PALEOGEOGRAPHY, SEA-LEVEL CHANGE AND THE PEOPLING OF THE MARITIMES: AN ARCHAEOLOGICAL PERSPECTIVE

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DEDICATION PAGE

For my mom and dad. It was a heck of a journey, but I am glad we took it together!

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Abstract

This thesis examines specific areas of the landscape of the Maritimes as they changed over the past 13 thousand years, focussing specifically on how sea level has affected shorelines and how these changes have shaped the lives of people in precontact and proto-historic times. This is important because we do not have historical records on which to base our understanding. Through an examination of past geological research and a subsequent mapping of paleo coastlines, this thesis seeks to provide an alternative to the theory of a "Great Hiatus" with one of a drowned landscape.

Much of the current narrative on precontact groups' lifeways is based on early ethnographies by European men. These depictions were recorded with clear objectives-exploration, colonization, and evangelical pursuits. These primary documents, whether they were journals, illustrations, or cartography, served to exploit and marginalize the Indigenous population. In other words, they provide a perspective from outside the culture that does not necessarily reflect an accurate picture.

Using current knowledge of sea level change for the Bay of Fundy, a corridor was selected along the Annapolis River which was deemed as high potential for archaeology. The head of tide on a tidal river is an area where anadromous fish congregate and was an important resource procurement site for precontact groups. Integrating known sea-level rise rates, the movement of head-of-tide through time was predicted. Archaeological investigations, including canvassing landowners, field walking and sub-surface excavations, were conducted along this corridor. Lithics were analysed and matched with known quarry sites to clarify precontact lithic acquisition in the northeast.

Ultimately, this thesis provides a tool to predict where precontact sites may be located and/or offer explanations as to why they have not been found. Through an acceptance and appreciation of oral traditions including the names of culturally relevant places, combined with the recovery and interpretation of material culture, Canada's First Nations' long history on the landscape can be better understood.

Key words: paleogeography, precontact settlement patterns, sea level change, Bay of Fundy

List of Abbreviations Used

BP	Before Present
Ka	Thousand years
^{14}C	Carbon 14 years
cal.	calibrated
yrs	years
RSL	Relative Sea Level
MSL	Mean Sea Level

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CHAPTER 1: INTRODUCTION

No matter how you frame Native history, the one inescapable constant is that Native people in North America have lost much. We've given away a great deal, we've had a great deal taken from us, and, if we are not careful, we will continue to lose parts of ourselves—as Indians, as Cree, as Blackfoot, as Navajo, as Inuit—with each generation. But this need not happen. Native cultures aren't static. They're dynamic, adaptive, and flexible, and for many of us, the modern variations of older tribal traditions continue to provide order, satisfaction, identity, and value in our lives. More than that, in the five hundred years of European occupation, Native cultures have already proven themselves to be remarkably tenacious and resilient.

Thomas King, The Inconvenient Indian (2014, pp. 255-256)

We were very impoverished because our history was denied to us. So, you can imagine all the work that we have to do still. That every community, every child that's growing, should know its history and, as much as possible, its language.

Alanis Obomsawin, filmmaker, CBC Radio interview (2014)

We know very little of the history and culture of Indigenous societies before European contact. Few undisturbed precontact sites have been discovered and studied. Locating, excavating, and interpreting these sites may be the best way to unravel the mysteries of precontact lifeways of the Indigenous peoples of the Maritimes. The goal of locating a sufficient number of sites to accurately portray the cultures of precontact societies may be unattainable, however, it is worth the effort. This thesis offers new "tools" or methods

that archaeologists can use that make the locating and interpreting of sites potentially more successful.

This thesis uses an interdisciplinary approach to weave together three disciplines — history, earth sciences, and archaeology. This approach has not been widely used and by incorporating multiple methods or angles from which to approach the subject, it allows for a greater opportunity of uncovering new information while also challenging the old, existing narratives.

In this thesis, many of the locations discussed are referred to by the names they were given by European settlers. In many cases, these settler names have replaced the original Mi'kmaw ones. This writer acknowledges that this practice is problematic because it further entrenches European colonialism while marginalizing Mi'kmaq history.

Predicting the location of sites can be difficult. There is a need to refine or create search methods that would allow for a greater success rate for locating undisturbed sites. Since coastal resources were a significant part of the ancestral Mi'kmaw economy, an examination of coastal sea-level rise may provide a tool for interpreting precontact settlement patterns. In the Bay of Fundy, the main area in this study, sea-level rise has

caused the submergence of shorelines and the movement of head-of-tide up major drainage systems, such as the Annapolis River.

Approximately thirteen thousand years ago, as the glaciers retreated, humans, following caribou herds, entered the Maritime region and settled in the area near what is now Debert, Nova Scotia (MacDonald, 1968). This date is based on the averaging of 13 radiocarbon dates, which gives an average occupation date of 10 600 ^{14}C yrs BP (12 900 cal yrs BP) (MacDonald, 1968).

The environment the Paleoindians encountered was changing. The tundra landscape became a forested one, inhospitable for caribou herds (Hinsdale, 1932; MacDonald, 1968). Most of the caribou either perished or left the region and this has sparked an almost half century of debate about what happened to the indigenous inhabitants. Some researchers believe that the Paleoindians left the region with the caribou and labeled this period as the "Great Hiatus" because there is no evidence of human habitation for almost four thousand years (Fitting, 1968; Ritchie, 1965; Tuck, 1984). In the 1980s, this hypothesis was countered with a "drowned landscape" alternative. This new hypothesis assumed that some Paleoindians stayed and turned to a marine economy, the evidence of which is now at the bottom of the sea (Bonnichsen et al., 1993; Keenlyside, 1984).

As glaciers retreated from the Maritime region, they melted and the land on which they sat rebounded. The volume of water increased so the net result was, in the Bay of Fundy, sea-level rise. Relative sea level can change for several reasons. All else being equal, increase or decrease in the volume of water will clearly cause rise or fall of sea level. If the volume of water is constant and the land shifts vertically or horizontally, the sea level will respond with a rise or fall. A redistribution of mass on the surface or in the interior of the earth will change the configuration of the water surface to follow the resulting change in the gravitational field. Changes in the shape of the ocean floor which affect the volume may appear as changes in the land-sea interface. The water captured in ice changes the volume of seawater, and the weight of the ice causes subsidence of the land. When the glacier melts the volume of seawater increases and the load on land formerly below ice decreases, causing uplift of the land surface. It takes millennia for the land to respond to the decreased load, so initial results of deglaciation are rapidly rising sea levels followed by a rapidly rising land mass. The process is further complicated by the wave nature of the rebound so that while one section of the Earth is rising another section is falling. The result is that the eustatic (volume of water) and the isostatic (vertical displacement of the earth's surface owing to redistribution of mass) changes are both involved in observable sea level changes during and after deglaciation. (Lambeck et al., 2010).

If people lived on the seashore, then clearly, when the sea level rose, the evidence would be submerged. If they continued to live on the shore, then there should be a continuous record which extends from the present shoreline out to the 12 000 yrs BP shoreline.

Rivers flowing into the sea are sensitive to sea level changes. Sea level height determines where the river meets the sea and the point inland where tidal effects are no longer felt. This point, which is the farthest inland reached by tidal water, is called the head-of-tide. It is the furthest point upriver where incoming sea water meets outgoing fresh water and is a place where large anadromous fish congregate (Deal, 2015b; Allen, 2005). Congregations of large anadromous fish are important food sources. As sea levels rise, the head-of-tide moves inland, and the corresponding fishing activity should move inland as well. Sites excavated near present day - head-of-tide locations should show evidence of recent use. Since the Bay of Fundy sea level has been rising for the last few thousand years, it is expected that sites nearer the river mouth will show evidence of earlier use.

The sites now known along rivers have mostly been discovered by chance by hikers or fishers. They were not, however, selected by precontact groups arbitrarily. Analysis of the landscape and the characteristics of the river in the vicinity, coupled with a knowledge of the position of the head-of-tide, should enable prediction of sites at earlier or later times.

Sections of the Annapolis River are not and were not tidal but were still used by Indigenous groups for fishing. The Boswell site, a Transitional/Terminal Archaic site located on the banks of the river in the village of South Farmington, west of Kingston, was discovered in 2009 by recreational fishers who recovered two bifacial artifacts from an eroding riverbank. They are diagnostic of the Transitional Archaic period (Deal et al., 2016). Radiocarbon dating, based on one charcoal sample, has fixed a date of this occupation at 3 800 ^{14}C yrs BP (4 190 cal. yrs BP) (Deal 2015a). This site will be compared with a site containing similar lithic materials, discovered during excavations in Paradise in 2015-2017 in Chapter 4.

What we know about the Paleoindians who entered the Maritime region is based mainly on these interpretations of lithic artifacts (Deal, 2015a). This is also true for later groups. Too few sites have been located to reconstruct how these groups lived. Most sites have been chance finds by amateurs stumbling upon an easily recognized "arrowhead". Unfortunately, most of these finds end up in private collections and cannot be studied *in situ* (Deal, 2015b).

The northeastern region of North America, in the period leading up to contact with Europeans (early 16th century) is poorly understood. Archaeologists (Deal, 2015b; Davis, 1994; Allen, 2005) in fact, claim that more is known about the settlement patterns of earlier groups, such as the Paleoindians, who arrived in the Maritimes approximately 11

000 ^{14}C yrs BP , (12 900 cal yrs BP) than is known about the subsequent 10 000 years of Indigenous settlement before the first encounters with Europeans. Historian Ralph Pastore writes:

> During the centuries that preceded the coming of the Europeans there were periods of significant cultural change, resulting both from radical environmental shifts and from the arrival of new ideas, and even new peoples, from outside the Atlantic realm. To understand the magnitude of these transformations, it is necessary to understand the nature of the Native societies of what would become the Atlantic provinces. Unfortunately, the archaeological data needed to answer some of the most basic questions about the region's indigenous peoples are lacking and because of rising sea levels in many areas of the Maritimes, may never be collected (Pastore, 1994, p. 23).

In what follows, an interdisciplinary approach is used to examine the topic of precontact and early protohistoric period in the Maritimes. The three streams used are history, earth sciences and archaeology.

Chapter 2 examines the dominant narrative of the lifeways of Indigenous peoples at the time of contact through a variety of primary sources which are often cited. The dominant historical narrative, which has largely shaped the narrative of precontact lifeways, is critiqued. The account or survey of what historians have already discovered is used. These well-known, early primary documents are discussed as to how they

both misrepresented and in many instances deliberately marginalized the Indigenous groups in the region. Of course, not all historical documents should be cast aside. Included is a short case study at the end of the chapter where Mi'kmaw place names, as recorded by a Jesuit priest and a 19th century missionary, are used as another tool by which archaeologists may locate and interpret sites.

Chapter 3 is grounded in the earth sciences discipline, with a focus on physical geography and oceanography. The work of earth scientists and oceanographers is synthesized and used to examine the Maritime region during and after deglaciation, the paleocoastline and the introduction of humans into the region. It focuses on the Bay of Fundy, Minas and Chignecto Basins. Evidence for sea-level rise and resulting drowned landscapes are discussed as they pertain to high potential sites for precontact occupancy. The Annapolis River was selected as a case study. Head-of-tide and its change with time is discussed and is based on surveys conducted by a technician from the Centre for Geography Sciences and this writer. The results of this survey are examined.

Chapter 4 is an analysis of past and original archaeological research conducted around southwestern Nova Scotia. This work leans heavily on scientific research, as discussed in Chapter 3, on sea-level rise in the Bay of Fundy. This chapter demonstrates that the prediction of sites is possible through an understanding of how earth processes have altered the landscape over thousands of years. In this way, an interdisciplinary approach

is used. There is a present-day need for this kind of research, as most of the work has been archaeology based on a historical approach, and there is almost no work presently being done of the kind that is presented here.

References throughout this thesis will be made to the Maritime Provinces cultural sequence outlined in Table 1. This table was created by archaeologist Ben Pentz in 2008 and is here modified by changing the designation of Woodland period to Ceramic period, as it is more specific to the change which occurred in the culture at this time. This table shows the chronological order of precontact, contact and post-contact cultures as understood and viewed by both archaeologists and the Mi'kmaw people (Pentz, 2008). The Nova Scotia Museum and the Confederacy of Mainland Mi'kmaq have developed a terminology for *Mi'kmakik Teloltipnik L'nuk* (How the People lived in Mi'kma'ki) which is "based on the way the Mi'kmaq view ancestral descent and how that descent is reflected in their oral story-telling traditions, mythology and cultural world-view" (Pentz, 2008, p. 4). Mi'kmaw oral history has referenced three precontact periods; *Saqiwe'k L'nuk*-the Ancient People; *Mu Awsami Saqiwe'k*-the Not so Ancient People; *Kejikawek L'nuk*-the Recent People. Pentz writes that the Mi'kmaq think of themselves as being in this region since ancient times. They view the changing material culture found in the archaeological record as evidence for these three precontact periods (Pentz, 2008).

Table 1 Maritime Provinces Cultural Sequence Timetable. (B. Pentz and modified by A. Taylor)

Mi'kmaw Chronology			Archaeological Chronology	
Period Dates	Period Terminology	Pre- Contact Period	Period Dates	Period Terminology
ca. 11 500- 8 500 BP	*Saqiwe'k L'nuk* (Ancient People)		ca. 11 500- 8 500 BP ca 11 500 - 10 000 BP ca 10 000 - 8500 BP	Paleo Period (Early) (Late)
ca 8 500- 3 000 BP	*Mu Awsami Saqiwe'k* (Not so Ancient People)		ca 8 500- 3 000 BP ca 8 500 - 5 000 BP ca 5 000 - 3 500 BP ca 4 000 - 3 000 BP	Archaic Period (Early/Middle) (Late) (Terminal)
ca 3 000- 450 BP	*Kejikawek L'nuk* (Recent People- Ceramic Period and Contact Period traditions		ca 3000 - 450 BP ca 3 000 - 2000 BP ca 2 000 - 1000 BP ca 1 000 - 450 BP	Ceramic Period (Early) (Middle) (Late)
ca AD 1000- Present	*Kiskukewe'k L'nuk* (Historic/ Modern Mi'kmaw People and Colonial Period traditions)	Contact Period	ca AD 1450? - 1500	Late Ceramic/ Proto-Contact Period
			ca AD 1497 - 1604	Contact Period
		Post- Contact Period	AD 1604- 1867 AD 1604-1763 AD 1763- 1867	Colonial Period (Early/French) (Late/ British)
			AD 1867- Present	Post Confederation

CHAPTER 2: INTERPRETATION OF PRIMARY HISTORICAL DOCUMENTS

2.1 Kejikawek L'Nuk-Recent People: An Examination of Primary Documents

Many early documents and accounts have been examined for the purpose of this thesis in order to look for any truth they can give about precontact life. The problem is obscured, however, by the actual impact of the Europeans on Indigenous life in terms of population, health, travel patterns, and trade. The record, as the reader will see, is obscured by the need for Europeans to write home for continued funding of their explorations, to encourage more settlers and for other political reasons. As is apparent in maps and pictures, there are powerful ideological distortions that have been observed by modern historians.

The dominant narrative of the lifeways of Indigenous peoples at the time of contact has been created using primary sources which were produced by European men. This history chapter examines this narrative. Several well-known historical texts are critiqued as to how they have shaped the discourse on pre- and proto-historic Mi'kmaw lifeways. A short case study of Mi'kmaw place names, as recorded by a Jesuit priest and a 19th century missionary, is included as a counterpoint to how historical documents from a Mi'kmaw perspective may be a more useful tool by which archaeologists may locate and interpret sites.

To better understand the Indigenous groups living in the region in the pre-and early-contact period, this thesis reviews primary and secondary documents on the history of Atlantic Canada, including maps, correspondence, illustrations and other manuscripts. Before any analysis of these documents is undertaken, it is important to recognize that this early period must not be viewed as one single event. The arrival and establishment of Europeans in the Northeast (and the rest of North America for that matter) occurred as several distinct episodes. These should be broken down as: precontact, exploration (Basque fishers 1490s-1530s), reconnaissance (Cartier 1530s), permanent settlement (1604-1660s) and finally entrenched settlement (1700s to 1755) (Bannister, 2015n, is the fact that the people encountered by the early European visitors were but a fragment of what the original population once was. Scholars caution that the post-contact Indigenous population was quite different from the precontact population and believe that many of the 17th-century records seem to be "documenting a culture in a state of total disequilibrium with its environment" (Burley 1981, p. 203). Allen concurs with these concerns about forming conclusions about the Indigenous groups based on early ethnographies stating, for example, that "the winter starvation and famine periods recorded by early ethnographers were most probably consequences of European contact" (Allen, 2005, p. 74).

A process of change can also be clearly seen in the archaeological record for this period and for reasons yet to be determined. Ceramics changed from being relatively refined

and heavily used, suggesting a sedentary lifestyle, to a thicker, coarser ceramic more suitable to a nomadic existence. This is referred to as the Late Ceramic Period (Deal, 2015a; Davis, 1994; Allen, 2005).

To what extent should early ethnographies, illustrations and cartography be used to make inferences on the lifeways and settlement patterns of precontact groups? Should these early accounts and cartography only be considered in conjunction with other evidence, such as archaeological? For example, one model for the Maritime region, developed by Hoffman, and based largely on the writings of Jesuit priests in the early 1600s (Hoffman, 1955), featured summer coastal habitation and a winter inland hunting season. It was accepted that this coastal/inland pattern had existed for thousands of years before European contact (Lewis, 2015; Wicken, 1994).

Archaeological evidence, starting with David Sanger's work in the 1970s, questioned the validity of this model. Sanger, excavating in northern Maine, found evidence of winter coastal occupation for the late precontact period. The change in pattern, Sanger believed, was a result of the contact with Europeans and their appetite for furs. It caused the Mi'kmaq to go inland in winter to trap and move to the coast in the summer to trade fur with the Europeans (Sanger, 1982).

Early primary accounts (often referred to as ethnographic data), as well as period illustrations and maps, are often used by archaeologists to locate and interpret sites. These documents have served to marginalize Indigenous groups since their creation over three hundred years ago. They also hinder archaeological research by either portraying a landscape almost completely devoid of Indigenous presence or depicting a culture as it attempts to adapt to the arrival of the Europeans. These documents are therefore not entirely reflective of the precontact culture.

For close to three centuries, European occupants of North America had assumed that First Nations peoples were going to be culturally assimilated or perish as a superior European civilization spread across the continent. In accordance with such expectations, historians asserted that Indigenous peoples had always been few in number and had had little impact on the environment making North America a pristine landscape at the time of European arrival (Trigger, 1985; McMillan & Yellowhorn, 2004).

Precontact societies had no written language, left few illustrations (petroglyphs) and left no maps for archaeologists to use as guides for locating and interpreting sites. Indigenous groups used oral traditions to pass information from one generation to the next. Some questions may be answered with careful attention paid to oral traditions and to the historical significance of ethnographic data. Most of what we can hope to know about changes that occurred in Indigenous cultures as a response to the European presence in

North America (prior to the historical records) must be learned from archaeological data. Information about changes in settlement patterns, material culture, access to resources, and ritual practices, such as burial customs can be uncovered through archaeology (Trigger, 1985; Renfrew & Bahn, 2015). Archaeology can help set early ethnographic information into historical context. Reliable archaeological data, Trigger concludes, are preferable to unverified ethnographic speculations (Trigger, 1985).

While historical documents are used by archaeologists and historians to locate and interpret historical period sites, archaeological research is needed to provide information on the late precontact and protohistoric periods in the northeast. This thesis argues that the documents archaeologists use to locate historic period sites are of limited value when used to research pre and protohistoric sites in the northeast. As previously stated, these documents were often created to marginalize the First Nations groups that were occupying the lands wanted by the European colonizers. This desired land had, in fact, been occupied by different Indigenous groups adapting over thousands of years to a diversity of environments (McMillan & Yellowhorn, 2004). In the first half of the seventeenth century, for example, the French were in contact with Indigenous groups totaling more than 125 000 people (Trigger, 1985). Their numerical superiority and their knowledge and skills allowed these Indigenous groups to wield the balance of power well into the eighteenth century (Reid, 2003).

Archaeologists have struggled to piece together an accurate picture of First Nations history prior to European contact and have developed several tools or methods to aid them. The archaeological record was initially viewed as a temporally brief extension of the ethnographic record of the Americas into the past. One result of this view was the use of what became known as the *direct historical approach* (Steward, 1942; Rubertone, 2000; Lyman et al., 2001). Temporal sequences comprising of cultural lineage were built up by starting with a list of cultural traits of an historically documented culture and then working back deeper into the past by looking for archaeologically represented cultures that shared traits with the historically documented cultures in the same geographic area (Willey & Phillips 1958; Rubertone, 2000; Lyman et al., 2001).

According to Julian Steward, *the direct historical approach* was first used in the southwestern United States in 1915. He pointed out that the use there was natural because the sites had been recently abandoned (early 20th century) and hence the history and the archaeology covered roughly the same period (Steward, 1942). In these areas, it was possible to start with historic sites and through stratigraphy or seriation (or both) carry sequences backward beyond the point where the traits of the known historic people fade out (Steward, 1942; Rubertone, 2000).

European material culture during the proto and early historic period, such as the use of muskets, steel traps and textiles created problems for the First Nations. These included

new trade relations, tribal dislocation and other issues coming directly or indirectly from European contact. Steward believes that in many cases they produced revolutionary changes in economy, village types, village distribution, migration, tribal contacts, and other features which would afford information basic to studies of culture change. The archaeology of early historic sites, he writes, would also help enormously to correct ethnographic attempts to reconstruct precontact cultures (Steward, 1942).

Unfortunately, *the direct historical approach* cannot be used in the northeast to the extent that it has been used elsewhere. It is dependent on sites that have been proven to be continuously occupied from the precontact period through the protohistoric and historic periods. At present, few of these sites have been located in the Maritime Provinces.

