unlimited | numeric |
| M | Correction Value | -12, 1.9, 4.9,12.4, 13.4,14.9, 17.9 | numeric |
| N | Corrected Volume (L) | unlimited | numeric |
| O | Volume (Cylinder) | unlimited | numeric |
| P | Rim Thickness (mm) | unlimited | numeric |
| Q | Wall Thickness (Rim) (mm) | unlimited | numeric |
| R | Wall Thickness (Shoulder) (mm) | unlimited | numeric |
| S | Wall Thickness (Body) (mm) | unlimited | numeric |

| | | | |
|---|---|---|---|
| T | Rim Description | flared, straight, constricted | text |
| U | Lip Description | rounded or flat | text |
| V | Shoulder Description | wide, narrow | text |
| W | Temper Type | grit, grit/organic, organic, organic/grit, | text |
| X | Castellation | yes/no | text |
| Y | Castellation Height (mm) | unlimited | numeric |
| Z | Castellation Angle (nearest degree) | unlimited | numeric |
| AA | Punctate (Frequency) | unlimited | numeric |
| AB | Punctate (Distance) (mm) | unlimited | numeric |
| AC | Punctate Diameter (mm) | unlimited | numeric |
| AD | Collar | yes/no | text |
| AE | Collar Width (mm) | unlimited | numeric |
| AF | Collar Thickness (mm) | unlimited | numeric |
| AG | Other unique form/ decoration | unlimited | text |
| AH | Residue Intensity | light, moderate, heavy | text |
| AI | Residue Location | outside, exterior, rim, body | text |
| AJ | Use Wear | unlimited | text |

| | | | |
|---|---|---|---|
| AK | Interior Decoration | CWS, D, PSS, incised lines, Undecorated, striations | test |
| AL | interior Decoration Application | Linear, Rocker, Mix[1] | text |
| AM | Exterior Decoration Style | CWS, LD, PSS, Incised Lines, Undecorated | text |
| AN | Exterior Decoration Application | Linear, Rocker, Mix, Geometric, pointed stylus | text |
| AO | Rim/Collar Decoration | CWS, LD, PSS, incised lines, Punctates, Undecorated | text |
| AP | Rim/Collar Decoration Application | Linear, Rocker, Mix, Geometric, Stylus, Striations | text |
| AQ | IMG | unlimited | numeric |
| AR | STATUS | done or blank ('done' means that the measurements have been entered) | text |

[1] 'Mix' refers to any number of these items with a '/' in between. There were a vast variety of options to choose from in this regard.

## Appendix C – Raw Data

| Borden/Site Identification | Common Name | Province | Catalogue Reference | Height (cm) | Rim Diameter (cm) | Body Diameter (cm) | Known Volume | Corrected Volume (L) | Avg. Rim Thickness |
|---|---|---|---|---|---|---|---|---|---|