2.2 Current Literature On The North American Northeast

The state of current literature dealing with this subject has been, until recently, meager. Historian Jeffers Lennox's work on *critical cartography* (Lennox, 2017), discussing how maps have been used to marginalize First Nations groups in the northeast, is a new and important contribution to the discussion. Archaeological research conducted by Stephen Davis and David Sanger in the 1970s and more recently Michael Deal from Memorial University provide information that shows the early primary accounts were describing a culture in change. Historian Andrea Bear Nicholas' work on colonial artists and how their

illustrations were used to marginalize First Nations groups indicates why early documents must be viewed critically.

Much of the earlier work, such as Bernard Hoffman's doctoral thesis *Micmac of the sixteenth and seventeenth centuries*, published in 1955 and William Wicken's doctoral thesis, *Encounters with tall sails and tall tales: Mi'kmaq society, 1500-1760,* published in 1994, provides a good compilation of primary accounts spanning the very earliest encounters between First Nations' groups and European explorers continuing through to the entrenched settlement period of the European colonizers. Wicken provides numerous details of Mi'kmaw culture and post-contact settlement patterns through his use of these early primary accounts.

Micmacs and colonists: Indian-White relations in the Maritime Provinces 1713 to 1867, by historian Leslie Upton, published in 1979, is representative of the traditional narrative of the Indigenous population as it dealt with the European colonizers - that of a group of people completely overwhelmed by the newcomers.

Historian Samuel Morison relates an account by Verrazano, a 16th-century European explorer, of an interaction with an Abenaki band:

> Wherever the crew came ashore, these Indians raised loud war-whoops, shot at them with arrows and fled into the forest. But they consented to trade meagerly with the boat crew from a rocky cliff on the seashore, letting down a basket on a line "what it pleased them to give us." (Verrazano 1524-28, as cited in Morison, 1971, p. 308)

What stands out from this encounter is the extreme reaction from the Indigenous group. Perhaps some groups in the northeast had already been in contact with European explorers and found it unpleasant. The reasons for the hostility may never be known but the incident illustrates that the initial European-Indigenous contact was complicated. Archaeologist Pat Allen agrees with the concerns about early ethnographies giving as an example, the winter starvation and famine periods recorded by early ethnographers which were probably consequences of European contact (Allen, 2005). Historian John Reid cautions that although there was certainly an impact on the First Nations by the arrival of the Europeans, they were still very much a dominant force during the early colonial period. The First Nations' groups, he contends, were disposed to favour friendly relations with the newcomers. The Europeans in the early stages of colonization were not normally perceived as a threat. Once the initial fears and suspicions had been allayed, the European in his trading ship or cloistered in his communal colony on the edge of the continent, obviously lacked the power to do serious harm (Reid, 1976). As the above primary account clearly demonstrates, the Indigenous group Verrazano encountered was dictating the terms of both contact and trade. Archaeologist Bruce Trigger argues that the dominant

historical narrative fails to acknowledge the tenacity with which Indigenous groups, in the face of increasingly unequal odds, continued to defend their lands, customs and personal dignity, despite a spiraling death rate, growing economic dependence, and unrelenting efforts of Europeans to control every aspect of their lives. This behavior, Trigger believes, constitutes a record of adaptability and resourcefulness, under conditions of stress that had never existed in North America in precontact times or at any time in the history of most other peoples (Trigger, 1985). William Wicken agrees that the balance of power in the northeast region of North America lay with the First Nations groups. In *Mi'kmaq Treaties on Trial,* Wicken offers as evidence that the British chose to negotiate treaties with the Mi'kmaq in 1726 and again in 1760-1761; an offer never made to the Acadians. "On the contrary", Wicken writes, "British soldiers rounded up the recalcitrants and shipped them out of the colony" (Wicken, 2002, p. 218).

It was the deliberate ambiguities of the treaties on the part of the British - the use of pen, parchment and a summary in English of the speeches, for example, which would be used to bend or change the treaty in dispute resolution with the Mi'kmaq. Remarkably absent from this record, is much detail about the Mi'kmaq. There is no mention of their belts of wampum or of their language. Wicken points out that when the treaties were written down, it was assumed that the Mi'kmaq would understand them as if they too, were steeped in the traditions of British literacy and politics (Wicken, 2002). These treaties, or the British interpretation of them, was part of a larger process of colonizing eastern North

America. The ambiguity of the written text of past agreements was used to justify British expansionism and the eventual displacement of Indigenous communities (Wicken, 2002).

By 1761 the balance of power had begun to shift from the French to the British. With the French no longer a factor in the region, the British were able to flex their military and economic power. The Mi'kmaq, who had experienced little difficulty in fishing and hunting previously, were now being forced off their traditional lands as British settlers began arriving in greater number. Based on *A description of several towns in the Province of Nova Scotia,* by the 18th century British military cartographer Charles Morris, and a rough estimate from an earlier census, Wicken believes the Mi'kmaw population in 1761 was about 4 000 people and the British population was roughly half of that. With their territories diminishing and their military power waning, the First Nations groups were no longer able to make adaptations to their changing circumstances. By the end of the century, these groups were almost entirely dependent on the British crown for their very survival (Wicken, 2002). Archaeologist Bruce Trigger believes that it was not because Indigenous people were unable to understand European behavior that they failed to devise strategies to halt European aggression and domination. They failed because they were overwhelmed by European technological superiority, and their dependence on it. In addition, the growing number of European settlers brought diseases with them that caused a radical decline in Indigenous populations (Trigger, 1991; Deal, 2015a). The political structures of the First Nations groups, in particular the slow process of decision making,

which was based on achieving consensus, factored into their inability to quickly maneuver politically when the situation warranted (Trigger, 1991; Fischer, 2008).

There was a dramatic change in First Nations cultures after the arrival of Europeans. Many descriptions provided by early ethnographies as they pertain to lifeways and settlement patterns contradict the archaeological record. Therefore, there are limits in their use in describing precontact cultures in the northeast. Stephen Davis, for example, wrote in his 1986 doctoral thesis *Man, molluscs* a*nd mammals,* that based on archaeological evidence, it became apparent that the seasonal round of activities defined from the ethnohistoric recorders did not apply to the Ceramic period dated between 500-2500 years ago (Davis, 1986).

2.3 Previous Archaeology in the northeast

In the 1970s, archaeologists David Sanger and Stephen Davis conducted archaeological investigations along the New Brunswick and Maine coasts (Passamaquoddy Bay/Gulf of Maine) to determine if precontact groups lived as early ethnographers had described; spring to fall coastal occupation and moving inland for the winter. This seasonal round is described by a 17th- century Jesuit priest, Father Pierre Biard. In his journal he describes the subsistence activities of the Mi'kmaq:

> …in January they have the seal-hunting: for this animal although it is aquatic, nevertheless spawns upon certain Islands about this time…in the month of February and until the middle of March, is the great hunt for Beavers, otters,

> moose, bears (which are very good), and for the caribou, an animal half ass and half deer.
>
> In the middle of March, fish begin to spawn, and to come up from the sea with certain streams, often so abundantly that everything swarms with them….Among these fish the smelt is the first; at the same time bustards, which are large ducks, double the size of ours, come from the South… At the same time come the sturgeon, and salmon, and the great search through the Islets for eggs, as the water-fowl, which are there in great numbers, lay their eggs then…From the month of May up to the middle of September, they are free from all anxiety about their food; for the cod are upon the coast, and all kinds of fish and shellfish; and the French ship with which they traffic…Now our savages in the middle of September withdraw from the sea, beyond the reach of the tides, to the little rivers, where the eels spawn, of which they lay in a supply, they are good and fat. In October and November comes the second hunt for elks and beavers, and then in December (wonderful province of God) comes a fish called by them "ponamo" which spawns under the ice (P. Biard, Jesuit Relations, v. 3, pp. 79-83).

If these Europeans were, in fact, documenting a culture in a state of total disequilibrium with its environment, what had caused this disequilibrium? One possible reason is climate change. A similar change was experienced by the Paleoindians entering the Maritime region. David Sanger, however, contends that vegetation of the past 2 500 years was much the same as it is at present (Sanger, 1975). Hence environmental change, he

contends, is not the reason. Pressures other than the environment must have caused the "disequilibrium".

This description of a seasonal round by Father Biard is popular amongst historians describing the period of early contact with the Mi'kmaq (Paul, 2000; Conrad & Finkle, 2002; Faragher, 2005; Fisher, 2008;). What these historians fail to do is to recognize or acknowledge that this cultural element is a result of an adaptation to European contact.

Figure 2.1 is a map of the distribution of First Nations in the Maritime Provinces at about 1700 AD. Figure 2.2 is a relatively recent map of the forest zones and eco-regions in the Maritime Provinces. The environment is similar on both sides of the Bay of Fundy which means that groups on both sides would have had similar economies. Due to the dearth of stratified sites excavated in Nova Scotia, researchers can look to sites already studied in Maine and New Brunswick which provide evidence of a year-round coastal occupation which clearly contradicts the seasonal rounds described by the Jesuit priest, Pierre Biard.

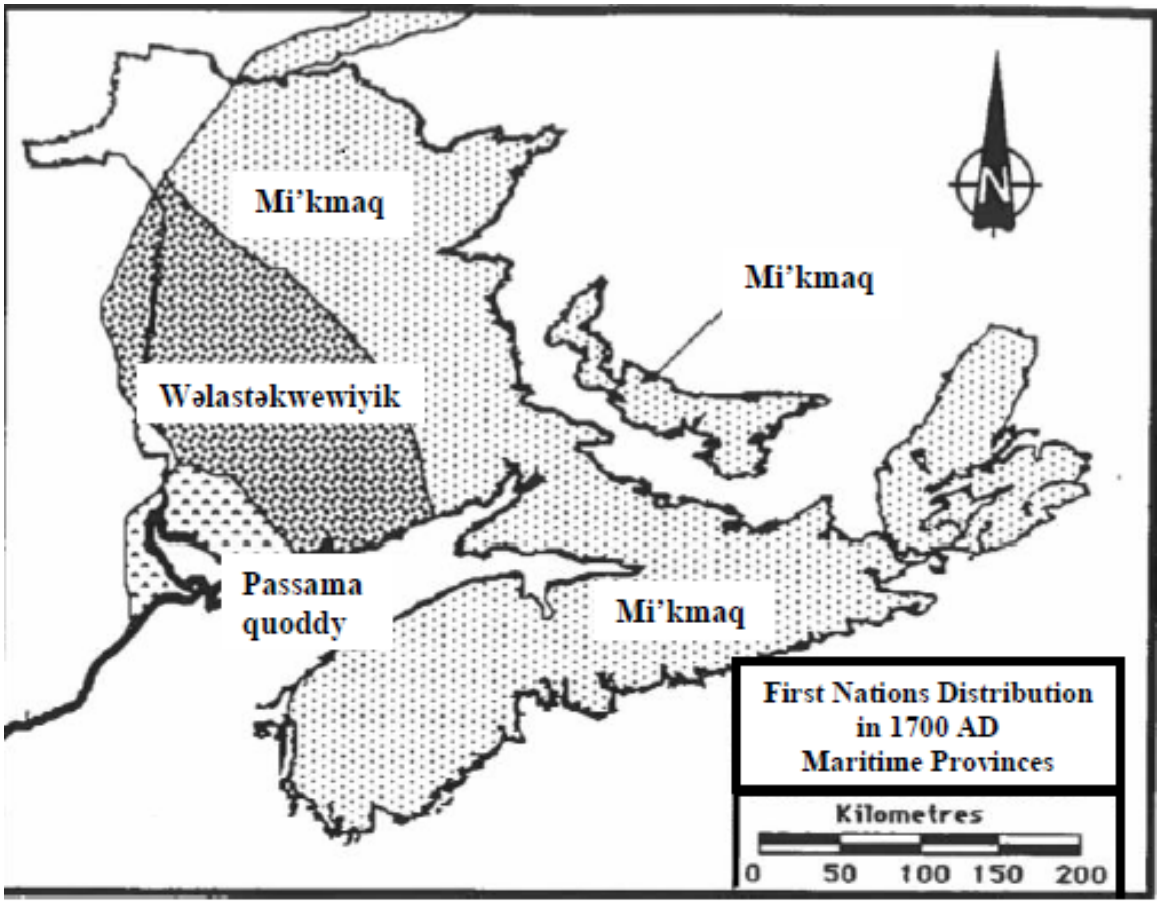


Figure 2. 1: Tribal Distribution in Maritime provinces ca. 1700 (modified with update terms by A. Taylor from S. Davis, 1986)

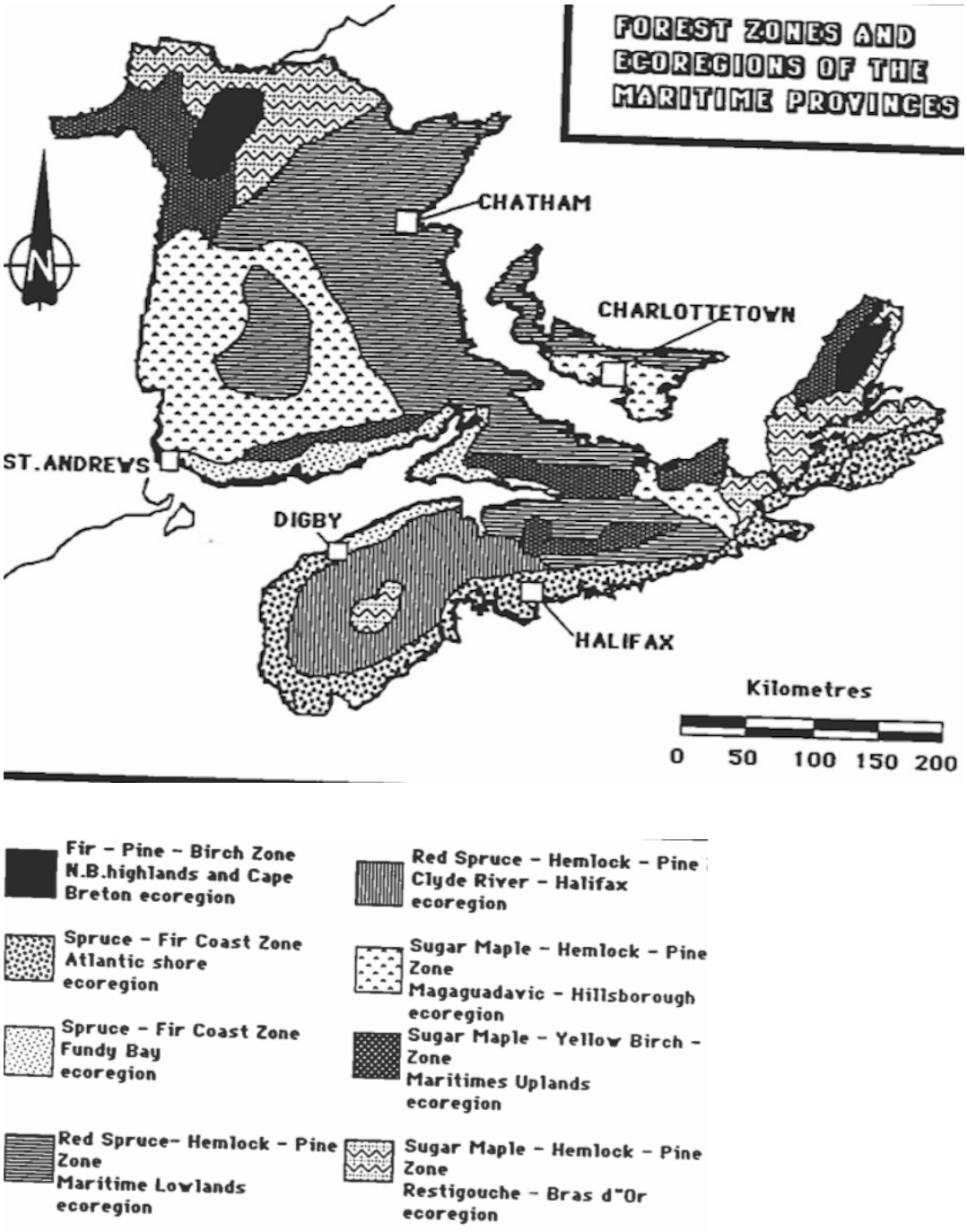


Figure 2. 2: Forest zones and ecoregions of the Maritime provinces (S. Davis, 1986)

Archaeological research conducted by David Sanger and Stephen Davis in the 1970s on the Todd and Knox sites (17-11 and 30-11) in Muscongus Bay, provided evidence of year-round occupation at these two sites. Anthropologist Lewis Binford (1983) described this type of settlement model as having *a collector strategy*. The foundation of this model was having a home base from where groups were dispatched to collect food and resources in a systematic and organized way as opposed to *a forager strategy* where humans acquired resources on a daily basis near where they lived. This would require the forager groups to be mobile in response to seasonal availability of key resources (Sanger, 1996).

To test the hypothesis that some Indigenous groups occupied coastal regions continuously, an analysis of seasonal availability and behaviour of species, in addition to, endogenous or growth increment changes in mammal teeth and in soft-shell clams (Sanger, 1996) was conducted. The growth rate of clams depends on the season. There is a rapid growth in April or May, a more gradual rate during the summer months and there is a non-growth phase in November which lasts until the following spring. These changes are reflected in the size and density of growth rings in the shell. The data collected in shell middens indicates that although shellfish were collected throughout the year, most sites investigated, reflect cold season gathering (Sanger, 1996).

Based on the archaeological record from this region, Sanger believes that “rather than a pattern of seasonal transhumance from coast to interior, as suggested by the historic

records" (Sanger, 1996, p. 521), its seems that there was a coastal population and an interior population. Seasonal mobility of settlement occurred in pre-European times, but it was movement within the coastal zone from more to less sheltered environments. The latter were summer sites (Sanger, 1996).

That there was a coastal population and an interior population is not proven. There would seem to be no reason that local groups be divided since Nova Scotia is a long, narrow land mass and the furthest distance from the coast anywhere is approximately 54 kilometres. Because of the numerous river systems, the entire province would be available to all. Archaeologist Ben Pentz, for example, believes that the Mersey River system which bisects southwestern Nova Scotia was traveled extensively by precontact groups (Pentz, 2008). It was concluded that the southeastern area of Wabanaki (Passamaquoddy Bay/Gulf of Maine) was occupied by people who favoured a year-round occupation on the coast (Bonnichsen & Sanger, 1977; Davis, 1978).

In her doctoral thesis, anthropologist Paulette Steeves discussed the failure of the cultural heritage community to properly study First Nations' history. Historians and archaeologists, she contends, have failed to consider oral traditions as evidence of a much longer period of occupation by Indigenous groups in North America than is accepted by most scholars and academics (Steeves, 2015). She believes it is a deliberate continuation

of the original colonizing goals and objectives the first European visitors carried with them. She writes:

> In an academic science that seeks to understand the human past on a global scale, the question becomes why the study of early humans in the Americas was a dangerous pursuit. I argue that this battle is not just about archaeological sites, it is about Indigenous links to an ancient past in a colonized land. Thus, it is also about legitimizing Indigenous space and place across time and linking contemporary Indigenous populations to ancient landscapes, rights, and Indigenous identities in the Western Hemisphere (Steeves, 2015, p. 47).

The remainder of this chapter discusses the early contact period with a focus on how the Indigenous population was marginalized in primary text, illustrations and cartography.

In the northeastern region of North America, little is known about the period just prior to contact with Europeans (early 16th century). Archaeologists (Davis, 1993; Allen, 2005; Deal, 2015a) in fact, claim that more is known about the settlement patterns of earlier groups, such as the Paleoindians, who arrived in the Maritimes approximately 13 000 yrs BP, more than 12 000 years before Indigenous groups first encountered European explorers and fishermen. Historian Ralph Pastore writes:

> During the centuries that preceded the coming of the Europeans there were periods of significant cultural change, resulting both from radical environmental

> shifts and from the arrival of new ideas, and even new peoples, from outside the Atlantic realm. To understand the magnitude of these transformations, it is necessary to understand the nature of the Native societies of what would become the Atlantic provinces. Unfortunately, the archaeological data needed to answer some of the most basic questions about the region's indigenous peoples are lacking and because of rising sea levels in many areas of the Maritimes, may never be collected (Pastore, 1994, p. 23).

Settlement patterns reflect the previously described strategies (Binford, 1983) used by a group of people to acquire the resources they need to survive in a particular environment. These were foraging and collecting.

A process of change can also be clearly seen in the archaeological record for this precontact period. Ceramics changed from being relatively refined and heavily used suggesting a sedentary lifestyle to a thicker, coarser ceramic more suitable to a nomadic existence. This precontact period is normally referred to as the Late Ceramic Period. (Davis, 1994; Allen, 2005; Deal, 2015a).

2.4 Primary Accounts

> The strongest form of power may well be the ability to define social reality, to impose visions of the world. And such visions are inscribed in language and most important enacted in interaction.
>
> -Susan Gal, *Linguistic Anthropology* (2001, p. 366)

Though it is believed that northeastern North America was visited by the Norse and later by Basque fishers, documentary evidence is scant and vague. Very little in the way of a detailed ethnographic description has been offered by these and subsequent early travelers, missionaries, and traders. Most of the documents from this time were written by priests and explorers who, not surprisingly, had quite specific goals, conversions of the Indigenous population to Christianity and economic exploitation. Champlain, for example, wanted peace among the various groups in order that he and his financial backers "might derive service from them and convert them to the Christian faith" (Champlain, 1922, p. 272). That said, there are small bits of useful information that can be gleaned from some of these early accounts, particularly the information which does not conflict with the previously stated objectives — the marginalization and exploitation of the Indigenous groups. The following are examples of the earliest known primary accounts of initial contacts with Europeans. They can be divided into accounts of economic interactions and descriptions of cultural components.