| BlDn-8 | Maquapit Lake Area | NB | 5183 (3) "Vessel 3" | 12.2 | 10.0 | 11.1 | | 0.6 | 4.8 |
| BlDn-12 | Fulton Island | NB | vessel 9: 192, 73-100cm DBS | | 14.0 | | | | 3.0 |
| CfDl-1 | Oxbow site | NB | 1984, Vessel 304:2140, Unit 84-2, Level 6 | 12.0 | 10.0 | 10.0 | | 0.5 | 3.0 |
| CfDl-1 | Oxbow site | NB | 1979, Vessel 202: 1573, 1962. 79-14 Level 8 | 9.1 | 8.0 | 11.4 | | | 1.5 |
| CfDl-1 | Oxbow site | NB | 1978, Vessel 11: 300, 78-10, level 4 | 13.3 | 10.0 | 11.1 | | 0.8 | 6.5 |
| CfDl-1 | Oxbow site | NB | 1979, vessel 5: 234, 78-10, level 4 | 24.4 | 15.0 | 18.8 | | 3.9 | 5.3 |
| BlDn-12 | Fulton Island | NB | 648 | 18.0 | 14.0 | 15.0 | | 1.8 | 3.8 |
| BlDn-12 | Fulton Island | NB | Vessel 5: 422,382 | | none | | | | 5.5 |
| BkDw-5 | Mud Lake Stream | NB | IV 56, BkDw5: 471 | 15.9 | 13.0 | 14.4 | | 1.4 | 5.8 |
| BkDw-5 | Mud Lake Stream | NB | IV 47, BkDw5:332 (C13), 345(C13), 375(C13), 338(C12), 364(C12), 362(B14), 343(C13), 367(C12), 380(C12), 322(D12), 361(D13) | 7.5 | 6.0 | 7.5 | | 0.2 | 8.3 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| BlDn-26 | Meadows site | NB | v19 2658-2661, Area B, Unit C2 | 18.3 | 15.0 | 16.7 | | 2.1 | 4.5 |
| BkDw-5 | Mud Lake Stream | NB | IV 3; BkDw5: 96, 363, 374. Unit B16 | 8.8 | 7.0 | 8.8 | | 0.4 | 5.3 |
| CfDl-1 | Oxbow site | NB | 1979, Vessel 222: 1545, 78-102 (screen) level 14 | 10.3 | 9.0 | 12.9 | | | 3.0 |
| BlDn-8 | Maquapit Lake Area | NB | 606 (2) | | none | | | | 5.3 |
| BlDn-8 | Maquapit Lake Area | NB | 605 (3) | | none | | | | 3.8 |
| CfDl-1 | Oxbow site | NB | 1979, Vessel 1833/1834, 79-13, level 16 | 18.3 | 15.0 | 16.7 | | 2.1 | 3.8 |
| CfDl-1 | Oxbow site | NB | 1979, Vessel 211: 1730 | 16.8 | 14.0 | 14.0 | | 1.5 | 5.5 |
| BlDm-1 | Keyhole site | NB | 5054 (Vessel 7) | 15.0 | 12.0 | 15.0 | | 1.9 | 3.3 |
| BlDn-8 | Maquapit Lake Area | NB | GLM: 18 | 18.3 | 15.0 | 16.7 | | 2.1 | 3.8 |
| BlDn-8 | Maquapit Lake Area | NB | 606 (3) | 15.0 | 12.0 | 15.0 | | 1.9 | 3.8 |
| BlDm-1 | Keyhole site | NB | 5054 (Vessel 2) | 19.6 | 16.0 | 17.8 | | 2.6 | 6.0 |
| CfDl-1 | Oxbow site | NB | 1984, Vessel (305): 2302, 2227. Unit 84-6,7, Level 6c | 27.6 | 17.0 | 21.3 | | 5.7 | 3.8 |
| BlDn-8 | Maquapit Lake Area | NB | 606 (4) | 15.0 | 12.0 | 15.0 | | 1.9 | 4.0 |
| CfDl-1 | Oxbow site | NB | 1984, Vessel 21: 297, 78-10, Level 4 | 15.0 | 12.0 | 15.0 | | 1.9 | 6.0 |
| CfDl-1 | Oxbow site | NB | 1978, Vessel 4: 762, 78-10, feat. 44 | 21.3 | 16.0 | 17.8 | | 3.4 | 5.0 |