2.4.1 Economic Interactions

Although very little in the way of a written record has been found, it is generally accepted that the Maritime region was first visited briefly by the Norse more than a thousand years ago. The Norse crossed the north Atlantic and traveled down the Labrador coast. A small settlement was established briefly at what is now L'Anse-aux Meadows and has been interpreted by Parks Canada archaeologist Birgitta Wallace as a base camp and centre for

boat repair (Davis, 1994) but was probably only occupied for a decade or two. Scholars following the trails told by the Norse sagas believe that these Scandinavian voyagers visited other locations in the Maritime region. According to Wallace, *Vinland* encompassed the Gulf of St. Lawrence, which could have led to contact with the Mi'kmaq in the Maritime region (Wallace, 2006). Of interest to this thesis, the sagas describe both trade and hostile encounters with the Indigenous population. There was likely minimal impact of this initial, brief encounter on the First Nations population.

Jacques Cartier gave what is probably the earliest detailed documented account of European contact with an Indigenous group in the northeast. In 1534 he described a group of Mi'kmaq near the Baie de Chaleurs:

> The next day some of these Indians came in a canoe to the point at the mouth of the cove where we lay at anchor with our ships…As soon as they saw us they began to run away, making signs that they had come to barter with us; and held up some furs of small value, with which they clothe themselves. We likewise made signs to them that we wished them no harm, and sent two men on shore, to offer them some knives and other iron goods, and a red cap to give to their chief. Seeing this, they sent on shore part of their people with some of their furs; and the two parties traded together (Cartier, *The Voyages of Jacques Cartier* 1924, pp. 52-53).

This event occurred in July of 1534. In interpreting this account through the lens of Indigenous lifeways, we may ask the question: were the Mi'kmaq on the coast because this was their natural subsistence cycle (coastal living from spring to fall and in the

interior for the winter), were they continuously living by the sea or were they merely awaiting the arrival of Basque fishers with whom it is believed they had already created a trading partnership (Trigger, 1985)?

After Cartier's foray up the St. Lawrence River, it would be almost eighty years later that Europeans made another effort to establish a permanent foothold in the northeast. The following account from this next attempt is that of a Jesuit priest who arrived at Port Royal shortly after Champlain and company had established a small settlement there. Father Pierre Biard described briefly in his journal the economic exchanges taking place between the French and Mi'kmaq:

> in Summer they often wear capes, and in Winter our bed-blankets, which they improve with trimming and wear double. They are also quite willing to make use of our hats, shoes, caps, woollens and shirts, and of our linen to clean their infants, for we trade them all these commodities for their furs (Biard, *Jesuit Relations,* v. 3, p. 75).

Another account by Father Biard provides evidence that these interactions brought disease and death to the Indigenous people. The Jesuit priest noted that in 1616 the Mi'kmaq numbered about 3 000-3 500 and that this estimate reflected a people already affected by European disease. He continues, commenting that the Mi'kmaq themselves report that "since the French mingle with and carry on trade with them, they are dying fast, and the population is thinning out" (as cited in Pastore, 1994, p. 35). Even Membertou, the Grand Chief or *sagamore,* commented in 1611 on the sparse population

saying that in his youth ‘the Savages were as thickly planted there as the hairs on his head’ (Thwaites, 1896, p. 177).

2.4.1.1 Interpretations by Historians

Historian, Thomas Peace, writing in *Two conquests: Aboriginal experiences of the fall of New France in Acadia* (2011) contends that the 17th and 18th- centuries were difficult times in Mi’kma’ki. Indigenous peoples in the region faced “new trade relations, language, cultures, and claims to territory as Europeans sought a secure foothold in the region” (Peace, 2011, p. 36). Trade with the French had become an important component of the Mi’kmaw economy that changed the Mi’kmaq from an economy of taking from the land what is only necessary for survival to commoditizing these resources. Not only did this cause eventual scarcity in these once abundant, relatively stable food sources but it also possibly caused the Indigenous population to lose their special relationship to the fauna. Egalitarianism was likely discarded for a more competitive model in which the most aggressive and proficient hunter benefited the most. This contact with Europeans forced the Mi’kmaq to change from bands of collectors to bands of foragers, in an attempt to address the insatiable needs of the French, while trying to continue to feed and clothe themselves. This belief is supported by Ruth Holmes Whitehead, who writes:

> Trade goods were in such great demand that, into the first few decades of the seventeenth century, they gave rise to a type of Native commerce. M. de Poutrincourt, founder of the Port Royal settlement, voyaged to what is now Saco, Maine, in 1607. He saw trade-goods being funnelled down into Maine by

> Micmac and Maliseet entrepreneurs, acting as middlemen in the fur trade (Whitehead, 1993, p. 79)

Further to this societal change, historian James Axtell notes that disease decimated the population and caused profound changes to the societal structure of the Mi'kmaq. He writes:

> The loss of family members tore gaping holes in the extensive web clans and kinship that shaped an Indian's identity as much as language and residence. Technological skills, leadership, and the group's corporate memory were lost with key adult members, especially elders who, with infants, possessed the least resistance. Political succession [was in]… disarray. Settlement patterns were broken as survivors regrouped or dispersed as members of new polities. But perhaps most important, the natives' religious beliefs, cosmological assumptions and social morale were battered by the inexplicable fate that had befallen them, predisposing them to seek the material and spiritual help of the newcomers (Axtell, 1981, p. 251).

2.4.2 Descriptions of Cultural Practices

Primary accounts also provided important clues to the cultural practices of the Mi'kmaq, which is borne out by the archaeology. Therefore, they may be considered as accurate depictions of what precontact lifeways may have been. An account given by French

merchant, Nicolas Denys, in the 1630s describes the cabins the Mi'kmaq constructed. He wrote, "If the family is a large one, they make it long enough for two fires; otherwise they make it round just like military tents" (Denys, 1908, p. 405). This is significant because these cabins appear on both Champlain's maps from 1604 and Delebat's maps from 1707-08 (Figure 2.7, 2.8, and 2.9). They provide evidence for an element of cultural continuity that likely extended well back into the past.

An excellent description of mortuary practices by the Mi'kmaq is given by Marc Lescarbot, a lawyer by training, who joined the Seigneur de Poutrincourt's expedition, along with cartographer Samuel de Champlain to the Bay of Fundy in the early 17th century. This account provides an example of the type of information that also may be verified through archaeology. After a Mi'kmaw man was killed in battle, his body was embalmed. "Of what kind, this balm is I could not discover, not having enquired upon the spot; I believe they cut up the dead bodies and dry them. Certain it is that they preserve them from rottenness" (Lescarbot, 1914, v.3, p. 274). The dead were usually mourned for a month after which "they went to the place where his cabin stood while he was alive, and burnt all that he had left, his bows, arrows, quivers, his beaver skins, his tobacco (without which they cannot live), his dogs and his other small furniture, to the end that none should quarrel over this succession" (Lescarbot, 1914, v.3, p. 279). According to Lescarbot, tombs were made like wooden boxes, where the bodies were placed and then covered and then the grave was filled with gifts from all the people present.

Recollet Father Chrestien Le Clercq was a priest in the Gaspé-Miramichi-Restigouche region around 1675. He described several aspects of a Mi'kmaw burial, many of which he witnessed and officiated.

> When the dying person has drawn his last breath, the relatives and friends of the deceased cover his body with a fine skin of elk, or a robe of beaver. In this he is enshrouded and bound with cords of leather or bark in such a manner that the chin touches the knees and the feet the back. Hence it comes about that their graves are quite round, **of** the form of a well, and four to five feet deep. Meanwhile the leading person and the chiefs give directions that the bark of the wigwam of the dead man be struck, the words *Oué, Oué, Oué* being said for the purpose of making the soul come forth…
>
> Everybody having assembled at the wigwam of the deceased; the body is carried to the general burial-place of the nation. It is placed in the grave and covered with bark and the finest skins. It is adorned also with branches of fir and sprigs of cedar, and finally they add thereto everything which the deceased has been accustomed to use. If it was a man they add his bow, arrows, spear, club, gun, powder, lead, porringer, kettle, snowshoes, &c; if it was woman, her collar for use in dragging the sled or in carrying wood, her axe, knife, blanket, necklaces of wampum and of beads and her tools used for ornamenting and painting the clothes, as well as needles for sewing the canoes and for lacing the snowshoes. The grave is then filled with earth and upon it is placed a quantity of logs elevated three of four feet in the form of a mausoleum upon which appears a fine

> cross, that is, if the deceased is one of our Cross-bearer Gaspésians. (Le Clercq, 1910, pp. 300-301).

Personal items have been recovered in precontact graves and thus indicates that at least some aspects of the above primary account probably occurred prior to the arrival of Europeans. Of course, the cross is a post-contact item.

2.5 Illustrations

> All art is propaganda. It is universally and inescapably propaganda; sometimes unconsciously, but often deliberately, propaganda.
>
> Upton Sinclair, *The Jungle*, 1905, p. 355

Illustrations and images are often powerful tools in depicting past events and people. This chapter examines several historic images of Indigenous groups living in Nova Scotia in the 18th and 19th centuries to see what they offer about this period. These images, like any art, reflect as much about the artist as their subjects. The art was not created in a vacuum but in a politically complex place and time. In her essay, "The Role of Colonial Artists in the Dispossession and Displacement of the Maliseet, 1790s-1850s", professor Andrea Bear Nicholas discusses how colonial artists chose to emphasize or highlight the achievements of the settler society and either ignored or misrepresented the realities of the Maliseet experience (Bear Nicholas, 2015). (Bear Nicholas uses both Maliseet and Wəlastəkwewiyik interchangeably). Bear Nicholas argues that artists were used to pave

the way for both “settler colonialism”- settlers who simply move in and displace the Indigenous population of their homeland without their consent and “settler imperialism”- a process that was implemented in conjunction with “gentlemanly elites”. In the Maritime region, the disposition could not have been accomplished “without engineering by political and economic elites who were closely connected to imperial interests” (Bear Nicholas, 2015, p. 27).

The artists, nearly all of whom had been trained in Europe, painted clearly romanticized scenes which did not accurately reflect the actual natural setting or activities (Bear Nicholas, 2015). In *Painting in Canada: A History,* J. Russell Harper describes the general background of the artists, as being relatively wealthy and highly placed in colonial society. Most of the artists were British army officers who were wealthy enough to purchase their commissions in the army. Most would have had not only the means and the time, but also an elite education that included training in painting (Harper, 1977). Bear Nicholas believes that “persons holding generally high standing in colonial society, all artists would have also had the motivation to produce primarily positive views of British North America” (Bear Nicholas, 2015, p. 29). Like primary text they are laden with cultural bias and assumptions and must be viewed accordingly.

Bear Nicholas gives specific examples of how the Wəlastəkwewiyik were marginalized through the illustrations. She writes that nature was to be revered as long as it included newly cleared lands with settlements, and even cities in the making. Similar to the Romantic period interests in “exotic” people elsewhere, artistic attention was paid to the Wəlastəkwewiyik, but it was generally peripheral to the primary narrative of settlement.

The Wəlastəkwewiyik would also be represented as a generally healthy and well-dressed group which, Bear Nicholas believes, served less in the early years to idealize them as *noble savages* than to convey the idea that the colonizing process was both mutually beneficial and successful (Bear Nicholas, 2015).

A speech given by Chief Nicholas Hawawas to an American officer in 1783 clearly details the desperate situation and fear felt by his people which contradicts the narrative being told in the paintings:

> Brother you remember when we came from St. Johns and followed you we had plenty of everything for comfort of our familys. You see the situation we are now in and the distress of our familys. All tho we will submit if we can be sure to have our hunting secured. We cannot sleep or rest, our women and children are crying about us, all our villages are disturbed, we cannot set down easy in any one place, our old homes are forsaken & like a deer pursued by hunters leave us no place of rest (Hawawas 1783, as cited in Bear Nicholas, 2015, p. 32).

A 1794 petition addressed to Lieutenant-Governor John Wentworth by a Mi'kmaw group, told of a time when there was enough land for everyone, including the French and British and described how gradually all the lands had been taken, so that there was no longer any place for them to hunt and fish (Wicken, 2002). An 1841 petition to Queen Victoria by another Mi'kmaw group clearly illustrates the First Nations dire predicaments:

> Indians poor - poor forever. No Store-No chest-no Clothes. All these woods once ours. Our Fathers possessed them all. Now we cannot cut a Tree to warm our Wigwams in Winter, unless the White Man please. The Micmacs now receive no presents, but one small Blanket for a whole family. (Paussanigh Pemmenawweet, 1841, as cited in Wicken, 2002, p. 222).

Another petition was sent to the queen, with aid from the Baptist missionary Silas Rand who had been working among the Mi'kmaq for several years:

> We can neither disbelieve nor forget what we have heard from our fathers, that when peace was made between the Micmacs and the British, and the sword and the tomahawk were buried by mutual consent, by the terms of the treaty then entered into which was ratified by all the solemnities of an oath, it was stipulated that we should be left in the quiet and peaceable possession of far the greater portion of the Peninsula. May it please Her Majesty. The terms of that treaty have never been violated by the Indians, but the white man has not fulfilled his engagements (Francis Paul 1853, as cited in Wicken, 2002, p. 222).

Unfortunately, the majority of illustrations of First Nations people in the northeast that exist today were drawn by British officers and date to the late 18th and early 19th century. No significant resident artists painted in the Atlantic region until after 1800 (Harper, 1977). The artists that did come, he continues "represented a New England social stratum which for long had been interested in the arts. Wilderness hardships were a vivid contrast to their former way of living" (Harper, 1977, p. 81). There is little doubt

that explorers and travelers to the region in the 17th and early 18th century northeast sketched the Indigenous groups they encountered, but none are known to exist today.

The following four illustrations are popular depictions of the Mi'kmaq in the late 18th and early 19th century. They hang in provincial and national museums or are published in books. These illustrations do not accurately reflect the reality of the conditions under which the First Nations lived as described previously.

In all the illustrations, artists were limited by their own personal technique and the style of the period, explains art educator, Doretta Groenendyk (2015). Within the frame, the artist selected some subjects while choosing to ignore others. In both Figure 2.3 and 2.4 everything from canoes, tents, and people of both genders as well as tools were included in the landscape during daylight. Was this a realistic representation or the artist's attempt to document as many cultural elements as possible on one canvas? Groenendyk describes these landscapes as romantic, florid, and graceful. Nature looks kind and hospitable. These works depict the region at its most idyllic, rather than its harsher and more brutal seasonal counterpart (Harris, 2008).

The figures appear calm and relaxed. There is a feeling of rest and recreation with no sense of bugs, weather, danger, or struggle. Because of illustration and reproduction techniques, Groenendyk believes that the lines tend to be regularized, and the strict linear forms make the figures appear static, the water, and the clouds unmoving (Groenendyk, 2015). It appears, she continues, that beauty is selected, and ugliness ignored. In some

paintings, there is a feeling of escaping to a better world. In Figure 2.3, a group of men and women appear to be lounging together as if at a picnic in a park. It seems to be a generalized geography, not specifically a Canadian place or person.

Figure 2. 3: Anonymous (after an earlier work by William Eager c. 1837) *Micmac Encampment*, ca. 1860, oil on canvas. Halifax, Nova Scotia Archives, Mi'kmaq Holdings.

It portrays a welcoming community. The people are relaxed, happy, and unthreatening. The landscape and dwellings are pleasantly rustic. Interestingly, the figure on the far left is wearing a crucifix around his neck, demonstrating to the intended audience that they are "civilized". Is the artist trying to promote settlement of the country?

In “Micmac Indians” (Figure 2.4), another artist has attempted to capture many cultural aspects of the Mi’kmaq in a single painting (Whitehead, 2015). He has included weapons, both pre and post contact including, a small cask probably used for gunpowder, musket and powder horn, steel traps, a fishing spear, an axe, plus dead porcupine, ducks and two fur-bearing animals placed outside the wigwam. Inside it, there is an iron kettle cooking over a fire, tended by a woman with a baby on her lap. Snowshoes and a toboggan are visible even though there is no snow on the ground and from the subjects’ dress it would appear to be summer or early autumn. Dogs lay quietly on the shore while hunters shoot geese. While the Mi’kmaq are clearly wearing European clothing, they continue to use birch bark for their tents as opposed to canvas which was adopted by many groups soon after European contact. Four of the men wear high-crowned beaver hats and one smokes a commercially made white clay pipe (Whitehead, 2015).

Figure 2. 4: Anonymous, *Micmac Indians*, oil, c 1820-1830. Ottawa, National Gallery of Canada.

This painting clearly attempts to depict the blending of Mi'kmaq and European material culture into one image. Again, this is another example of the romanticizing of the Indigenous population. It fails to accurately depict the harshness of their living conditions and general health at this time.

Like Figures 2.3 and 2.4, Figure 2.5 clearly shows the Mi'kmaq using the waterways with their canoes, living in "tents" and cabins and locating their settlements along river systems and coastal areas. In these drawings, the scenery may be idealized but looks

relatively authentic. The tools, locations and the dwellings agree with the archaeological record (Pentz, 2008, p. 164) and therefore they should not be dismissed in their entirety as they have at least some degree of accuracy.

Figure 2. 5: Bartlett, William H., *The General's Bridge near Annapolis,* 1842, Engraved by J.C. Bentley in *Canadian Scenery Illustrated:* London, 1842. Halifax, Nova Scotia Archives.

In the engraving entitled *Homme Acadien*, by Jacques Grasset de Saint-Sauveur, 1796, the male form (Figure 2.6) appears as an idealized image, with symmetrical markings and well executed though not necessarily representational anatomy and visage. This man, posed with his hunting trophy, seems to embody the idea of "noble savage", a concept that was prevalent in Europe at the time of this composition. This engraving appeared in a

travel journal which was published in Paris in 1796, suggesting that it would have been available to a larger audience.

Figure 2. 6: Grasset de Saint-Sauveur, Jacques, *Homme Acadien*, 1796 Engraving published in *Encyclopédie de Voyages* by Jacques Grasset de Saint-Sauveur. Montréal, Université de Montréal.

In *The myth of the noble savage,* Terry Ellingson refutes the concept of the *Noble Savage* that was first invented by Rousseau in the mid-eighteenth century to glorify the "natural life". Rousseau wrote: "Men in a state of nature do not know good and evil but their independence, along with peacefulness of their passions, and their ignorance of vice keep them from doing ill" (Rousseau, 1923, p. 179). Ellingson writes that European ideas of the "savage" grew out of an "imaginative fusion of classical mythology with the new descriptions that were beginning to be conceived by scientifically minded writers as 'observations' of foreign peoples by Renaissance travel- ethnographic writers" (Ellingson, 2001, p. 11). The idea of the *Noble Savage* can be traced to the beginning of the 17th century in the writings of Marc Lescarbot, who has been cited previously in this chapter (Ellingson 2001, p. 11). He spent several years living among the Mi'kmaq in Port Royal and seemed quite taken with them. "Having never seen any before, I did admire, at first site, their shape and form of visage" (Lescarbot, 1911, p. 84). Commenting on their generosity, he writes:

> For the savages have that noble quality, that they give liberally, casting at the feet of him whom they will honour the present that they give him. But it is with hope to receive some reciprocal kindness, which is a kind of contract, which we call without name "I give thee, to the end thou shouldest give me".

That all Mi'kmaw men were able to hunt also left an impression on Lescarbot because they enjoyed a right that was restricted by law to the nobility in Europe (Ellingson, 2001). Lescarbot drew comparative conclusions that the "savages are truly noble" (Lescarbot

1911, p. 257). An English translation of Lescarbot's own voyage and ethnography, Nova Francia, was published in London in 1609. With its appearance, the noble savage, also made his entrance into English literature (Ellingson, 2001).

Although Lescarbot should be viewed as having a humanistic view of the Mi'kmaq, his ethnographies are tightly wrapped in a Eurocentric blanket which have blunted the complex nature of Mi'kmaw culture and society.

2.6 Maps

> A map is also cultural artifact- a window into the past and a clue to understanding the worldview of the person or persons who make it. It is a glimpse at what they may have valued and what they didn't, what they desired and what they didn't. What they might have known and certainly what they didn't.
>
> Adam Shoalts, *A History of Canada in Ten Maps*. (2017, p. 2)

Critical cartography emerged in the late 1980s, rising to prominence in the 1990s as a "one-two punch of new mapping practices and theoretical critique. Critical cartography challenges academic cartography by linking geographic knowledge with power and thus is political" (Crampton & Krygier 2006, p. 11). This is an effective theoretical stance to

adopt when interpreting visual materials depicting contested landscapes of early Acadie/Nova Scotia. For example, historian Jeffers Lennox uses critical cartography to examine how maps were used to advance the agenda of those in power, marginalize those threatening this power and convince and manipulate the British populace into believing this new colony, Nova Scotia, was a peaceful, hospitable land full of opportunity. In *Homelands and Empires: Indigenous Spaces, Imperial Fictions and Competition for Territory in Northeastern North America, 1690-1763,* Lennox continues this idea, (specifically in reference to 17th- and 18th-century northeastern North America) that geographic knowledge informed political decisions, influenced imperial relations and shaped the public discourse as it pertained to their government, allies and enemies (Lennox, 2017).

The point Lennox emphasizes is that, however detailed these maps may appear, they are not merely neutral or objective depictions of geography but culturally modified landscapes. Early cartographers manipulated maps of Acadie/Nova Scotia through both omissions (leaving Indigenous representation off the maps) and additions (making the British settlements appear more "civilized" than they were). This helped to frame the idea of colonization in North America for the population back home in Europe. Support for this fledgling colony was not guaranteed as colonizers inhabited a place dominated by Indigenous groups with their own understanding and representations of space (Lennox, 2007) The British, whose relationship with the Indigenous groups was much more violent than that of the French, desperately wanted an influx of immigrants. They needed to

make the new colony as appealing as possible to establish a sense of permanency in the eyes of both the Indigenous population and, equally important, their long-time French adversaries. These maps, or "tools of empire" as John Harley has argued, "create knowledge and power through their representative functions" (Harley, as cited in Lennox, 2007, p. 374).