| BlDn-8 | Maquapit Lake Area | NB | 5183 (2) | 17.5 | 14.0 | 17.5 | | 2.9 | 3.0 |
| CfDl-1 | Oxbow site | NB | 1978, Vessel 66: 780, 78-101, levels 8-10 | 24.0 | 20.0 | 20.0 | | 4.3 | 5.5 |
| CfDl-1 | Oxbow site | NB | 1984, Vessel 96: 132 TC1-77, Feature 4 | 25.2 | 21.0 | 21.0 | | 4.9 | 3.3 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CfDl-1 | Oxbow site | NB | v210 - 1979, Vessel 79-14/1775: 1968, 1757, 79-14 Level 14 | 17.5 | 14.0 | 17.5 | | 2.9 | 3.8 |
| CbDd-1 | Skull Island | NB | Vessel 2 | 26.5 | 21.3 | 22.4 | 6.0 | | 0.0 |
| CfDl-1 | Oxbow site | NB | 1978, Vessel 26: 425, 78-10, Feat. 36 | 17.5 | 14.0 | 17.5 | | 2.9 | 3.8 |
| CfDl-1 | Oxbow site | NB | 1978, Vessel 35: 735, 78-10, Level 6 | 17.5 | 14.0 | 17.5 | | 2.9 | 2.8 |
| CfDl-1 | Oxbow site | NB | 1979, Vessel 228: 1661, 79-13, level 12 | | none | | | | 1.3 |
| NB VIII-D | Indian Point | NB | NB VIII-D: 412 | | 14.0 | | | | 7.0 |
| CfDl-1 | Oxbow site | NB | 1979, Vessel 201: 1616, 79-14, level 11 | 22.7 | 17.0 | 18.9 | | 4.1 | 4.5 |
| CfDl-1 | Oxbow site | NB | 1978, Artifact 1567, 78-102, level 14 | | none | | | | 4.5 |
| CfDl-1 | Oxbow site | NB | 1978, Vessel 27: 427 | | none | | | | 5.0 |
| CfDl-1 | Oxbow site | NB | 1984, Vessel 97: 805, 916. Level 6, and Feat. 61 | 22.7 | 17.0 | 18.9 | | 4.1 | 3.5 |
| BlDn-12 | Fulton Island | NB | Vessel 8: 192, 73-95cm DBS | 34.1 | 21.0 | 26.3 | | 10.7 | 5.8 |
| BlDn-12 | Fulton Island | NB | Vessel 6: levels 7-10, features 33,46, and 51. | 29.5 | 22.3 | 23.8 | | 7.2 | 3.3 |
| BlDn-8 | Maquapit Lake Area | NB | 606 | 18.8 | 15.0 | 18.8 | | 3.6 | 7.0 |
| CbDd-1 | Skull Island | NB | Vessel 5 | 38.0 | 22.4 | 28.5 | 14.0 | | 0.0 |
| NB VIII-D | Kennebecasis | NB | 472 | 23.0 | 19.0 | 19.1 | | 3.1 | 2.3 |
| CbDd-1 | Skull Island | NB | Vessel 3 | 27.1 | 20.3 | 22.7 | 7.2 | | 0.0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CbDd-1 | Skull Island | NB | Vessel 1 | 22.0 | 16.5 | 21.0 | 5.1 | | 0.0 |
| BlDn-8 | Maquapit Lake Area | NB | 605 | 21.3 | 17.0 | 21.3 | | 5.3 | 3.3 |
| BlDn-8 | Maquapit Lake Area | NB | 606 (5) | 21.3 | 17.0 | 21.3 | | 5.3 | 4.3 |
| CfDl-1 | Oxbow site | NB | 1984, Vessel 104: 294, Feat. 15, Unit 78-4 | 21.3 | 17.0 | 21.3 | | 5.3 | 5.8 |
| BlDn-12 | Fulton Island | NB | Vessel 1: 31, 60-75cm DBS | 22.5 | 18.0 | 22.5 | | 6.3 | 5.0 |
| CfDl-1 | Oxbow site | NB | 1984,Vessel 308:1410,973,123, Feature 72, 78-102 | 22.5 | 18.0 | 22.5 | | 6.3 | 3.8 |