In *Essays on northeastern North America – seventeenth and eighteenth centuries*, historian John Reid discusses the relationship between imperialism and the names that appear on colonial maps of North America. He writes:

> Specific toponymies sought to determine, for example, whether the river eventually to be known as the St. John should be designated as the Wulstuk (Maliseet), St. Jean (French), or Clyde (Scottish). Broader territorial divisions identified such overlapping areas as Mi'kma'ki (Mi'kmaqiq), Acadie (French), or New Scotland (Scottish). Both the specific and the broad designations represented competing cartographies that carried powerful implications regarding the maintenance of aboriginal possession or alternatively regarding imperial appropriations and the tension between imperial claims (Reid, 2008, p. 90).

Among the many historical maps available, eight have been chosen. Some are English in origin, some are French. The map in Figure 2.7 is by French cartographer Samuel de

Champlain. It was created in 1604 and published in 1613 in his book, *Les voyages dv Sieur de Champlain Xaintongeois,* which detailed his first expedition to the Maritime region. This map depicts Port de la Heve on the southern shore of Nova Scotia and is the earliest known large-scale map of the province (Dawson, 1988). One can clearly see the "cabins" and "tents" where the Mi'kmaq were living as described by French entrepreneur, Nicolas Denys, who visited the area roughly thirty years later (Denys, 1908). They are located close to the coast and near the mouth of the *petite riviève*, which Champlain designated with a letter "B" on the map. Champlain arrived at this location in the summer of 1604. These two separate documents (Champlain's map and Denys' written account) clearly show a coastal presence of the Mi'kmaq at two distinct times at this location. Without more archaeological research, the duration of these encampments in terms of seasonal occupation and span of time can only be speculated.

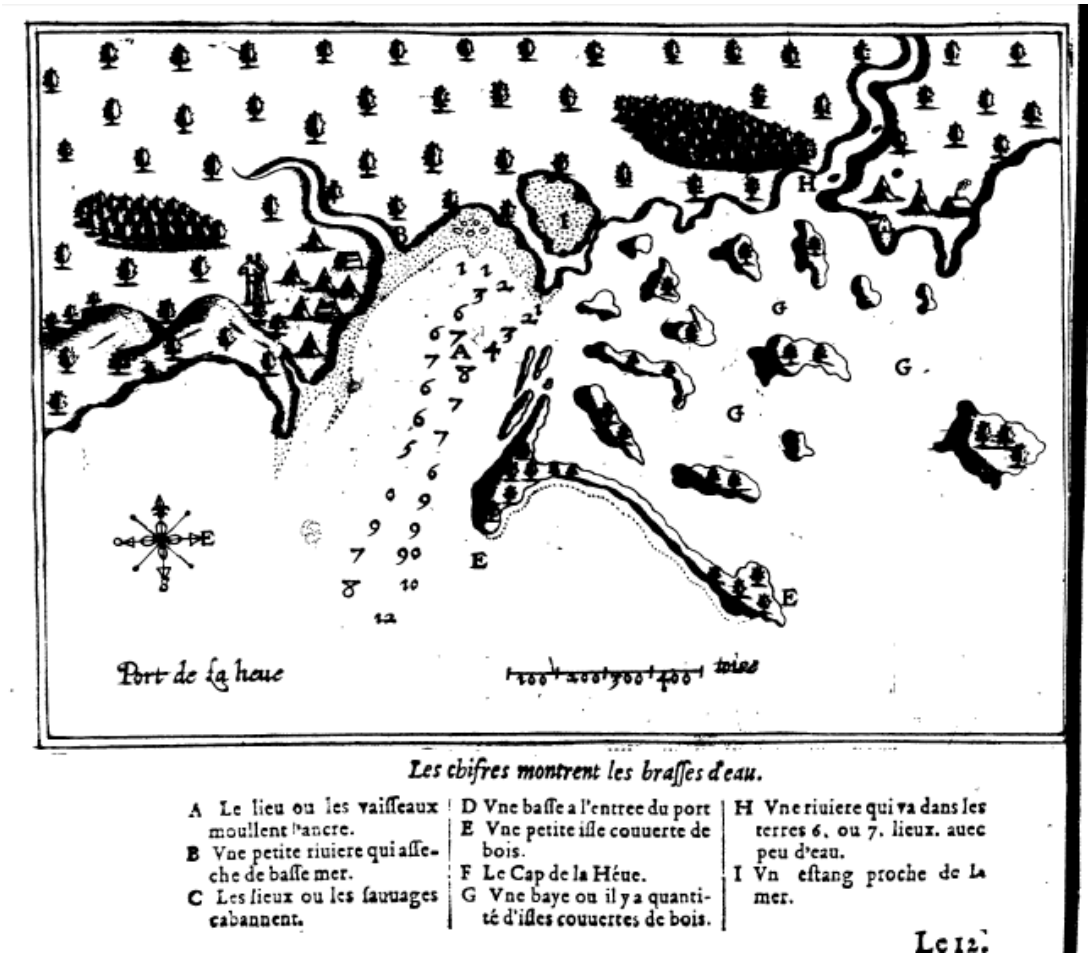


Figure 2. 7: Samuel de Champlain. Map of Port de La Heve, 1613. from *Les voyages dv Sieur de Champlain Xaintongeois.*

The Mi'kmaq depicted on the Port de La Heve map would have been from the same group of people that Champlain encountered later in the Port Royal area. This is supported by archaeological evidence in the form of fish weirs and lithics found along the Mersey River system which bisects southwest Nova Scotia, forming a corridor between the two coasts. The waterways connecting these two areas would have been well traveled

using birch bark canoes for several thousand years prior to the arrival of European settlers (Dunn, 2004; Pentz, 2008; Lewis, 2015).

The map below, Figure 2.8, was also drawn by Champlain and published in 1613 in *Voyages.* It is one of the more detailed maps of this early settlement period, a period which saw the French attempt to put a deep footprint on the continent in order to exploit what must have seemed, at the time, like an inexhaustible supply of natural resources - particularly furs and fish. The leaders of this early expedition, in particular Champlain, knew that in order for their settlement to succeed they had to have the support of the Indigenous population. He had carefully studied Cartier's journals and believed that his forays up the St. Lawrence in the 16th century had failed in large part because of his poor treatment of the Indigenous groups he encountered.

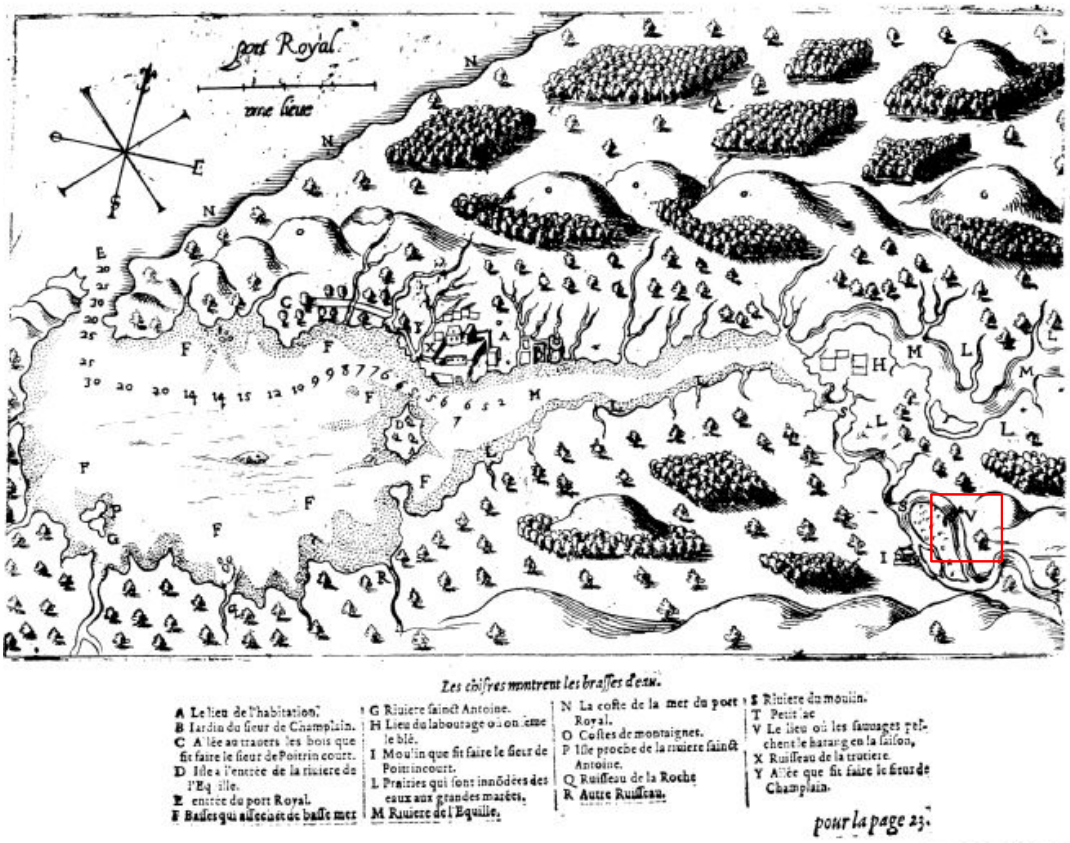


Figure 2. 8: Samuel de Champlain. Map of Port Royal, 1613 from *Les voyages dv Sieur de Champlain Xaintongeois.*

Cartier, Champlain writes, had 'alienated the Indians by treating them in a brutal and treacherous way -another fatal mistake' (As cited in Fischer, 2008, p. 115). Unlike many of Champlain's maps, this one depicts very little evidence of the Indigenous population on the landscape and no indication of any Mi'kmaw settlements. He simply marks an area on the map along the Allain River with the letter "V" (marked with a red rectangle by this writer) and describes it in the map's legend as the place "where the Indians fish for herring in season". This is curious because there are many written accounts by Champlain and others of the frequent visits by the "Indians" to their Port Royal Habitation. Was the

omission of the Mi'kmaq on this map a simple oversight on his part or was there a political objective behind it? Champlain's enthusiasm for the area cannot be doubted as he wrote, "having searched well in all directions, we found no place more suitable than a somewhat elevated spot about which are some marshes and good springs" (Champlain, 1613, p. 368). The historiography on Champlain is quite contentious (Faragher, 2005; Fischer, 2008) and beyond the scope of this thesis. Whether or not Champlain's omission of the Mi'kmaq at Port Royal was a deliberate attempt to marginalize them and thereby make the area more enticing for large scale permanent settlement is a matter of debate. Historical geographer Cole Harris writes that regardless of Champlain's intentions, his maps "enabled the French Crown to claim territory, and in so doing to ignore Native possession while asserting its own interest. A rudimentary knowledge of the land, made available in Europe, became a considerable source of European power – a cartographic equation of power and knowledge that would be repeated across the continent" (Harris, 2008, p. 29). The French nobleman, Jean Biencourt de Poutrincourt, changed the name originally given the Annapolis River by Champlain, *la rivière L'Equille* (Eel River) to *la rivière Dauphin* "believing it more elegant and attractive to anticipated French settlers" (Dunn, 2004, p. 4).

The next map (Figure 2.9) is by the French engineer, Jean de Labat, who had been sent from France to supervise the reconstruction of the fort at Port Royal. This 1708 map is the second of three similar large-scale maps drawn between 1707 and 1710, just prior to the town's surrender to the British. These maps detail the town's location, layout,

physical aspects and the location of its inhabitants-both French and Mi'kmaq. Figure 2.9 clearly shows a Mi'kmaw settlement with structures similar to those depicted on Champlain's La Heve map and described by Denys. These *cabanes* were also shown on the 1707 map but curiously not on the 1710 map. The reason for this omission can only be left to speculation. Did the Mi'kmaq leave the area? Was this map produced in such haste because of the town's imminent surrender that it was an oversight or is there something more political and calculated behind the omission?

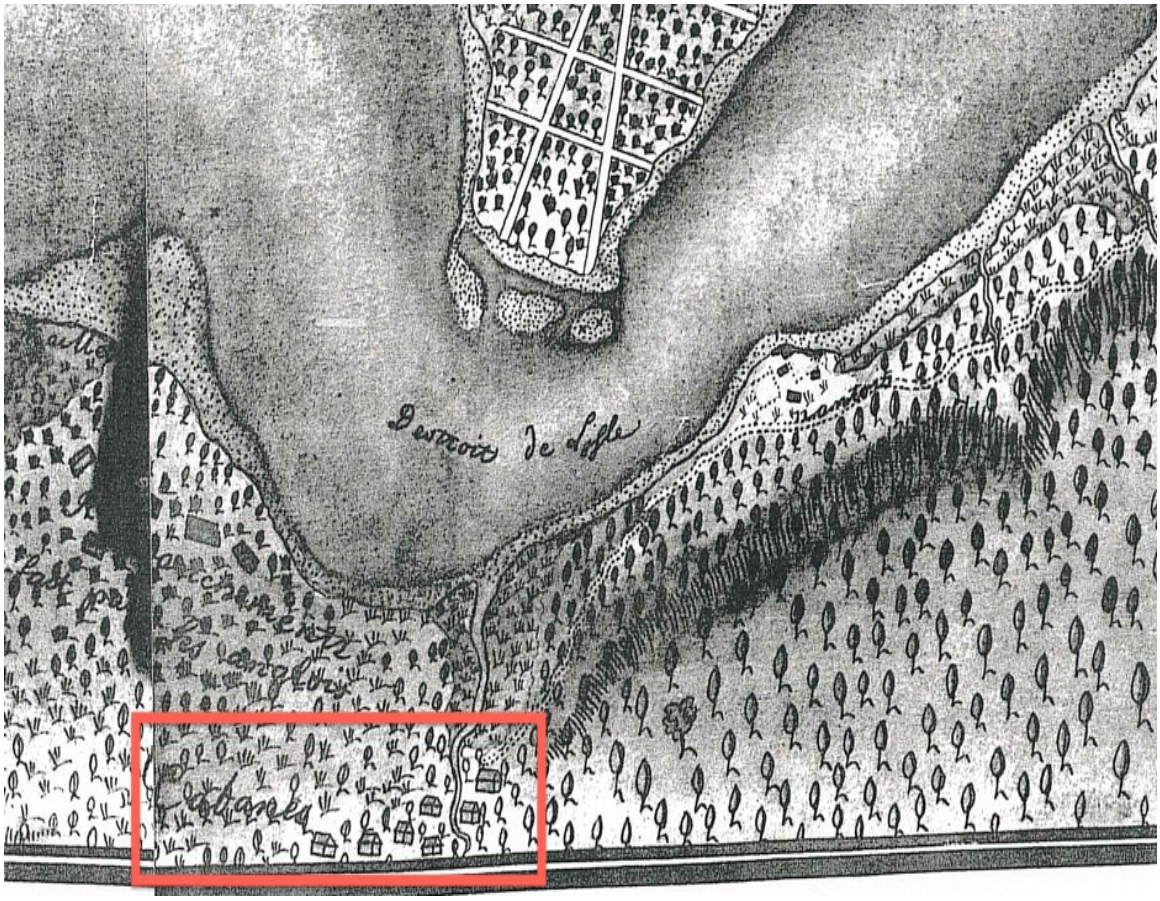


Figure 2. 9: Extract from de Labat's Plan de la Banlieue du Port Royal à L'Acadie et de ses Environs. 1708. It depicts the Mi'kmaw Cabins (Cabanes) and labels them as such. (Courtesy of J. Fowler, Saint Mary's University).

The French, unlike the British, made sure to include Indigenous place names to indicate their homelands so as to "limit European geographic fictions" (Lennox, 2017, p. 62). To appease the Mi'kmaq and their allies the French recognized Mi'kmaw sovereignty over their traditional territories. This had the indirect (but desired) effect of extending French territorial control by proxy (Lennox, 2017). A short case study on Mi'kmaw place names follows this section.

Henri Chatelain's 1719 map, *Carte de la Nouvelle France*, (Figure 2.10) clearly shows a strong Indigenous presence. Included are "les micmaques", and "souriquois" (Mi'kmaw ancestors) on peninsular Nova Scotia and "Nations de Etechemins" (a 17th - century term to describe the regions Indigenous groups) on the Bay of Fundy's west coast. Lennox believes the French and Indigenous place names were placed deliberately to restrict the British to the eastern seaboard (Lennox, 2017). This map, continues Lennox, was used as a tool to counter against British claims to an extended Acadia. Using Chatelain's map, the French could argue that while the Indigenous territory might not be French, neither was it British (Lennox, 2017).

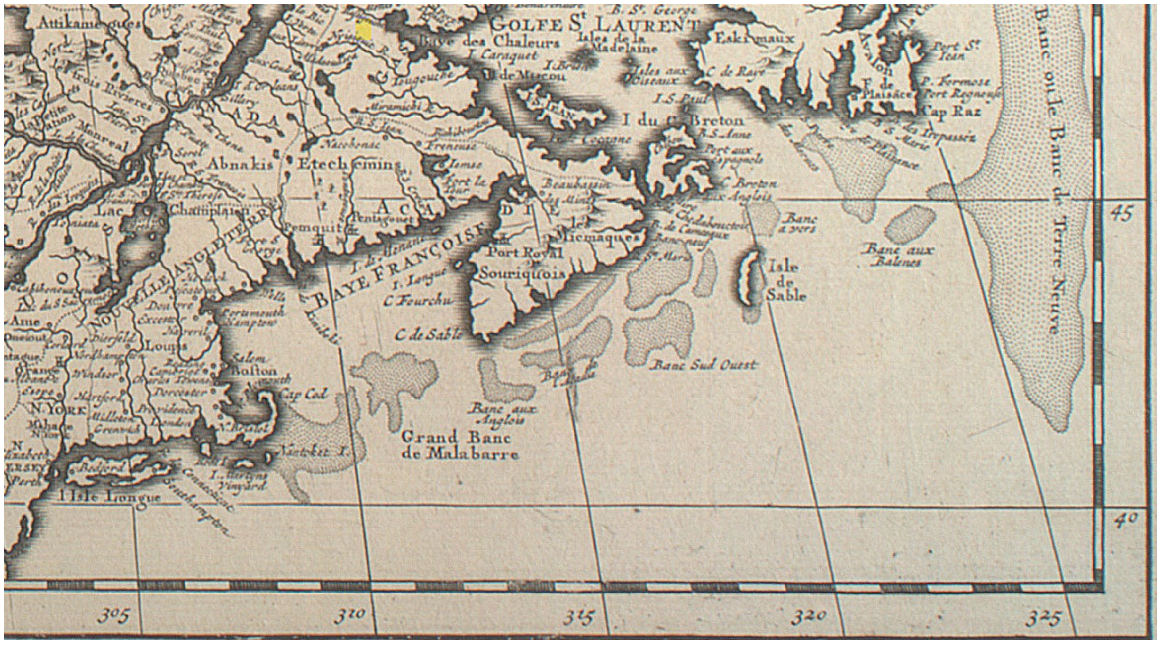


Figure 2. 10: Extract from Henri Chatelain's Carte de la Nouvelle France, 1719. Numerous Indigenous toponyms are readily found. McGill University, W.H. Pugsley Collection, G3400 1719 C5 RBD Map. Digital Library.

A 1715 map produced by British cartographer Herman Moll (Figure 2.11) drastically contrasts with that of the Chatelain map drawn just four years later. The omission of the Indigenous population was a deliberate attempt to create an empty landscape ready to be filled with British settlers. "Acadia" is placed on the western side of the Bay of Fundy (which he has changed from "Baye François" to "Fundy Bay". Lands south of the St. Lawrence River are designated as "New Scotland" and "New England" just south of Trois-Rivières. These maps, Lennox writes, "influenced how the public imagined these regions, so the placement of names, the inclusion or exclusion of Indigenous peoples, and the use of English or French toponyms imbued the map with a particular vision" (Lennox, 2017, p. 63). Dennis Reinhartz contends that mapmakers used these maps as tools for

settling border disputes. Maps, he believes, could shape both official policy and public opinion. “Moll’s maps reached many who could not read and made immediate strong impressions on those who could” (Reinhartz, 1997, p. 123). With these maps the British and French “imperial fictions” were created (Lennox, 2017).

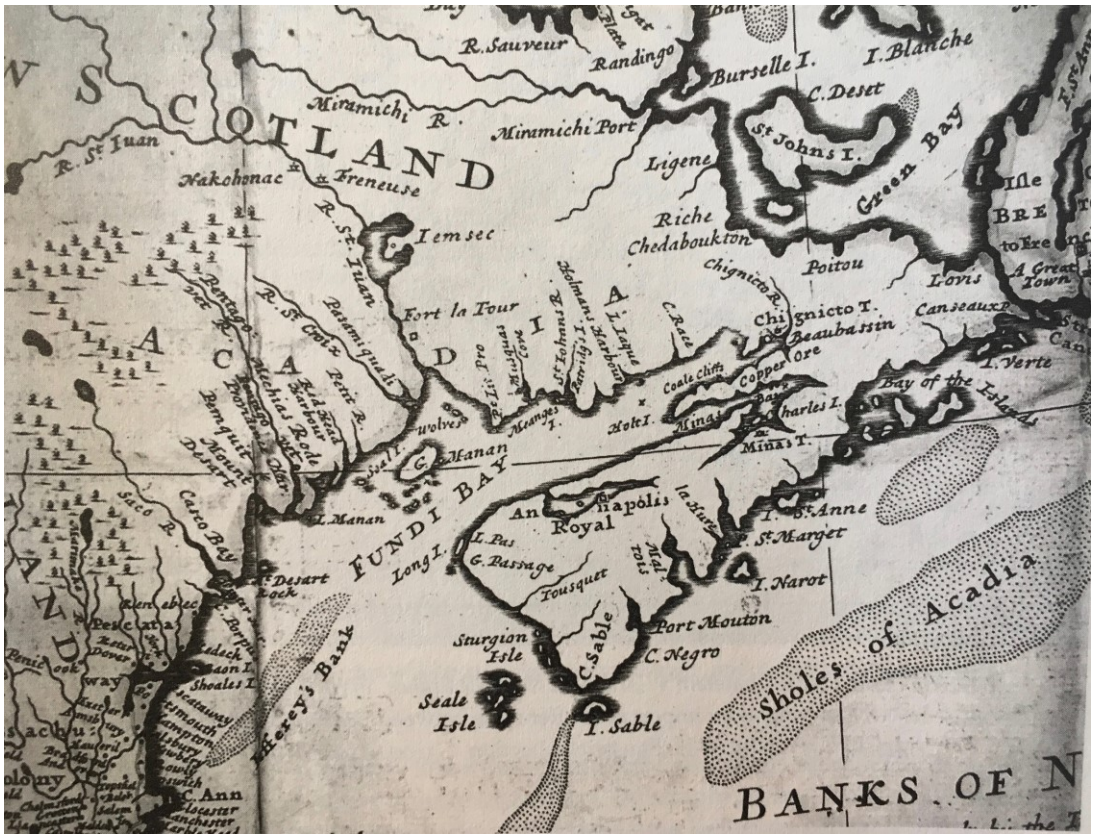


Figure 2. 11: Extract from Herman Moll’s A New and Exact Map of North America, 1715. Dalhousie Special Collections, Map 48 (Morse) 1715. The Indigenous presence is almost entirely erased from the map

British cartographer Moses Harris’s time in the colony was brief and he produced only a few maps. A detail from a map of Halifax appears below (Figure 2.12). This map was never published for fear by officials that it might send the wrong message to the public

back home (Lennox, 2017). To the centre left of the image, a Mi'kmaw wigwam is visible. In later versions it would be removed providing a map void of an Indigenous presence. In the foreground a threatening dragon can be seen and on the complete map a bear can be seen creeping around a tree. Both symbolize the potential danger (mythical or otherwise) lurking in this yet to be tamed territory (Lennox, 2017). Later versions omitted the animals. The topography was also changed to provide a tamer appearance, trees were thinned and any evidence that Halifax was once an area frequented by the Mi'kmaq erased. Lennox describes the 1749 Harris map as rare because unlike other maps which may show an abstract rendering of an Indigenous presence, often situated at a distance, Harris showed the Mi'kmaq using a traditional dwelling and placed them within close proximity to the burgeoning settlement.

Figure 2. 12: Extract from Moses Harris's unpublished Plan of Chebucto Harbour with the Town of Hallefax, 1749. A Mi'kmaw wigwam (circled in red) would be removed in later versions. The British Library. Maps K. Top. 119 f73.

Harris's most famous map is the *Porcupine map* (Figure 2.13) which was created in 1749. It was published in *The Gentleman's Magazine* and clearly offers a different message than his *Plan of Chebucto* (Figure 2.12). The map provides the viewer with few details about the region, instead offering images of wildlife and government symbols. Local animals and insects, especially the porcupine, replaced the rugged geography and Indigenous presence in the earlier Harris map (Lennox, 2017). Gone is the lurking bear and the threatening dragon. The settlement appears very tidy and tamed, ready to welcome the next group of settlers.

Figure 2. 13: Moses Harris's Porcupine map. Special collections, Dalhousie University. Map 38 (Morse) 1749.

Jefferys' map (Figure 2.14) first appeared in 1750, shortly after the establishment of Halifax. It is a composite of Harris's *Porcupine map* and a town map with a chart of Nova Scotia based on surveys by the French geographer Jean-Baptiste Bourguignon d'Anville (Lennox, 2017). By this time, the British Empire was determined to control Nova Scotia and decided to do this through relatively large-scale immigration and settlement of British citizens and foreign Protestants. The map below was created for both officials and the public to inspire confidence in the new colonial enterprise. It was

expected that any contradiction between appearance and reality would be lessened over time (Dawson, 1988). Nowhere on these maps is there any mention of the Indigenous population. Rivers, inlets, coves and other bodies of water, known to be important to the Indigenous groups still inhabiting these areas, have been given names such as “Summer Cove”, “Winter Cove” and “Sandwich River”. A Londoner looking at these maps, would have concluded that this new colony was now a landscape “tamed” and void of any perceived dangers to themselves or their cultured civilities. Popular magazines in Britain and France, such as *The Gentleman’s Magazine* and the *Journal des Sçavans*, provided venues for the perspective governments to promote geography’s role in imperial affairs. The populations of each empire were exposed to cartographic images in an attempt to make these new lands recognizable and appealing to their citizens aesthetic tastes (Lennox, 2017).

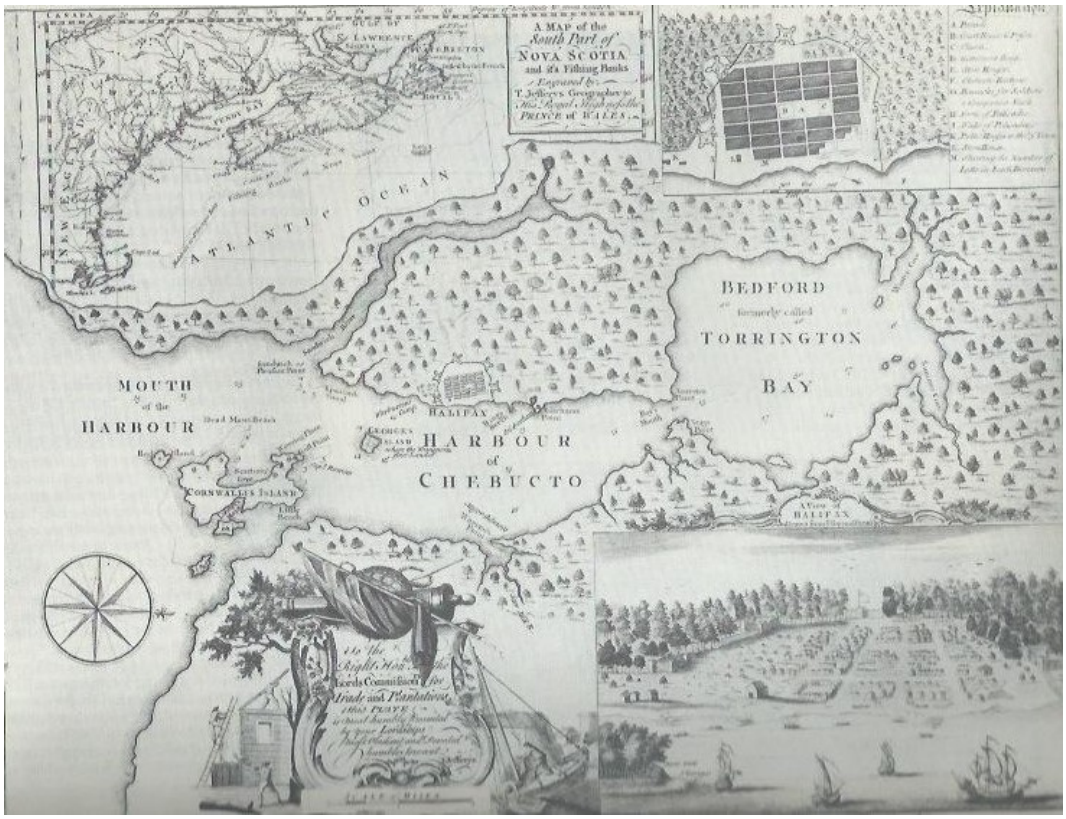


Figure 2. 14: Thomas Jefferys. Composite map consisting of an untitled map of Chebucto Harbour; A Map of the South Part of Nova Scotia and Fishing Banks; A Plan of Halifax Surveyed by M. Harris; and A View of Halifax Drawn from Ye Topmasthead, 1750. (Dawson, 1988, p. 26)

2.6.1 Mi'kmaw Place Names as Tools for Archaeologists

Although, many Mi'kmaq places names have been lost through colonialism, those which have survived play an essential role in understanding the landscape which was inhabited by the Mi'kmaq people since ancient times. Earlier in this thesis, it was acknowledged that many of these important Mi'kmaq cultural sites are referred to by their settler names. In this case study, this writer uses several of those names which have survived through

oral tradition to locate and interpret archaeological sites to try and piece together the precontact history of the region.

Throughout human history, people have given names to specific locations in our landscapes that they deemed significant. Topographical or hydrological features, historical events, and sources of important resources like hunting or fishing sites were given names so that this information, often needed for survival, would be remembered, and passed down through the generations. Through both oral and written language, the place names of the Atlantic region bear the shared history of the Mi'kmaw people and the European settlers who came later. The overlapping and often conflicting history of the various cultures can make it difficult to trace a place name to its genesis.

For thousands of years, Mi'kmaw oral histories have been an essential element in the culture of this coastal Indigenous group. Intertwined in the language are the legends, including named locations, which can be used as mapping tools (Sable, 2005). "Their sense of identity, at the collective and individual level, was bound up with the landscape" (Sable, 2005, p. 1).

Maps reflect cultural bias. In a study of property deeds, Indigenous and European perspectives were compared using both the language and graphic representations. Unlike European settlers, Indigenous peoples chose different elements to highlight when naming locations. Because Indigenous knowledge had been primarily passed down through oral

language, place names were often working from a predominantly oral culture. Indigenous peoples relied heavily on instructive toponyms. A place was named for its physical features, the people who lived in the region, and for its geographic location in relation to other places. Consequently, the "name was not simply a signifier, but also a mnemonic device" (Lennox, 2017, p. 9).

Many place names have disappeared due to displacement, which occurred after European contact. Names were often changed to English and French and the Mi'kmaw names were forgotten. Geographic areas that were deemed valuable to the Europeans, such as islands, inlets and rivers, were given European names on some of the earliest maps, thereby cementing the new name. These names have continued to this day. For example, *Chebucto* was changed to Halifax Harbour/Bedford Basin. *Epikwitk* was changed to Isle Saint-Jean by the French and later changed to Prince Edward Island. *Unamiki* was changed to Cap Breton and later to Cape Breton Island. Names for areas of lesser importance to Europeans seem to have had a better chance at surviving, and many have, although, over the centuries many have been bastardized and their meanings have often changed (Morris, 2020).

Because of their descriptive nature, this case study examines the use of Mi'kmaw place names as a tool for archaeologists to use when researching precontact history. Here, the focus is on the Annapolis and Mersey River systems, located in southwestern Nova Scotia. Locations which the Mi'kmaq deemed as significant enough to designate with a name and which have survived to be recorded, have been documented in the Mi'kmaw

Place Names (*Ta'n Weji-sqalia'tiek*) Atlas which was launched in 2010, by multiple Mi'kmaw stakeholders. Through extensive interviews with elders and other knowledge holders, as well as archival work, place names and their meanings were gathered. The historical documents and dictionaries were taken primarily from the works of two missionaries, Father Pacifique and Silas Rand, in the late 19th and early 20th centuries (www.mikmawplacenames.ca/about). Locations which have undergone archaeological research have been documented in the Maritime Archaeological Resource Inventory (MARI). For the purposes of this case study, points of intersection which can be found in both the Mi'kmaw Place Names Atlas and the MARI were searched.

The Annapolis River or *Tewapskik* , which means water flowing between rocks, is located in southwestern Nova Scotia and has been used by Indigenous groups for travel, resources and trade routes for thousands of years (Deal, 2015a). Its source is located west of where the Cornwallis River begins at the Aylesford Bog. The Mi'kmaw name for this area is *Cobeetek* (beaver's home). Beavers feature prominently in Mi'kmaw lore and are often recognized as being responsible for the changing of the landscape. Ruth Whitehead believes that the Giant Beaver (Casteroides ohioenses) which once existed in Nova Scotia approximately 10 000 yrs BP, and measured over 3 metres in length, may have been the seed for these stories (Whitehead, as cited in Sable, 2005). Until faunal remains of the Giant Beaver are found in an archaeological context, the idea that these stories were passed down for ten thousand years remains speculative. The Annapolis River runs parallel to the Bay of Fundy until it empties into the Annapolis Basin. Numerous archaeological sites, from the Archaic tradition and the Ceramic/Woodland period to the

colonial period have been located by both private citizens and archaeologists along its banks. Unfortunately, few sites correlate with present day Mi'kmaw place names.

Paradise — *Nisoqe'katik* (at the lowlands) is a small community located between the towns of Middleton and Bridgetown. It is also where the 'head of tide' was located when a turbine was installed in the basin in the early 1970s. This 'head of tide zone' was an important fishing area for precontact groups. A freshly ploughed field along the river in this town contained numerous lithic materials which were collected as surface finds. Based on these finds, sub-surface investigations were conducted, and a small quantity of exotic lithic materials were recovered. It was designated as a site and given a provenance number of BfDh-19. No evidence of settlement was located at this site and it appears to have been an area where only resource procurement activities occurred. The fact that the Mi'kmaq described it as a low area might indicate that it was not valued as a settlement site, as it would have been vulnerable to periodic flooding. It also has poor sightlines, making it difficult to view approaching canoes on the river and people travelling by foot. The area has undergone considerable development, first by the Acadians, who arrived in the 1680s. They transformed the landscape through the practice of dyking the tidal section of the river. This practice was continued by the Planters and is still in use to this day.

Running off the Annapolis River in Paradise is the small Paradise Brook. It was given the name *Nikoqe'katik* (the spearing place) by the Mi'kmaw. As of this writing no archaeological research on this brook has been undertaken. Indigenous groups would

probably have speared eel (a catadromous fish which lives most of its time in fresh water, only moving to salt water to spawn). Based on its Mi'kmaw name this small brook would be a high potential area for archaeology.

Further downstream, Bridgetown — *Likalie'katik* (at the church area) must have been given this Mi'kmaw name during the post-contact period. Although, it is known that the Mi'kmaw had spiritual places prior to contact, the "church" is a post-contact cultural element constructed by the French as part of their proselytizing efforts. No archaeological research has been conducted in Bridgetown and due to the high amount of development the town has undergone, the likelihood of uncovering evidence of this church or interpreting the site is small.

Port Royal, founded in 1605 by Samuel de Champlain and his crew was first named *Nme'judqnek*, meaning "place of the bountiful fish". This obviously would have been an important location to the precontact groups in the area. The early 20th-century construction of the replica fort, combined with sea-level rise and subsequent erosion of the land, has probably destroyed any evidence of its earliest occupiers.

Running perpendicular to the Annapolis River is the Mersey River or *Oqomkikiaq* which in Mi'kmaw means a "dry sandy place". Like the Annapolis, the Mersey has been used for transportation, resource procurement and as a trade route for several thousand years. Unlike the Annapolis River, the Mersey River has had extensive archaeological research conducted on and around it. Along the Mersey River is a small community called

Milford. Its original name is *Sikunme'katik* and means "the gasperaux place". This fish was an important part of the Mi'kmaw diet and therefore one would expect to find evidence of fishing and harvesting. Archaeological work in the area of site BdDi-05, recovered lithic material consisting of a scattering of quartz, quartzite and weathered agate and a small quartzite hammerstone.

Further downstream is a small lake, called Grand Lake. Its Mi'kmaw name is *Skite'kmujua'kik* which is translated as "the place of the ghosts". Three archaeological sites were designated as BdDi-01, BdDi-08, and BdDi-09. The artifacts recovered from these sites consisted of channeled gouges, undecorated, grit tempered pottery fragments, waste flakes from a variety of materials, a birdstone and adze, agate scrapers, a corner-notched knife/point and a button. The materials collected from these three sites give an occupancy ranging from the late Archaic period through to colonial times. The meaning of this name remains speculative. Was this a ceremonial site, a burial place or a place where people went to die? More targeted archaeological research at this site may provide information to better interpret this area if, for example, burial grounds were located.

An area that has maintained its Mi'kmaw name is *Kejimkujik* which is now a National park and located approximately midway between the source and mouth of the Mersey River. Its meaning is "the place of the little fairies". More than 60 archaeological and historical sites have been found there. Kejimkujik is known best for the hundreds of individual pictures that are carved into stone along lake shorelines and other areas. These pictures are called petroglyphs. There are more than 500 known petroglyphs from the

area, which makes it the largest site of its kind in eastern North America. “Place of the little fairies” has been viewed by many as a name associated with the petroglyphs, however, Donna Morris, a retired Mi'kmaw interpreter at the park points out that the present spelling and therefore meaning of Kejimkujik has been “bastardized” from its original meaning which was “a place of discomfort” possibly referring to the sore back and knees people would get from the long canoe trips (Morris, 2020). This point illustrates the complexities of using Mi’kmaw place names to interpret an ever-changing landscape.

Due to the post-contact displacement of the Mi’kmaw people by the French and British colonists, and the changes from the Mi'kmaw name to a French or British one, very few Mi'kmaw place names remain on or around the Annapolis and Mersey Rivers. This can be said about most areas in Nova Scotia. In fact, very few Indigenous place names remain in North America at all. That said, it can be argued there is value in looking at Indigenous place names to aid in the locating and interpreting of archaeological sites.

2.7 Conclusion

The use of primary and secondary sources including maps, journals, illustrations and other manuscripts are essential tools of historical archaeologists in determining where to conduct subsurface research. Precontact archaeologists, however, are at a disadvantage because most precontact societies left no written record from which to interpret past

events or cultures. It is difficult to draw conclusions from the small sample of material culture that has been excavated.

In this chapter, it was argued that many of the primary sources pertaining to First Nations groups in the northeast deliberately misrepresent them to marginalize and exploit them. Therefore, they provide little use to archaeologists in the locating and interpreting of precontact sites. While some of these documents provide insights into the Indigenous cultures during the proto and historic periods and have been used effectively by historians for these periods, the primary and secondary sources must be viewed with a critical eye by those looking to understand earlier historical periods. Early documentarians, artists and map makers of North America were all European men who had their own biases and agendas. They deliberately marginalized if not completely omitted the Indigenous population from their imagined landscape. These early contact period documents should be viewed more as evidence of the resilience and adaptability of Indigenous peoples to the dramatic changes forced upon them in this early contact period rather than evidence of their lifeways in precontact times.

Because of the rate of coastal erosion and sea-level rise there is impetus for greater archaeological research along coastal regions and river systems. Parks Canada archaeologist, Birgitta Wallace, believes, for example, that the original Port Royal Habitation site located at the mouth of the Annapolis River has probably already been

lost to erosion (Wallace, 2015). As sea-levels continue to rise and more of the landscape washes away, both precontact and historical sites will be lost.

Figure 2.15 is a map of Port Royal in 1690. The next image (Figure 2.16) is an extract of the original fort. The bottom, right bastion clearly depicts an earlier fort eroding into the river.

Figure 2. 15: Port Royal d' Acadie. 1690. FR CAOM 3DFC54C.

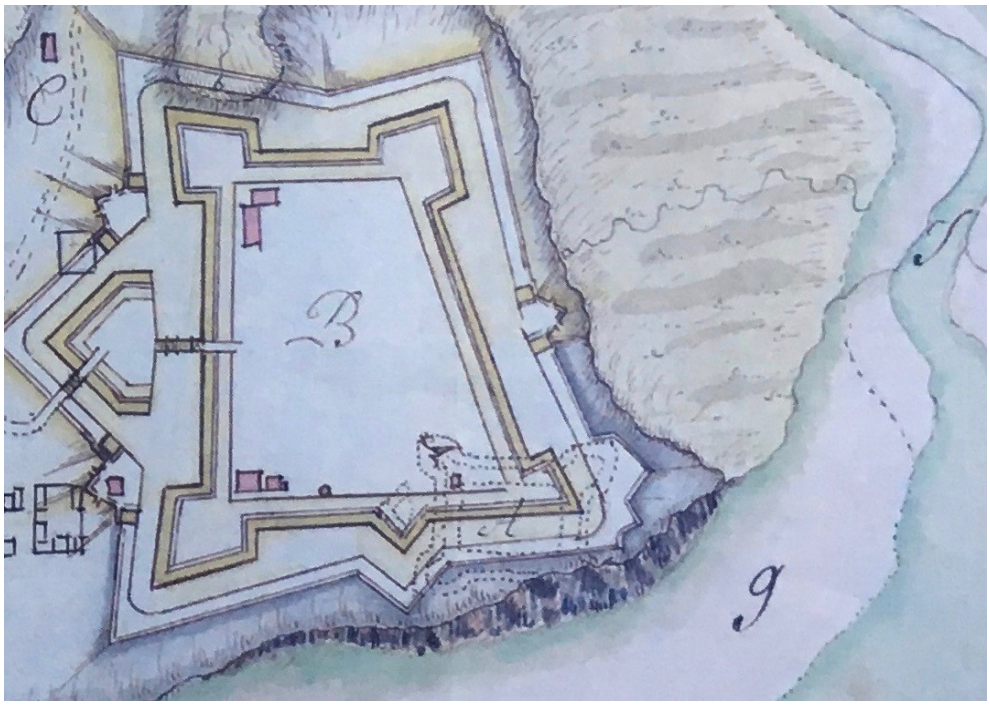


Figure 2. 16: Anonymous. Extract of Port Royal d' Acadie. 1690. FR CAOM 3DFC54C.

Many early precontact sites have already been destroyed in the Maritime region, taking with them information on their occupants. Information on the late precontact and early contact period however might still be found if archaeologists incorporate a multidisciplinary approach in their research.

If early ethnographies, illustrations, and cartography are of limited use to archaeologists in locating and interpreting precontact sites in the northeast, researchers must develop other tools or methodologies. In the following chapter, one such tool for predictive modelling is proposed.

CHAPTER 3 PALEOGEOGRAPHY, SEA-LEVEL CHANGE AND FIRST ARRIVALS

3.1 Introduction

Post-glacial sea-level change in the Maritime region of Canada has had a profound effect on the landscape over the last 13 000 years. These changes have implications for both spatiotemporal patterns of human occupation and the preservation potential of the archaeological record of those occupants. Although global eustatic sea level has, broadly speaking, risen in the past 13 000 years, relative sea level (RSL) within the Maritimes has a far more complex history (Stea et al., 1998). This includes significant variations between basins and Early Holocene fall in RSL of over 80 m (Amos & Zaitlin, 1985; Shaw, 2002). The spatially complex and dynamic history of RSL variability over the past 13 000 years has occurred due to a combination of isostatic and dynamic changes in crustal height during and after unloading from melting of the Laurentide ice-sheet (Honig et al., 1986; Stea et al., 1998; Shaw, 2002). Simply put, some areas of the Maritimes that were terrestrial surfaces during the Early Holocene are now drowned, whereas in other areas paleoshorelines are tens of metres above modern sea-level. These dynamic conditions indicate that the generations of humans occupying the Maritimes over the past thirteen thousand years have encountered profound changes in shoreline position and in the availability and location of terrestrial and marine resources.