| CfDl-1 | Oxbow site | NB | 1943 | 24.5 | 18.0 | 25.3 | | 8.9 | 3.5 |
| BlDm-1 | Keyhole site | NB | 5054 (Vessel 10) | 37.4 | 23.0 | 28.8 | | 14.1 | 3.8 |
| BlDn-8 | Maquapit Lake Area | NB | 606 (6) | 23.8 | 19.0 | 23.8 | | 7.4 | 1.8 |
| CfDl-1 | Oxbow site | NB | 1984, levels 4-6, Vessel 2 (303) | 23.8 | 19.0 | 23.8 | | 7.4 | 3.3 |
| CfDl-1 | Oxbow site | NB | 1979, Vessel 180: 130, Level 8 | 23.8 | 19.0 | 23.8 | | 7.4 | 5.3 |
| BlDn-12 | Fulton Island | NB | Vessel 13: 484, 50-60cm DBS | 30.7 | 23.0 | 25.6 | | 10.0 | 1.8 |
| BgDs-10 | Minister's Island | NB | 2253, Vessel 94 | 25.0 | 20.0 | 25.0 | | 8.6 | 6.3 |
| BlDn-26 | Meadows site | NB | 2956-2959, Area C. Unit D1 | 25.0 | 20.0 | 25.0 | | 8.6 | 4.8 |
| BlDm-1 | Keyhole site | NB | Vessel 1 | 26.3 | 21.0 | 26.3 | | 9.9 | 4.3 |
| CfDl-1 | Oxbow site | NB | 1978, Vessel 3: 796,1057, 78-10, Level 6 | 28.8 | 24.0 | 24.0 | | 7.4 | 2.0 |
| BlDm-1 | Keyhole site | NB | 5054 (vessel 3) | 26.3 | 21.0 | 26.3 | | 9.9 | 4.5 |
| CfDl-1 | Oxbow site | NB | 1979, Vessel 45: 129 Level 6 | 37.4 | 23.0 | 28.8 | | 14.1 | 3.0 |
| CbDd-1 | Skull Island | NB | Vessel 6 | 33.0 | 27.0 | 28.2 | 14.3 | | 0.0 |
| CeDw-3 | Hazel site | NB | GLM 21, Vessel 1 | 21.3 | 20.0 | 27.4 | | | 0.0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CbDd-1 | Skull Island | NB | Vessel 4 | 31.8 | 25.0 | 29.2 | 11.6 | | 0.0 |
| BlDn-26 | Meadows site | NB | vessel 22: 3354-3362, Area C, Unit D1, Feat. 33 | 27.5 | 22.0 | 27.5 | | 11.4 | 4.3 |
| CfDl-1 | Oxbow site | NB | 1979, Vessel 230: 1822, 79-13, level 13 | 27.5 | 22.0 | 27.5 | | 11.4 | 2.3 |
| BlDn-12 | Fulton Island | NB | vessel 16: 184,175, 73-91cm DBS | 28.8 | 23.0 | 28.8 | | 13.1 | 4.0 |
| CfDl-1 | Oxbow site | NB | 1978, Vessel 226: 1727(79-13, L 13), 1562 (79-13, L 10), 1502 (79-14, L7). | 30.6 | 25.0 | 27.8 | | 9.8 | 3.5 |
| BlDn-8 | Maquapit Lake Area | NB | 5183 | 28.8 | 23.0 | 28.8 | | 13.1 | 7.0 |
| BlDn-12 | Fulton Island | NB | 303 | 40.6 | 25.0 | 31.3 | | 18.1 | 4.0 |
| BjDu-17 | Diggity site | NB | 159, vessel 1 | 31.3 | 25.0 | 31.3 | | 16.8 | 4.0 |
| BlDm-1 | Keyhole site | NB | 5054 (Vessel 6) | 20.0 | 25.0 | 20.0 | | 4.4 | 5.0 |
| CfDl-1 | Oxbow site | NB | 1978, Vessel 252: 843 mostly. 78-10, level #6 | 31.3 | 25.0 | 31.3 | | 16.8 | 7.0 |
| BlDn-8 | Maquapit Lake Area | NB | Maquapit Lake Vessel! | 30.8 | 26.5 | 26.7 | | 8.8 | 2.3 |
| BlDn-12 | Fulton Island | NB | vessel 3:20 40-45 cm DBS | 32.4 | 27.0 | 27.0 | | 10.5 | 7.3 |