Most of this material is in various places but has not been synthesized for the archaeological community. From an archaeological perspective, having a comprehensive understanding of sea-level history in the Maritime region is important for two reasons. The first is to reconstruct a landscape that was available for human mobility and migration and secondly to improve our ability to predict where archaeological resources may be found. Although there are numerous studies of paleo sea-level in the Atlantic region (eg Scott et al., 1982; Stea et al., 1998; Shaw, 2002; Bell & Renouf, 2004), a comprehensive summary that is useful to archaeologists in the Bay of Fundy is lacking. Here, numerous existing sea-level records for the Maritimes during the past 13 000 years are reviewed and an attempt to synthesize these into a coherent record of RSL is made, highlighting where individual records of RSL are in conflict and proposing resolutions. Then the chronology of RSL is connected to important, and as yet unresolved archaeological questions. These include the approximately 4 000-year gap in the archaeological record, historically referred to as the "Great Hiatus" that followed the arrival of Paleoindians into the region and precontact settlement patterns on tidal river systems. The work of this thesis is focussed on the Bay of Fundy area and has two sections, divided by time period: The first section (Section 3.3.2), focuses on RSL in three sub-basins of the Bay of Fundy from 13 000 years ago to present and examines the implications of this for the first arrival of humans that occupied the region during and soon after deglaciation. In a later section (Section 3.5.1), the late Holocene record of RSL for the Fundy Basin is used to determine changes in head-of-tide for the Annapolis River. This is done because the Annapolis River and surrounding area is a potentially rich location of archaeological resources, and more generally a river's head-of-tide is a critical

resource-rich region for human occupants who gather where anadromous fish congregate each spring to spawn (Allen, 2005). On low-gradient rivers such as the Annapolis River, the location of the head-of-tide may change by tens of kilometres or more as a river's baselevel rises and/or falls as the tidal range increases. This is caused by either isostatic rebound or an increase or decrease in the volume of water entering the river. This information is used to predict where archaeological sites might be found.

3.2 Site Description - Bay of Fundy

The Bay of Fundy began as an oceanic rift about 250 million years ago as Pangea divided (Barr et al., 2001). Following the division of Pangea, the fissures grew into a rift valley system. A series of sedimentary basins resulted as the rifting stretched and thinned the crust, usually along the lines of weakness. The Cobequid-Chedabucto Fault System was one of the lines of weakness. In this fracture zone, the Fundy Basin developed where today is the Bay of Fundy. This being an active continental margin, widespread volcanism developed. The area was covered with tholeiitic basalt. Subsequent tidal erosion and transportation created strata of sand, mud, shales, and other aggregates (Todd & Shaw, 2012). Some of these sediments were deposited in rivers and lake beds while others were wind blown, creating sand dunes and others formed alluvial fans. In Nova Scotia, the red cliffs of Blomidon and Five Islands provide visual evidence of the Fundy Basin strata (Barr et al., 2001).

The head of the Bay of Fundy divides to form Chignecto Basin, lying northeasterly and the Minas Basin lying easterly (Figure 3.1). The Chignecto Basin receives freshwater input from several small rivers; these estuaries have been infilled by salt marshes fronted by extensive mudflats. The landscape has been significantly modified in the last 300 years as many of these salt marshes were dyked beginning in the late 1600s and remain dyked today (Bleakney, 2004). The Minas Basin also receives sediments from small rivers. But because the cliffs surrounding it contain course sandstones overlain by glacial till, the Minas Basin also contains sandy tidal features, in contrast to the Chignecto Basin where there are fewer sources of sand (Dalrymple et al., 1992; Shaw et al., 2010).

The Greater Bay of Fundy has the largest tidal range in the world (O'Reilly et al., 2005). The tidal range results from its funnel shaped geomorphology which enables and amplifies tidal resonance. The resonance exists because the length of the bay (about 170 km) is such that the M2 (lunar component) tidal wave travels from its mouth to its head and back in roughly the same length of time as the M2 lunar period of the tide in the Atlantic Ocean (12 hours and 30 minutes) (O'Reilly et al., 2005). The result is that the tidal range in the Bay of Fundy is about 4 metres at the mouth (Gulf of Maine) and can reach 17 metres at the head. As the channel narrows, current velocities can exceed 4.5 metres per second. This causes significant coastal erosion (O'Reilly et al., 2005; Parrott et al., 2008; Greenberg et al., 2012).

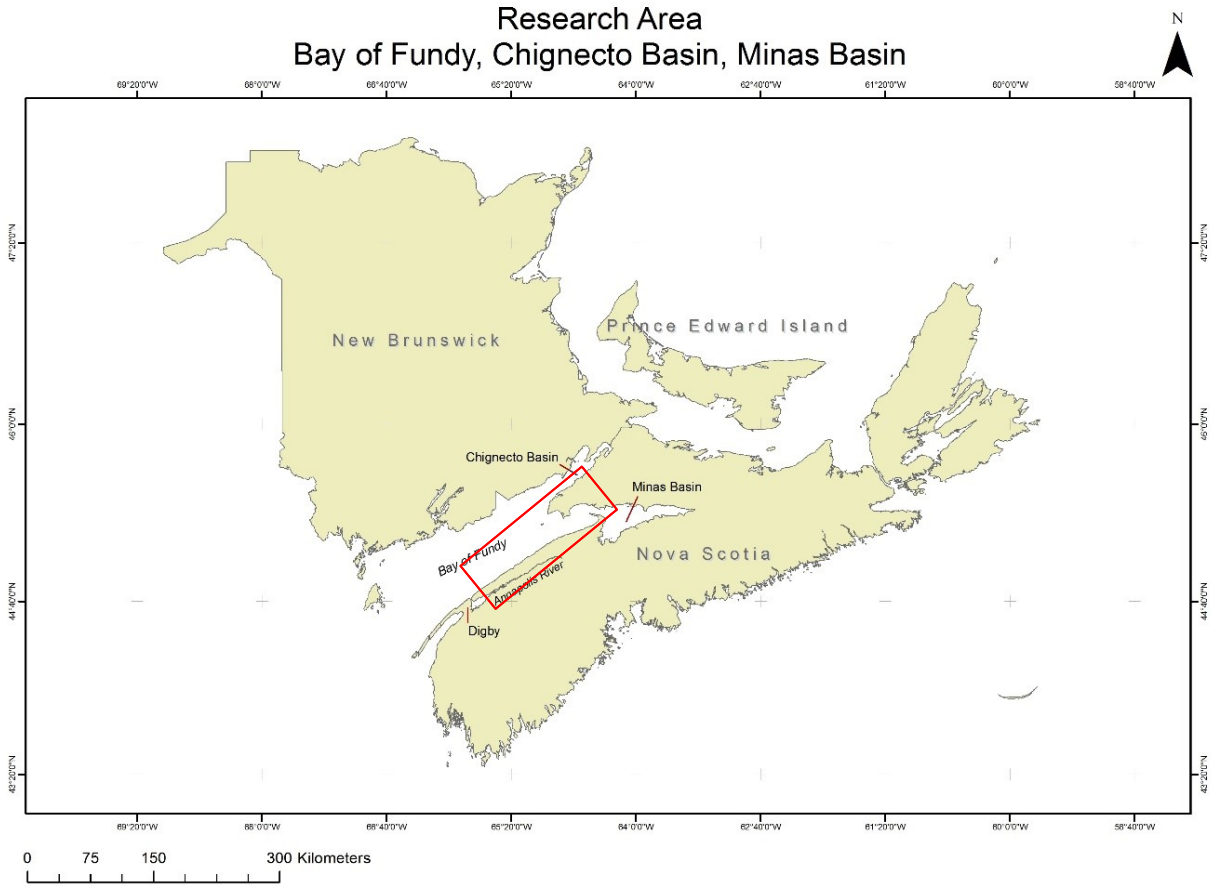


Figure 3. 1: Map of the research area which includes the Bay of Fundy, Chignecto Basin, Minas Basin and Annapolis River.

Figure 3.2 is a bathymetric image of the Greater Bay of Fundy. The red rectangle demarcates an area deemed as high potential for archaeology. This area is discussed in greater detail later in the chapter.

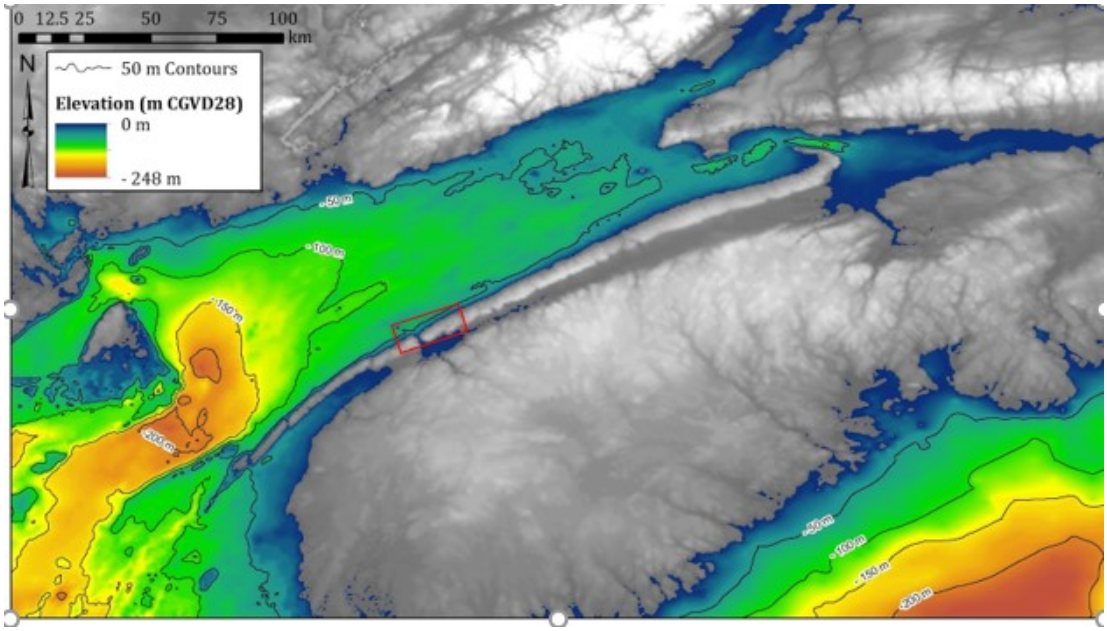


Figure 3. 2: Bathymetry of the Bay of Fundy, Chignecto Basin and Minas Basin. 50 m contours. C. MacDonald. Centre of Geographical Sciences (COGS 2017). Red rectangle indicates area containing high potential area for archaeology. See figure 3.25.

3.3 Sea Level Change and Paleogeography, 13 ka years to present

3.3.1 Regional Trends and Processes

The Wisconsin Glaciation covered Eastern Canada and the surrounding continental shelf from 75 000 to 12 000 yrs BP. The nature of the present land surface and the characteristics of the land sea interface, as well as the sea bottom on the continental shelf, are the consequences of this period of glaciation and sea level variability. Wisconsinan Glaciation consisted of five phases (Rampton et al., 1984; Stea et al., 1998). Phase One (Caledonian, 75 000 - 40 000 yrs BP) resulted in a southeastward flow from the Appalachian ice field across Nova Scotia onto the Scotian Shelf. Phase Two (Escuminac,

22 000 -19 000 yrs BP) resulted in an ice flow predominantly southward from north of PEI across Nova Scotia onto the Scotian Shelf. The retreat of ice associated with the Escuminac phase resulted in the development of the Scotian ice divide along the length of Nova Scotia. This resulted in the development of Phase Three (Scotian phase, 18 000 – 15 000 yrs BP), which consisted of a northwestward flow over the Bay of Fundy and a southeastward flow over the Scotian Shelf originating from an ice divide over and parallel to the axis of mainland Nova Scotia. Phase Four (Chignecto phase, 13 000 -12 500 yrs BP) consisted of an ice flow from northern Nova Scotia southwestward across the region. After 12 500 yrs BP, the temperature rose rapidly but was punctuated by a period of dramatic cooling from11 000 to 10 000 yrs BP, that resulted in the redevelopment and reinvigoration of maritime ice sheets. This period of glaciation is locally referred to as the Collins Pond Phase. It coincides with a short-lived period of global cooling called the Younger Dryas (Figure 3.3) (Stea et al., 1998).

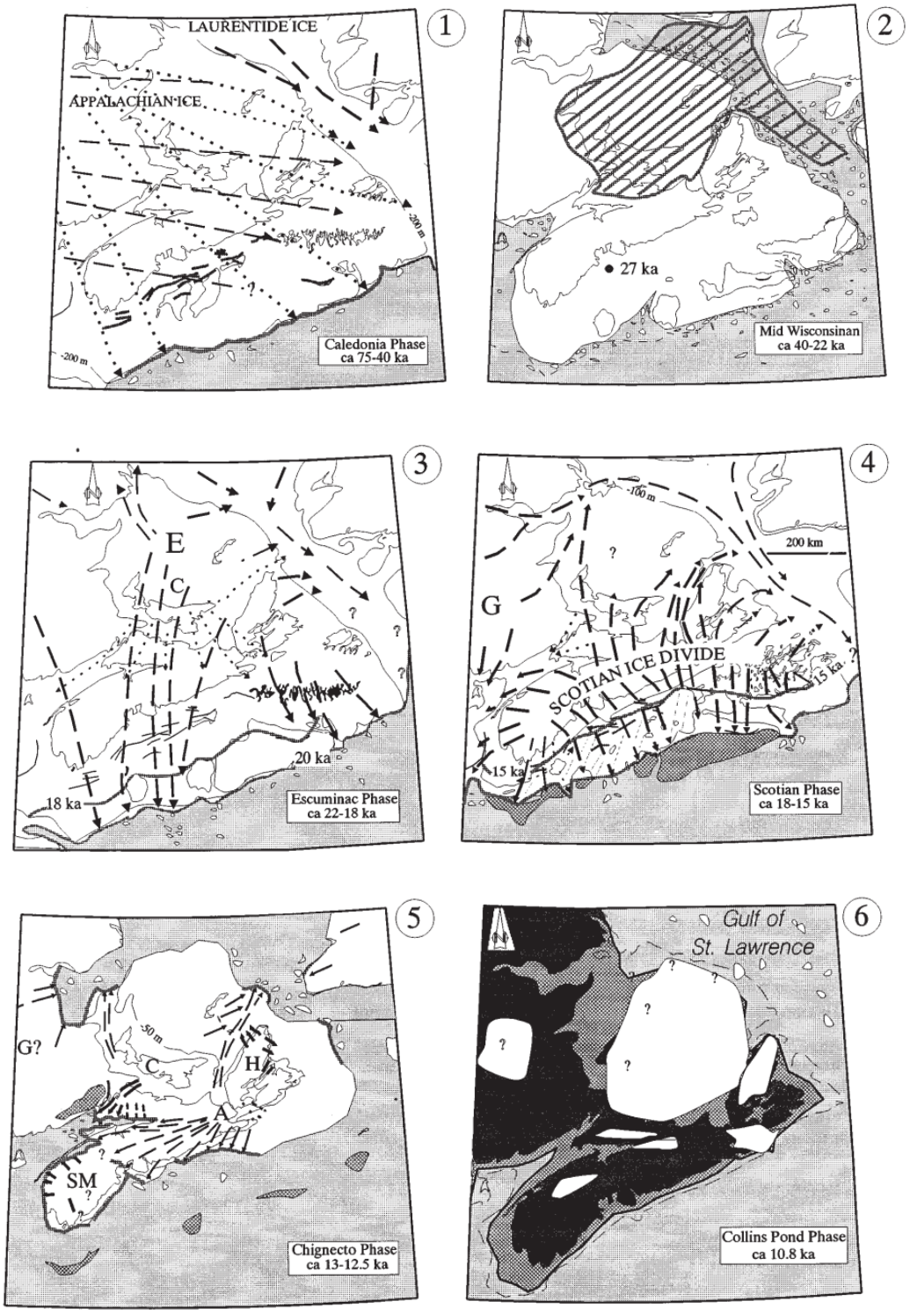


Figure 3. 3: Regional ice flow trends and the evolution of ice divides over Maritime Canada during Wisconsinan time (75 -10 ka) as identified by Stea et al., 1998.

Relative sea level on the inner shelf of the Atlantic coast has changed dramatically from 15 500 yrs BP to the present. The RSL was at its lowest (-65 m) around 11 600 yrs BP (Stea, 1984) and then rose rapidly to about -40 m by 11 000 yrs BP (Quinlan & Beaumont, 1982; Scott et al., 1989; Amos & Miller, 1990; Stea et al. ,1994). A relative sea-level curve was published in Stea (1998) and used data from Amos and Miller (1990); Scott et al. (1989); Stea et al. (1994) and Quinlan and Beaumont (1982). The following information was taken from this graph. The rate of sea level rise slowed between 11 000 and 7 500 yrs BP to about 4mm/year, and then increased to about 6.5 mm/year from 7 500 to 4 500 yrs BP. From 4 500 yrs BP to the present, it has risen at a fairly constant rate of about 2.6mm/year.

The Bay of Fundy has rocky coasts and is affected by wave erosion, chemical and physical weathering, mass movement and bio-erosion (Masselink & Hughes, 2003; Todd & Shaw, 2012). Unfortunately for researchers attempting to understand and document sea-level change and coastal erosion on rocky coasts, these previously mentioned processes often occur at the same time (Masselink & Hughes, 2003). As a result, the Bay of Fundy coastline lacks some of the depositional features that may be indicators of sea level change. Instead, indicators of sea level change along the Fundy coast consist of eroded shore platforms, cliffs, notches and benches, that are evidence of earlier sea-level high-stands (Masselink & Hughes, 2003).

Determining the rate of sea-level change is also challenging and depends on two factors: an understanding of variability in absolute sea level and rate of isostatic adjustment (subsidence or emergence) of the coastline. Even if sea- level measurements indicate a constant RSL, this does not signify that both land elevation and absolute (eustatic) sea-levels are constant. Instead it is plausible that the change in eustatic sea-level is balanced by the isostatic movement of land (Masselink & Hughes, 2003). In addition, indicators of low sea levels (low stands) are often destroyed during subsequent submergence by higher sea-levels (Masselink & Hughes, 2003). One approach to locating low stands is to use organic intertidal sedimentary deposits which were deposited at known tidal levels (Scott et al., 1983; Masselink & Hughes, 2003).

Taking these challenges into consideration, relative sea-level changes occur because of:

1) Land rising isostatically after the removal of glaciers.

2) (Increased ocean water volume) Absolute sea level rises when land-based ice caps melt and contribute water to the oceans.

3) Differential isostatic adjustment through time due to forebulge collapse and nearshore loading (Stea et al., 1998; Gehrels et al., 2004).

A depiction of a possible paleo- coastline for a section of the Bay of Fundy is shown in Figure 3.4. This map is based on a sea-level of -30 m that occurred off the coast of Digby

at 7000 cal yrs BP. This lowstand was determined as a result of ^{14}C dates obtained from marine cores in the area. (Scott et al., 1983). If a lowstand for a certain location for a certain date is known, the reconstruction of the paleocoastline can be extended to that depth, bearing in mind the complications of coastal erosion and deposition (Shaw, 2019). The reconstruction of paleocoastlines must also, however, consider glacio-isostatic rebound, which is a non-uniform process and depends on location as the rheology of the mantle is non-uniform (Todd, 2019). Therefore, this map does not present an accurate depiction of the Fundy coast at 7 000 cal. yrs BP but instead is a general depiction of the extent of the coastline that has been submerged in the last 7 000 years. First Nations would have occupied land close to the ocean. The -30 isobath shows that the coastline would have extended up to 5 km out from the present-day coastline.

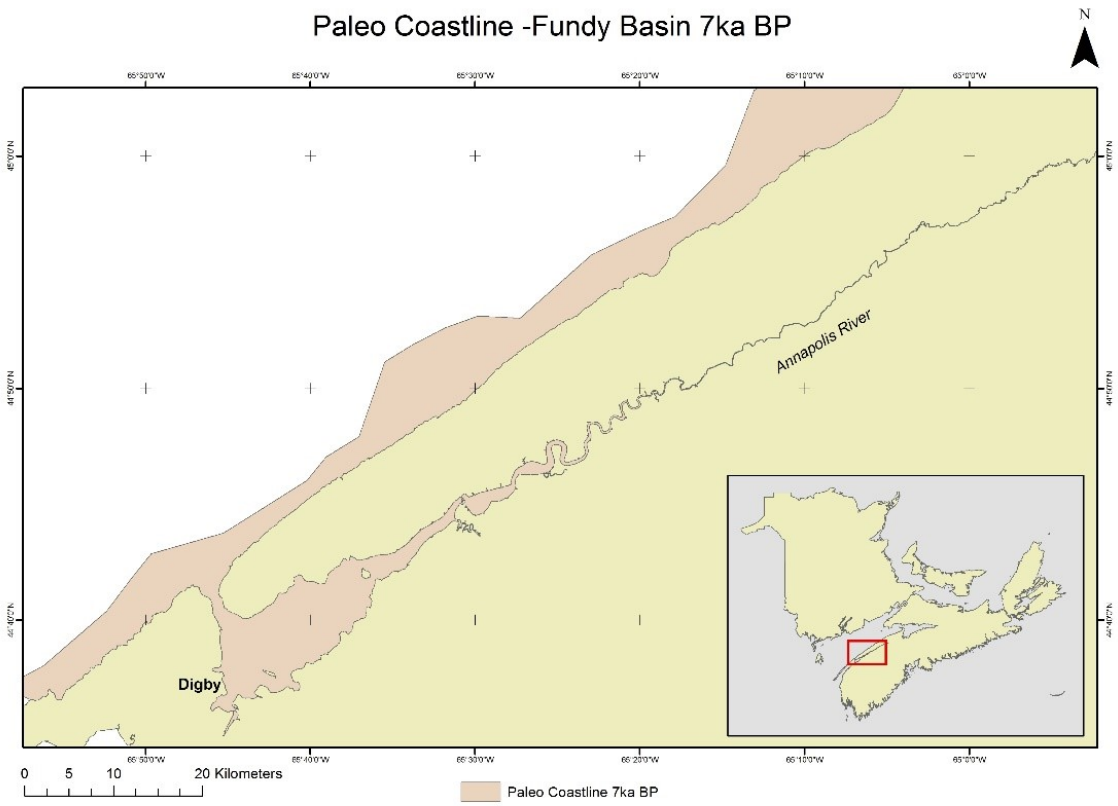


Figure 3. 4: Paleocoastline for a portion of the Fundy Basin at 7 000 cal. yrs BP including the Annapolis River (Scott et al., 1983). -30m contour line.