| BgDr-11 | Teacher's Cove | NB | 539 | 15.0 | 12.0 | 15.0 | | 1.9 | 9.3 |
| BlDn-8 | Maquapit Lake Area | NB | 5335 | 20.0 | 15.0 | 16.7 | | 2.8 | 10.0 |
| BlDn-8 | Maquapit Lake Area | NB | 605 (2) | 27.6 | 17.0 | 21.3 | | 5.7 | 5.5 |
| BgDs-10 | Minister's Island | NB | 1724, level 66 | 20.8 | 17.0 | 18.9 | | 3.1 | 2.8 |
| BgDr-7 | Bocabec, Digdeguash Point | NB | 248 | 30.9 | 19.0 | 23.8 | | 8.0 | 4.5 |
| CfDl-1 | Oxbow site | NB | 1673 | 20.5 | 16.2 | 19.7 | | 4.2 | 3.5 |
| BlDq-1 | Savage Island | NB | 50 | 19.5 | 17.0 | 21.6 | | 5.6 | 2.5 |

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|---|---|---|---|---|---|---|---|---|---|
| BgDs-10 | Minister's Island | NB | 1715, level 66 | 28.0 | 21.0 | 23.3 | | 7.6 | 6.3 |
| BgDr-11 | Teacher's Cove | NB | 540 | 25.0 | 20.0 | 25.0 | | 8.6 | 5.8 |
| BgDs-10 | Minister's Island | NB | 1706, level 65 | 19.2 | 24.0 | 19.2 | | 3.9 | 4.5 |
| EeBi-42 | Gould site | NL | Has Bright Yellow Tag.. No numbering | 16.8 | 14.0 | 14.0 | | 1.5 | 4.8 |
| EeBi-42 | Gould site | NL | 2253 Vessel 2 | | none | | | | 5.0 |
| EeBi-42 | Gould site | NL | 2253 Vessel 1 | 20.0 | 16.0 | 20.0 | | 4.4 | 5.3 |
| EeBi-42 | Gould site | NL | 2253 Vessel 3 | 23.8 | 19.0 | 23.8 | | 7.4 | 5.5 |
| BcDc-4 | Eisenhauer Shellheap | NS | 267 (A and C) | 5.7 | 5.0 | 7.1 | | | 4.5 |
| BdDk-1 | Bear River | NS | None(A) | 12.0 | 9.0 | 10.0 | | 0.6 | 7.8 |
| BdDk-1 | Bear River | NS | 150 (B) | 14.6 | 9.0 | 11.3 | | 0.8 | 5.8 |
| BgDb-5 | Cemetery | NS | 43 (K) | 11.0 | 9.0 | 10.0 | | 0.5 | 3.0 |
| BgDb-4 | Melanson | NS | 101 (D) | 11.3 | 9.0 | 11.3 | | 0.8 | 3.5 |
| BlCf-2 | Odaskawnokh | NS | 211 | | 9.0 | | | | 2.5 |
| BdDk-1 | Bear River | NS | 59.41.159B(1) | 16.3 | 10.0 | 12.5 | | 1.2 | 2.5 |
| BdDk-1 | Bear River | NS | 58.54.171 | 22.8 | 14.0 | 17.5 | | 3.2 | 7.3 |
| BhDc-5 | Clam Cove | NS | Vessel 3 | 15.6 | 13.0 | 13.0 | | 1.4 | 6.0 |
| AlDf-2 | Port Joli XII | NS | 13, 15 | 24.4 | 15.0 | 18.8 | | 3.9 | 6.0 |
| BgDb-5 | Cemetery | NS | 43 (D) | 13.4 | 11.0 | 12.2 | | 0.8 | 5.3 |
| BdDk-1 | Bear River | NS | 58.54 140 | 14.7 | 12.0 | 13.3 | | 1.1 | 7.0 |
| BgDb-5 | Cemetery | NS | 43 (F) | 14.7 | 11.0 | 12.2 | | 1.1 | 3.3 |
| BlCf-2 | Odaskawnokh | NS | 112 | | 11.0 | | | | 3.3 |
| BdDk-1 | Bear River | NS | 58.54.169(1) | 17.1 | 14.0 | 15.6 | | 1.7 | 5.8 |
| BgDb-4 | Melanson | NS | 101(A) | 15.0 | 12.0 | 15.0 | | 1.9 | 4.8 |
| AlDf-3 | Port Mouton IV | NS | 43, 59 | 15.0 | 12.0 | 15.0 | | 1.9 | 6.0 |