3.3.2 Sub-basin records

The Greater Bay of Fundy consists of three sub-basins: the Chignecto, the Fundy and the Minas Basins (Figure 3.1). The mechanics of sea-level change through time in each of the sub-basins was likely different owing to different isostatic properties and therefore each basin must be considered separately (Withjack et al., 1991; Withjack et al., 2009).

3.3.2.1 Fundy Basin

Figure 3.5 depicts reconstructed sea-level change in the Fundy Basin from 13 000 yrs BP to the present. Relative sea-level decreased considerably from 13 000 to 7000 yrs BP and then rose from 7 000 yrs BP to present. The Early Holocene decrease in relative sea level was a result of isostatic rebound after deglaciation that outstripped absolute sea level rise. At about 7000 yrs BP forebulge collapse and declining input from melting continental ice combined to produce relative sea level rise in the Fundy Basin. Scott et al. (1983) indicate that the rate of RSL rise was rapid from 7 000 to 4 000 yrs BP (as high as 10 mm/year) and then declined (2 mm/year) from that point until present. Present rates of sea-level rise are between 3.1 mm per year and 3.3 mm per year, an increase that is attributed to a rise in sea level associated with climate change (Gehrels et al., 1995; Webster, 2010).

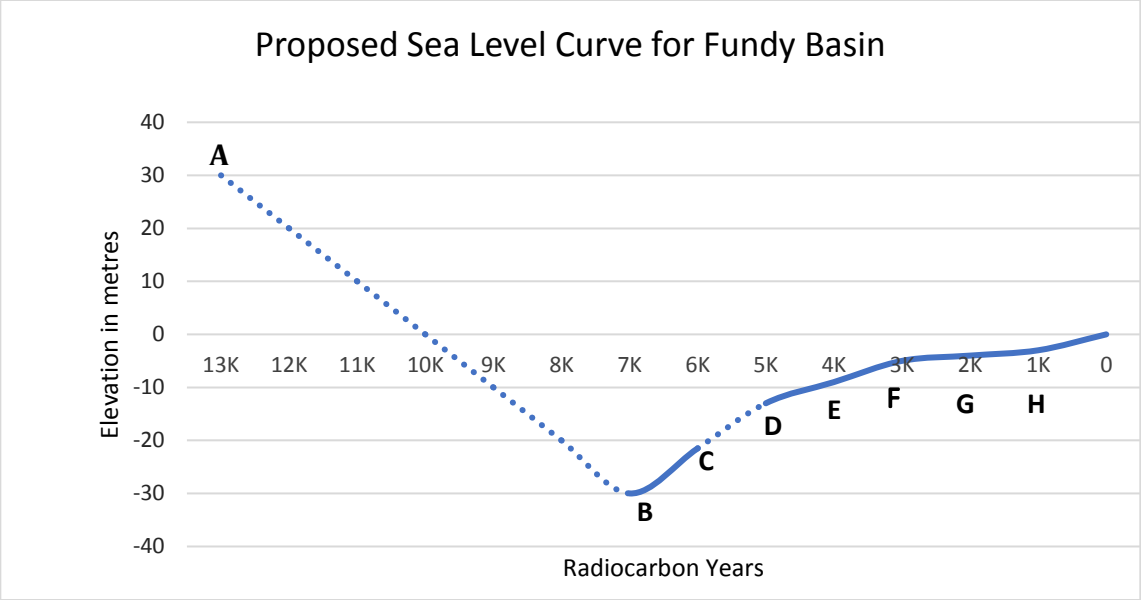


Figure 3. 5: Mean sea-level curve for the Fundy Basin- 13ka to present. Compiled from Scott et al., 1983; Amos and Zaitlin, 1985; Amos et al., 1990; Gehrels et al., 1995; Webster, 2010). Letters refer to sources in Table 2. The dotted line indicates a period where insufficient data is available.

Table 2 Table of sources for Figure 3.5

	Source	^{14}C Years BP	Elevation (m)
A	Amos et al., 1990; Shaw et al., 2002	13 000	30m
B	Scott et al., 1983; Amos & Zaitlin, 1985	7000	-30m
C	Scott et al., 1983	5 000	-13m
D	Scott et al., 1983	4 000	-9m
E	Scott et al., 1983	3 000	-5m

F	Scott et al., 1983	2 000	-4m
G	Gehrels et al., 1995; Webster, 2010	1 000	-3m
H	Gehrels et al., 1995; Webster 2010	Present	3mm/year rising

3.3.2.2 Chignecto Basin

The Chignecto Basin is the north end of the Bay of Fundy. It is a glacially excavated, elongated macrotidal estuary (Amos et al., 1990). The steep cliffs surrounding the estuary reach a height of 57 metres and are being eroded at rates between 400 and 1000 mm per year (Amos & Zaitlin, 1985). These cliffs, composed of Paleozoic fluvio-deltaic sedimentary and volcanic rocks, are "overlain by a thin cover of Wisconsin-Late Wisconsin ablation till and glacio-fluvial sediments" (Amos & Zaitlin, 1985, p. 163). The strata that make up the coastline is a ready source of fine grained sediments within the Chignecto Basin which is in contrast to the Minas Basin, which is dominated by sand-sized sediments, due to the erosion of surrounding Triassic sandstone cliffs (Amos & Long, 1980).

As a result of deglaciation, the sea-level changes in the Chignecto Basin are both isostatic and eustatic (Rampton et al., 1984; Prest, 1976 as cited in Amos & Zaitlin, 1985). The maximum submergence occurred "immediately after local deglaciation, circa 13 500 years BP" (Amos & Zaitlin, 1985, p. 163). Highest mean sea level at the time was 48

metres higher than the present mean sea-level (MSL). MSL dropped 70 metres in the 6 500 years following deglaciation reaching its lowest level around 7 000 ^{14}C yrs BP, then MSL rose at a rate of 1.5 mm per year to reach its present level (Grant, 1970; Amos et al., 1980, as cited in Amos & Zaitlin, 1985). Figure 3.6 is a proposed sea-level curve for the Chignecto Basin region.

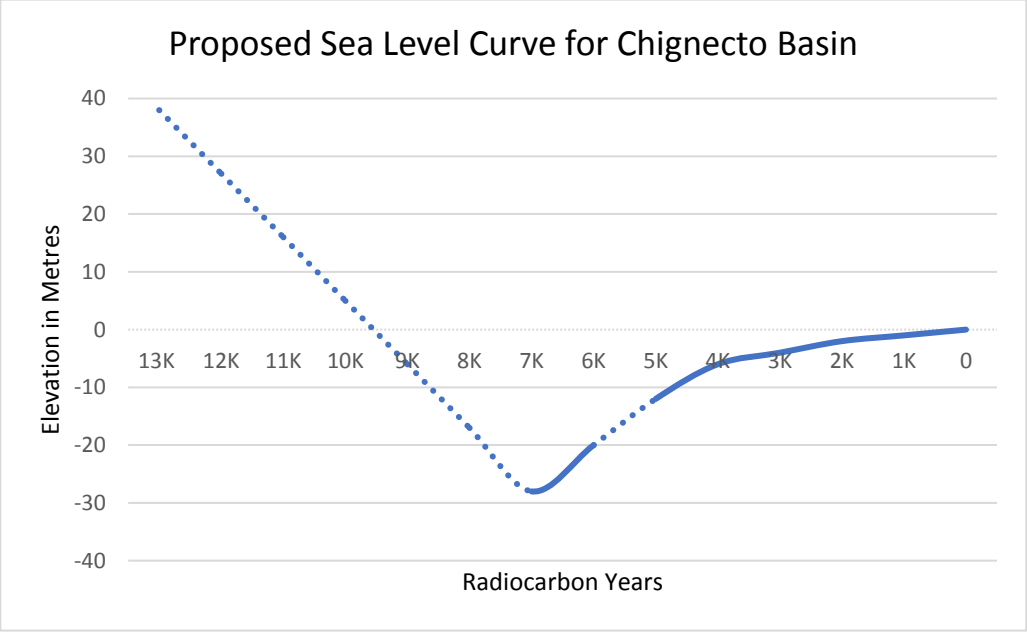


Figure 3. 6: A proposed sea-level curve for the Chignecto Basin region. The dotted line indicates a time period where insufficient data is available. (from Amos & Zaitlin, 1985).

Between 13 500 and 9 000 yrs BP, the volume of water in the Chignecto Basin was much greater than at present. During this time, the MSL dropped by about 40 metres. Mean sea-level continued to decline between 9 000 and 6 000 BP. Amos & Zaitlin, (1985) proposed that a distinct seismostratigraphic discontinuity separates these two periods and is accompanied by a change in lithology from coarse sediment to clay and lenticular bedded

sand. This discontinuity was thought to represent the transition from macrotidal to high energy mesotidal conditions which occurred between 9 000 and 8 000 ^{14}C yrs BP (Amos & Zaitlin, 1985). Based on faunal identification in a core sample, Amos and Zaitlin (1985) proposed that a lowstand occurred at 7 000 ^{14}C yrs BP. The tidal range at that time was interpreted to be "no greater than 25% of that at present and perhaps the smallest to have occurred during post-glacial times" (Scott et al., 1983, as cited in Amos & Zaitlin, 1985, p. 168, citing Scott & Greenberg, 1983). Between 6 000 and 2 500 yrs ^{14}C BP, sea level rose rapidly and was associated with a 100% increase of the tidal range to about 10 metres (Amos & Zaitlin, 1985). This increase in tidal range would have likely impacted human occupants and the movement of 'head of tide' upstream.

Amos and Zaitlin (1985) conclude that due to the considerable amount of sediment flowing into the Chignecto Basin, the resulting tidal sequence is far more complex than apparent in existing models (Amos & Zaitlin, 1985). This suggests that many tidal sequences, "although generally identifiable in the geologic record, may be misinterpreted in terms of their detailed evolution" (Amos & Zaitlin, 1985, p. 168). As a consequence, identifying tidal sequences in order to suggest paleoshorelines is complicated by the complexity of their accurate interpretation.

Several marine terraces date to the late Pleistocene and early Holocene period along the shores of the Chignecto Basin. Paleoindians travelling east eventually arrived in the

Maritimes and likely settled around the Chignecto Basin and possibly dispersed along the shoreline of southwestern Nova Scotia (Deal, 2015a). Archaeologists consider these raised beaches (Figure 3.7) to be high potential areas for Paleoindian sites (Davis, 2014). The highest raised beach in Nova Scotia is 40 m above current mean sea level (Stea et al., 1998) and is located at Squally Point on Cape Chignecto (Figures 3.8 and 3.9).

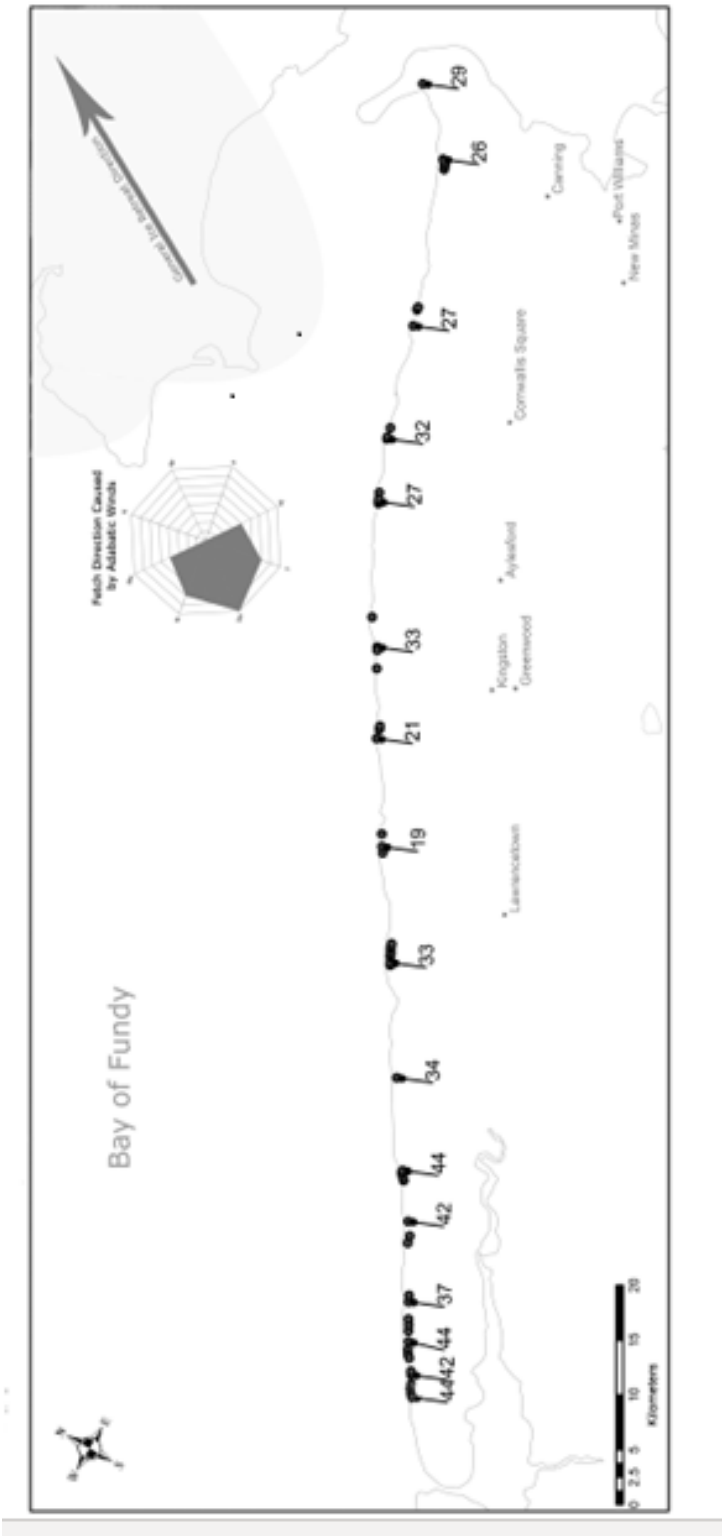


Figure 3. 7: Raised beaches surrounding the southern section of the Bay of Fundy. (Bates et al., 2008).

At Squally Point, the former shoreline reaches to the edge of the woods and is located at 37 metres above mean sea level (Stea et al., 1998). Based on the sea-level curve (Figure 3.6) this would have been a beach at approximately 11 000 ^{14}C yrs BP, the time Paleoindians were known to be in the region. These data infer that Squally Point, has high potential as a location for Paleoindian sites. A comprehensive application of known and dated paleoshoreline features in the study region would aid in the identification of other potential occupation sites.

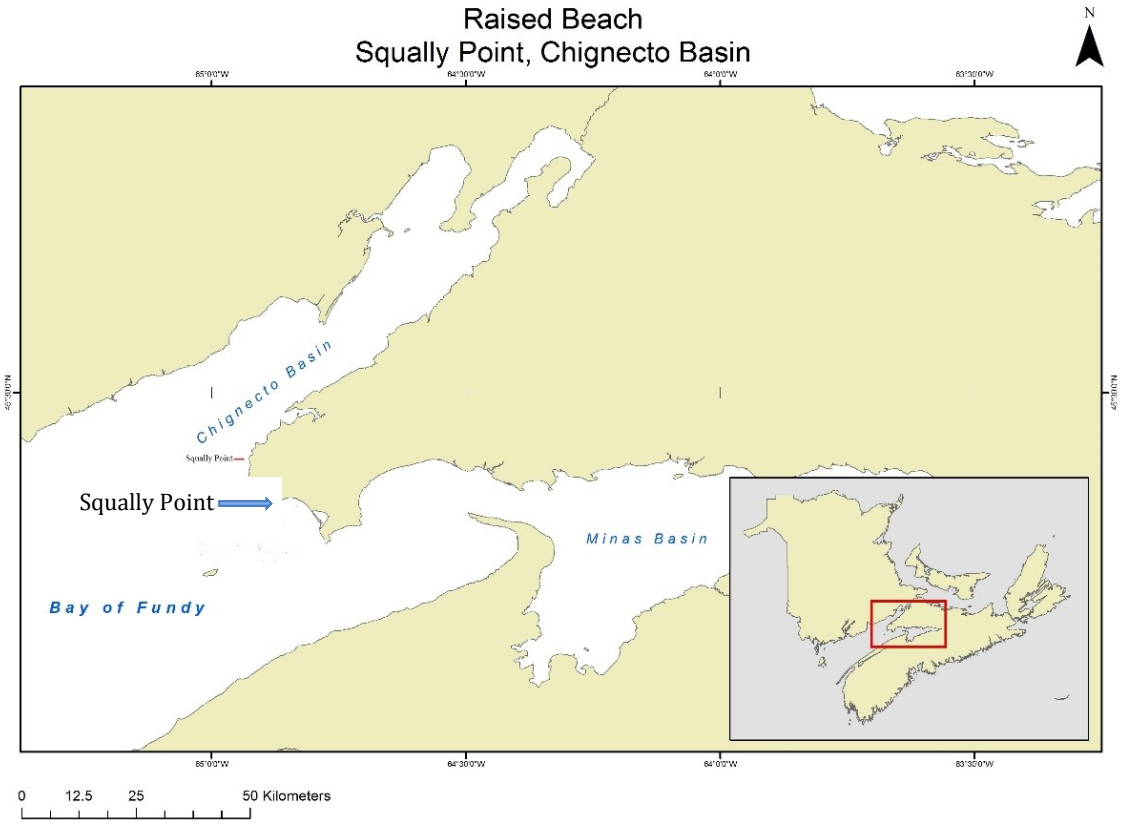


Figure 3. 8: Map of Cape Chignecto indicating general location of Squally Point.

Figure 3. 9: Raised beach (red arrow) at Squally Point, Chignecto Basin, the highest raised beach in Nova Scotia at 37 m above mean sea level (from Stea et al., 1998).

3.3.2.3 Minas Basin

The Minas Basin possibly had a different sea-level history than the Bay of Fundy and Chignecto Basin because a sand barrier may have served as a barrier to marine inundation (Shaw et al., 2010). If this indeed did occur, the resulting regional geography likely had significant implications to the settling and later drowning of potentially occupied landscapes. Because of the delayed effects of sea-level rise, the distance of Debert, for example, from the marine limit would have been greater than it is today. This rapid tidal expansion as hypothesized by Shaw et al. (2010), resulted when a possible barrier beach at the mouth of the Minas Basin, was rapidly breached. This breach in the barrier, if it indeed occurred, might have caused a near instantaneous flooding of the basin. “Water temperature dropped, tidal currents and turbidity increased, and the form of the inner

estuary was changed from lagoonal-mesotidal to macrotidal" (Shaw et al., 2010, p.1079). Oyster shells, now extinct within the Minas Basin, were discovered entombed in the mud flats and radiocarbon dated to approximately 3800 ^{14}C yrs BP (Fowler et al., 2019). They were discovered facing upwards and appeared to have died *in situ* by a rapid increase of mud that suffocated them (Fowler et al., 2019). Several of the species that were found need calm brackish waters to survive which is not a characteristic of the present Bay of Fundy (Bleakney & Davis, 1983; Fowler et al., 2019).

Interestingly, Mi'kmaw oral tradition appears to support the existence for this catastrophic change and will be discussed later in this chapter. Variations of this legend exist, but a dam break leading to flooding of the Minas Basin is central to them all. Hence the legend may be evidence for the destruction of a barrier across Minas Passage at approximately 3 500 yrs BP.

Figure 3.10 is a map proposed by this writer of the Minas Basin at 7 000 ^{14}C yrs BP with a -30 m lowstand in the upper Bay of Fundy. Given this lowstand, the majority of the present-day Minas Basin would have been dry land, except for a water feature (see Figure 3.11) that flowed through its centre (Shaw et al., 2010). If the Paleoindians had moved down to the basin to procure marine resources, most of this land (and evidence of its occupation) would now be under water and/or eroded away and/or buried under redistributed sediment.