| BdDk-1 | Bear River | NS | 59.41.159B (Tray 7) | 16.8 | 14.0 | 14.0 | | 1.5 | 6.8 |
| BdDk-1 | Bear River | NS | 636 (2) | 24.4 | 15.0 | 18.8 | | 2.0 | 8.3 |
| BdDk-1 | Bear River | NS | 151(A) | 18.0 | 15.0 | 15.0 | | 2.1 | 3.0 |
| BdDk-1 | Bear River | NS | BRZ9+ | 11.4 | 10.0 | 14.3 | | | 6.5 |
| BdDk-1 | Bear River | NS | None(D) | 13.8 | 13.0 | 17.8 | | | 6.5 |

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|---|---|---|---|---|---|---|---|---|---|
| AlDf-2 | Port Joli XII | NS | 12 | 17.1 | 15.0 | 21.4 | | | 5.5 |
| BdDk-1 | Bear River | NS | 231 | 20.0 | 15.0 | 16.7 | | 2.0 | 3.0 |
| BdDk-1 | Bear River | NS | 151( C) | 26.0 | 16.0 | 20.0 | | 4.8 | 3.5 |
| BgDb-5 | Cemetery | NS | 43 (E) | 20.4 | 17.0 | 17.0 | | 2.6 | 3.5 |
| BgDb-5 | Cemetery | NS | 43 (A) | 20.0 | 15.0 | 16.7 | | 2.8 | 2.5 |
| AlDf-3 | Port Mouton IV | NS | 28 | 21.3 | 16.0 | 17.8 | | 3.4 | 3.5 |
| BdDk-1 | Bear River | NS | 58.54.169(2) | 16.3 | 13.0 | 16.3 | | 2.4 | 7.0 |
| BdDk-1 | Bear River | NS | 229 (B) | 16.3 | 13.0 | 16.3 | | 2.4 | 3.5 |
| BdDk-1 | Bear River | NS | 59.41.159C | 17.5 | 14.0 | 17.5 | | 2.9 | 5.5 |
| BdDk-1 | Bear River | NS | 150 (A) | 29.3 | 18.0 | 22.5 | | 6.8 | 3.0 |
| AlDf-3 | Port Mouton IV | NS | 85, 26, 24, AlDf-1, 9, 90 | 18.8 | 15.0 | 18.8 | | 3.6 | 6.3 |
| BbDh-6 | Eel Weir | NS | 9B32E14-1 | 18.8 | 15.0 | 18.8 | | 3.6 | 3.8 |
| BdDk-1 | Bear River | NS | 636 (1) | 18.8 | 15.0 | 18.8 | | 3.6 | 11.3 |
| BdDk-1 | Bear River | NS | 59.41.159B (48) | 18.8 | 15.0 | 18.8 | | 3.6 | 9.0 |
| BcDc-4 | Eisenhauer Shellheap | NS | 114 | 23.2 | 19.0 | 21.1 | | 4.3 | 6.0 |
| BdDk-1 | Bear River | NS | None(B) | 18.8 | 15.0 | 18.8 | | 3.6 | 9.0 |
| BdDk-1 | Bear River | NS | 151(B) | 22.7 | 17.0 | 18.9 | | 4.1 | 4.3 |
| NS VIII-B | Quarry Island Shellheap | NS | 988a,b,c | 18.8 | 15.0 | 18.8 | | 3.6 | 4.3 |
| BdDk-1 | Bear River | NS | BRX7+ | 20.0 | 16.0 | 20.0 | | 4.4 | 8.5 |
| BgDb-4 | Melanson | NS | Vessel 1 (90,94,89,84,85,92,86) | 20.0 | 16.0 | 20.0 | | 4.4 | 2.3 |
| BgDb-5 | Cemetery | NS | 43 (B) | 20.0 | 16.0 | 20.0 | | 4.4 | 3.5 |
| AkDm-1 | Commeau Hill site | NS | Yarmouth Vessel | 17.0 | 16.0 | 21.9 | 5.5 | | 7.0 |
| BgDb-4 | Melanson | NS | 143 | 35.8 | 22.0 | 27.5 | | 12.4 | 3.3 |
| BgDb-5 | Cemetery | NS | 43 (H) | 20.0 | 16.0 | 20.0 | | 4.4 | 2.8 |
| BdDk-1 | Bear River | NS | 229 ( C ) | 18.0 | 15.0 | 15.0 | | 2.1 | 3.5 |
| AlDf-3 | Port Mouton IV | NS | 27 | 19.2 | 16.0 | 16.0 | | 2.5 | 3.0 |

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|---|---|---|---|---|---|---|---|---|---|
| BlCf-2 | Odaskawnokh | NS | 102 | | 15.0 | | | | 5.3 |
| BdDk-1 | Bear River | NS | 229 (A) | 21.3 | 17.0 | 21.3 | | 2.7 | 3.8 |
| BdDk-1 | Bear River | NS | 59.41.159B(2) | 21.3 | 17.0 | 21.3 | | 5.3 | 5.5 |
| BhDc-5 | Clam Cove | NS | 69 | 18.3 | 16.0 | 22.9 | | | 3.5 |
| BgDb-4 | Melanson | NS | Vessel 2 (90,94,89,84,85,92,86) | 20.4 | 17.0 | 17.0 | | 3.0 | 3.8 |
| BgDb-5 | Cemetery | NS | 43 (G) | 22.5 | 18.0 | 22.5 | | 6.3 | 4.8 |
| BgDb-4 | Melanson | NS | 123, 133 | 20.6 | 18.0 | 25.7 | | | 5.0 |
| BdDk-1 | Bear River | NS | None( C) | 23.8 | 19.0 | 23.8 | | 7.4 | 5.5 |
| BgDb-5 | Cemetery | NS | 43 ( C ) | 21.6 | 18.0 | 18.0 | | 3.6 | 3.0 |
| BcDc-4 | Eisenhauer Shellheap | NS | 108 | 20.6 | 18.0 | 25.7 | | | 3.3 |
| BgDb-4 | Melanson | NS | 119, 121 | 26.3 | 21.0 | 26.3 | | 9.9 | 4.8 |
| BgDb-5 | Cemetery | NS | 43 (I) | 26.3 | 21.0 | 26.3 | | 9.9 | 4.0 |
| BgDb-5 | Cemetery | NS | 43 (J) | 23.2 | 19.0 | 21.1 | | 4.3 | 6.0 |
| BgDb-4 | Melanson | NS | 101(B) | 23.8 | 19.0 | 23.8 | | 7.4 | 4.0 |
| BdDk-1 | Bear River | NS | 58.54.169 (Tray 7) | 27.5 | 22.0 | 27.5 | | 11.4 | 5.3 |
| BbDh-6 | Eel Weir | NS | 9B49X1-1 (previously 9B11X3-1) | 25.1 | 22.0 | 31.4 | | | 4.0 |
| BdDk-1 | Bear River | NS | 59.41.159B (49) | 28.8 | 23.0 | 28.8 | | 13.1 | 8.5 |
| AlDf-1 | Port Mouton I | NS | AlDf-1:80, AlDf-3:31 | 30.0 | 24.0 | 30.0 | | 14.8 | 3.8 |
| BdDk-1 | Bear River | NS | 58.54.138A | 31.3 | 25.0 | 31.3 | | 16.8 | 8.8 |
| BgDb-5 | Cemetery | NS | 43 (L) | 30.6 | 25.0 | 27.8 | | 9.8 | 6.3 |
| BdDk-1 | Bear River | NS | 58.54.169(39) | 40.6 | 25.0 | 31.3 | | 18.1 | 5.8 |
| BgDb-4 | Melanson | NS | 112, 113, 121 | 36.3 | 29.0 | 36.3 | | 26.2 | 5.0 |
| BgDb-4 | Melanson | NS | 101 ( C ) | 36.3 | 29.0 | 36.3 | | 26.2 | 4.0 |
| AlDf-3 | Port Mouton IV | NS | 22 | | none | | | | 6.3 |
| BdDk-1 | Bear River | NS | BR Y 9-10 | | none | | | | 6.0 |
| BdDk-1 | Bear River | NS | BRU-1: 3626 | | none | | | | 4.0 |
| BdDk-1 | Bear River | NS | 59.41.159B (5) | | none | | | | 5.8 |

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|---|---|---|---|---|---|---|---|---|---|
| BdDk-1 | Bear River | NS | 59.41.159B(4) | | none | | | | 4.3 |
| CcCm-12 | MacDonald site | PEI | 187 | 16.8 | 14.0 | 14.0 | | 1.5 | 3.3 |

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