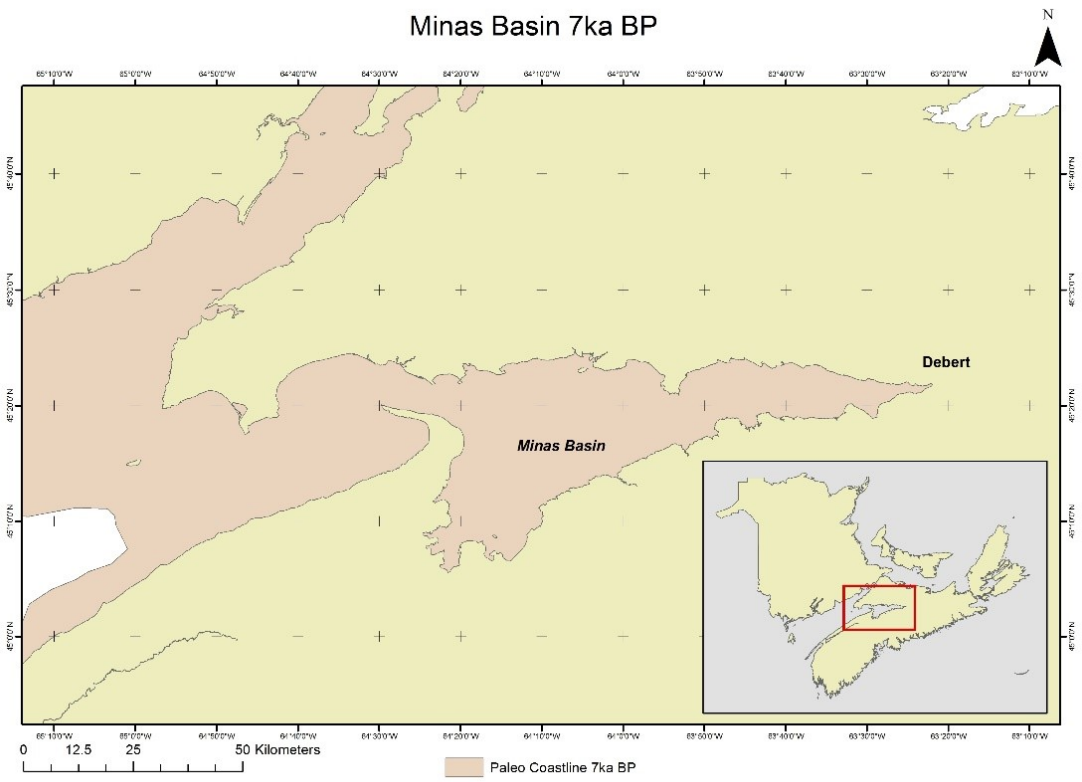


Figure 3. 10: A map proposed by A. Taylor of the Minas Basin at 7 000 ^{14}C yrs BP based on a -30m low-stand in the Bay of Fundy.

Figure 3.11 is a map of the Minas Basin proposed by Shaw et al. (2010) prior to its flooding at ca. 3 500 ^{14}C yrs BP. It depicts a significant barrier and back barrier lagoon that might have existed in the inner Minas Basin at ca. 3 500 yrs.

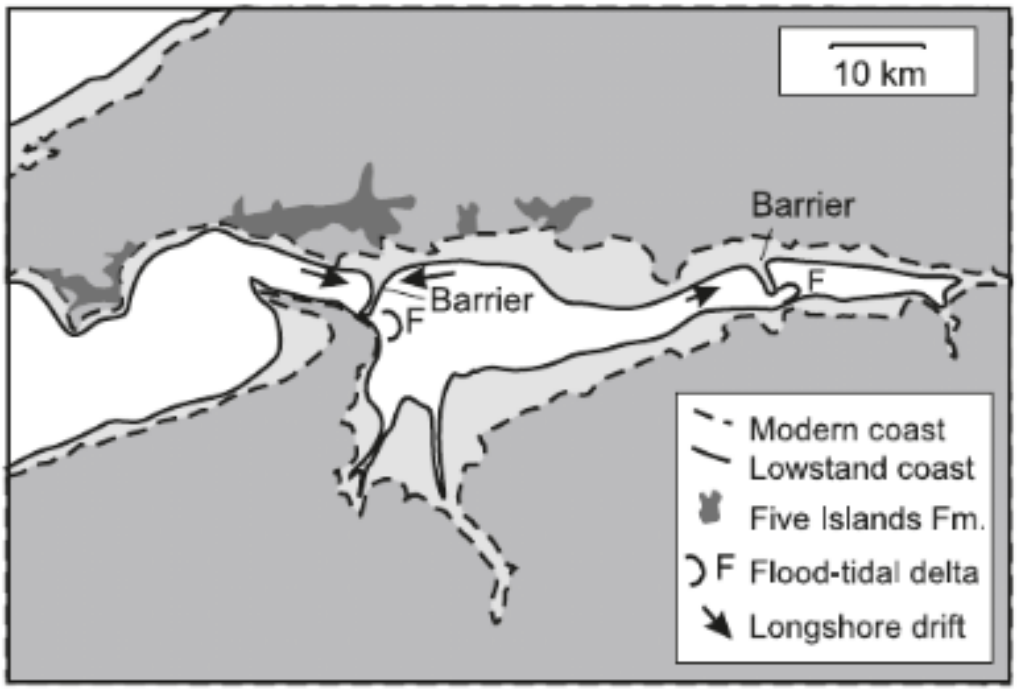


Figure 3. 11: Suggested configuration of Minas Basin during mid Holocene depicting a barrier and significant barrier beach and back barrier lagoon. (Shaw et al., 2010).

Tree stumps in the Minas Basin (Figure 3.12 and 3.13) which can be seen at low tide were radiocarbon dated in 1951 by Sherman Bleakney, to approximately 3 500 ^{14}C yrs BP (Bleakney, 2004). This provides further evidence that much of the Minas Basin was dry land around this time.

Figure 3. 12: S. Bleakney examining tree stumps from about 3500 ^{14}C BP in the Minas Basin in 1951. Courtesy of Nova Scotia Department of Agriculture and Marketing. As cited in Bleakney, 2004, p. 128).

Figure 3. 13: A. Taylor and colleagues examining the same white pine and hemlock stumps which Bleakney had dated 50 years earlier, 2010.

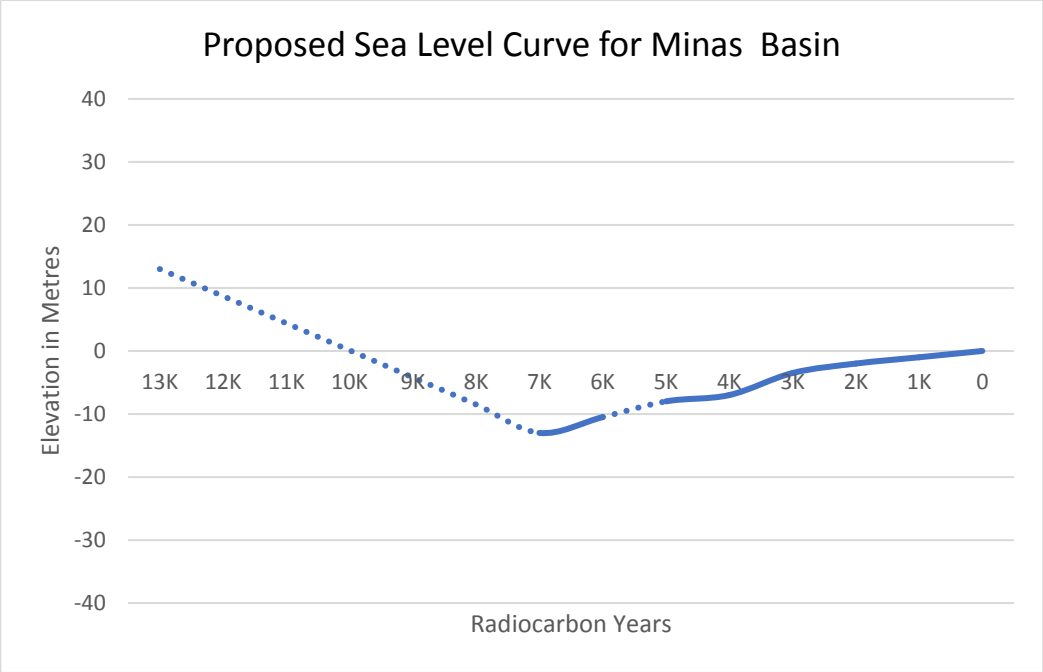


Figure 3. 14 : Proposed sea-level curve for the Minas Basin (Dalrymple & Zaitlin, 1994, modified by A. Taylor, 2018).

Figure 3.14 is a proposed sea level curve for the Minas Basin from 13 000 ^{14}C yrs BP to present. There is a lowstand at 7 000 ^{14}C yrs BP. A relatively rapid rise between 4 000 and 3 000 ^{14}C yrs BP, then a gradual rise from 2 500 ^{14}C yrs BP to present. This data supports the theory of a barrier being breached at ca. 3 500 ^{14}C yrs BP.

Figure 3.15 is a combined sea level curve for the Fundy, Chignecto and Minas Basins from 13 000 ^{14}C yrs BP to the present. Each basin experienced a similar rise and fall of sea level; however, variances can be seen when viewing the graphs together. The Minas

Basin, as mentioned previously, experienced a unique and dramatic flooding event approximately 3500 ^{14}C yrs BP.

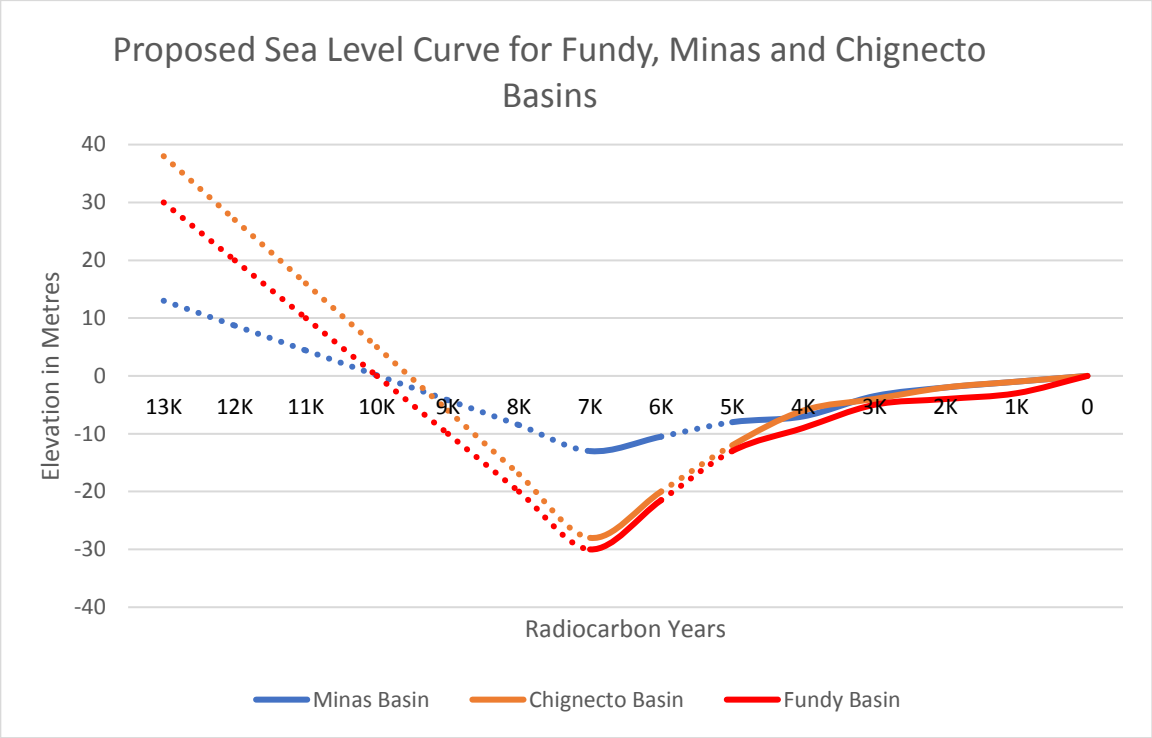


Figure 3. 15: Proposed sea level curve for Minas, Chignecto and Fundy Basins adapted from Scott et al., 1983; Amos & Zaitlin,1985; Amos et al., 1991; Dalrymple & Zaitlin, 1994; Gehrels et al., 1995; Webster, 2010.

3.4 Implications for Early Human Occupation

3.4.1 Saqiwe'k L'nuk-the Ancient Ones

Abrupt climate and sea-level change played a key role in shaping Paleoindian settlement patterns in Nova Scotia and northeastern North America. Did this changing environment cause an abandonment of the region, as some suggest, or did these early colonizers,

coming from a culture of adaptation, stay in the region, creating a lifestyle appropriate for the environment?

Humans arrived in Nova Scotia just after the glaciers retreated and settled in and around the area which is now Debert. The evidence of their occupation is found in lithics and possible hearths. Unfortunately, due to lack of evidence very little is known about this group of early migrants. Where these people came from, what they did, and why they disappeared from the archaeological record, are questions that may be elucidated through the lens of relative sea level change during the period of early human occupation. The remainder of this chapter will address these questions.

3.4.2 The Siberian Migration

The debate regarding the peopling of the Americas remains unresolved. There are several different models, or theories as to how and when humans arrived on the North American continent. The Clovis-first, Multiwave, Pacific Coastal and the Separate Colonizing Events models (Fladmark, 1979; Greenberg et al., 1986) are four of the more recent ideas offered and deserve more attention than this thesis can provide. The Clovis-first model, the most widely accepted, envisions that a band of roughly 150 Siberian big game hunters walked across the Bering Land Bridge while stalking prey. This occurred near the end of the last glacial period when lower sea-levels exposed the Bering Land Platform connecting Asia and North America. These would be the first humans to set foot in North

America at approximately 11 500 ^{14}C yrs BP (Bonnichsen, 2004). These hunters made their way through unglaciated parts of Alaska and the Yukon, eventually using an ice-free corridor running between the Cordilleran and Laurentide Ice sheets to arrive at what is now the Great Plains. One can only imagine what these hunters would have thought when they first encountered these huge expanses teeming with large, unwary game animals (Bonnichsen, 2004). This theory suggests that these hunters would have developed new tools and weapons to take advantage of this new bounty. With a reliable food source, this small band of hunters grew quickly. Within 1 000 years, small groups branched off to colonize the rest of the continent (Martin, 1984).

The journey to the Maritimes (Figure 3.16) probably skirted the eastern Ice Cap because the caribou herds they were following preferred the cool air which had fewer swarming insects (Davis, 2005). Figure 3.16 also shows the location of Clovis point finds which are regarded as the earliest points in North America.

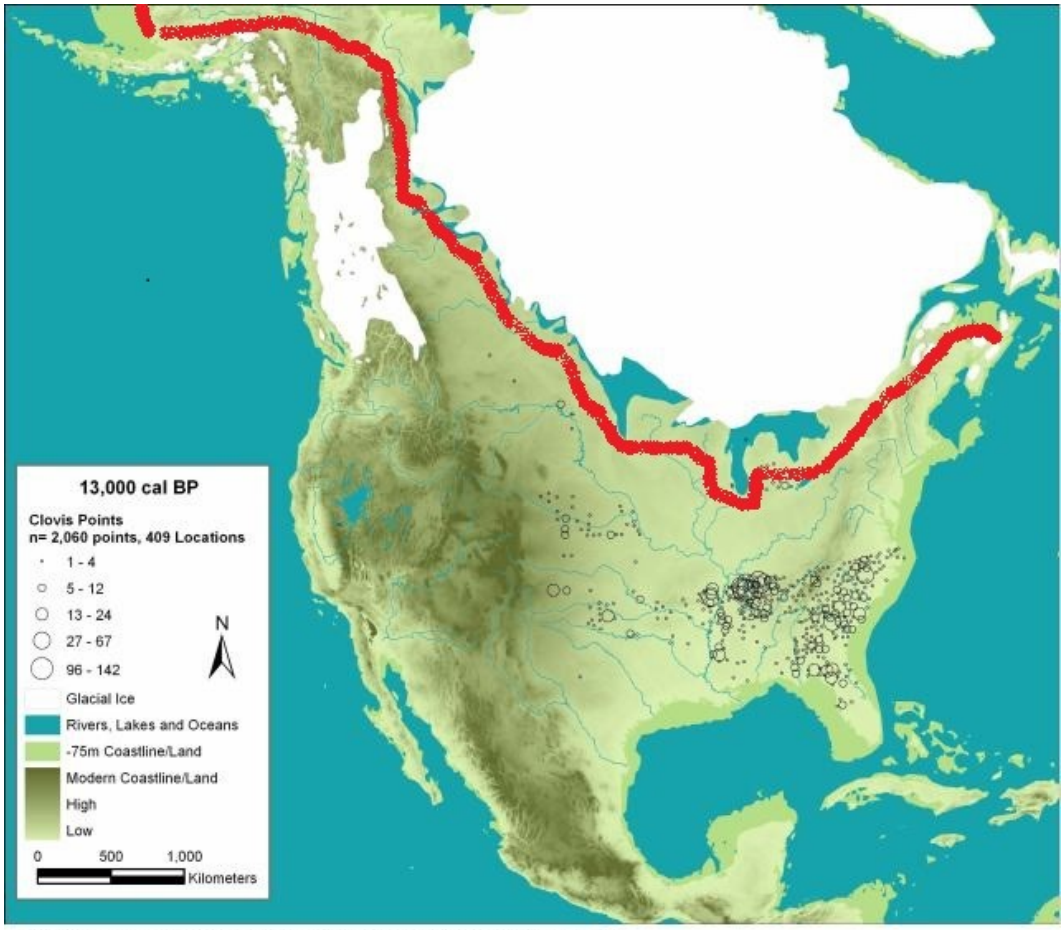


Figure 3. 16: North America at 13 000 cal yrs BP. It depicts an ice-free corridor running from Alaska through central Canada. (Anderson et al., 2005). Red line depicts possible route to Maritimes (added by A. Taylor, 2019).

In the late 1990s, biologists investigating large mounds of caribou dung in the Yukon exposed by melting ice patches, recovered fragments of several wooden dart shafts. These shafts were likely from an atlatl, a weapon that pre-dates the bow and arrow (Farnell et al., 2004). Archaeologist Gregory Hare used radiometric analysis on wood samples from these shafts which gave an approximate date of 4 600 ^{14}C yrs BP (5373 cal

yrs BP) (Hare et al., 2012). These finds led to the creation of what Hare has termed “Ice Patch Archaeology”.

As the ice patches in the southern Yukon melt, archaeologists are encountering a large collection of Holocene faunal remains including human tissue and bone. The faunal remains are principally caribou and sheep, several dozen mummified mammals and birds as well as a large amount of preserved dung from caribou and other herbivores (Hare et al., 2012). Numerous wooden shafts, many containing feathers and sinew and stone points were also recovered. These artifacts have been dated from ca 900 yrs BP to almost 9 000 yrs BP (Hare et al., 2012).

Based on the amount of dung, biologists believe that caribou congregated on and near these ice patches for thousands of years for reasons such as thermal regulation and to avoid insect attacks (Hare et al., 2012). Hunters hiked to these ice patches to find prey standing or laying on these ice patches. They would have crept as closely as possible to the unsuspecting animals and launched their darts. Weapons that missed or broke provide archaeologists with a record of early human activity in the far north.

This confirmed use of ice patches by caribou herds and direct evidence of prehistoric hunting of these herds near these ice caps, supports the hypothesis that hunters following caribou herds, which were travelling along the edges of the retreating glaciers, ended

their journeys in the Maritime region. Keenlyside proposed that these Paleoindians entered the Maritime region along the Atlantic coast then traveled the river systems to the interior (Keenlyside, 1991).

The exact route by which people reached Nova Scotia is unknown. However, the area from which the ancestors of these early colonists originated has been confidently established. In *The Search for a Clovis Progenitor in Sub-Arctic Siberia,* Goebel contends that there exists enough genetic evidence to demonstrate that the origins of all Native American populations are in northeast Asia. A firmly established and growing Upper Paleolithic archaeological record for Siberia and greater northeast Asia supports this theory (Goebel, 2004).

Upper Paleolithic hunter-gatherers who settled and occupied the Sub-Arctic and Arctic regions of Siberia provide an example of a culture that prospered in a harsh climate. Initial human occupation of Siberia, in the Lake Baikal region, has been radiocarbon dated to approximately 43 000 to 38 000 ^{14}C yrs BP. Archaeological evidence indicates that this area was continuously settled and contained a stable and possibly expanding population during cold periods (Fiedel, 2007). From 36 000 ^{14}C yrs BP to 12 000 ^{14}C yrs BP, the climate in this part of the world fluctuated constantly and inhabitants endured long periods of extremely cold temperatures. Expansion and contraction of the population did not coincide with these extreme temperatures (Fiedel, 2007). For instance, at the Last

Glacial Maxim (LGM), when the climate was very cold and dry, the population remained comparatively stable. Fiedel (2007) believes that any claim that a cold, fluctuating climate posed any significant challenge to humans in Siberia in the Pleistocene and a supposed (LGM) 'hiatus' in the population dynamics are not supported by the archaeological record (Fiedel, 2007). Humans did not abandon settlements because of cold temperatures and changing environment. If there was food, they stayed.

The flexibility found in Siberia suggests that some cultures may adapt to short term changes in climate. Since these Maritime colonists came from a culture of adaptation, they would have been capable of meeting the challenges caused by a 3-4° C temperature drop over a roughly 500-year interval. Fiedel concludes:

> We must consider the possible complexities of adaptive responses of both ecosystems and human socio-cultural systems to climatic changes. We should not simply assume that humans responded directly to colder temperatures as a negative stress factor by means of population reduction, contraction of settlement area, or outright abandonment of the entire region (Fiedel 2007, p. 74).

3.4.3 Debert

The Debert site is situated on a 1940s military base, approximately 5 km from the town of Debert in central Nova Scotia. It was discovered in 1948 by E.S. Eaton and his wife while gathering blueberries. This find was a result of sheer luck (as seems to be the case for

most Paleoindian finds in the northeast); not only luck in encountering these surface-finds but luck also that Mr. Eaton had both an interest in berry picking and archaeology. Ongoing bulldozing in the area, combined with wind erosion enabled the Eatons to collect a small quantity of artifacts (and blueberries) over several years. Suspecting that the number of finds might be of importance, the Eatons contacted the National Museum of Canada (MacDonald, 1968). An archaeologist came to Debert and examined the artifacts and recorded the location of the site. The quantity and nature of the artifacts indicated that the site was worthy of further examination. In 1962, plans for full-scale excavations were drawn up and were carried out in 1963 and 1964 (MacDonald, 1968). The archaeological work indicated that there had been a thriving Paleoindian community at the site.

The Paleoindians living in Debert settled on a gently sloping plain stretching along the north shore of the Minas Basin and bounded to the north by the Cobequid Mountains. The plain extends approximately 50 km east to west. There would have been numerous rivers draining from the highlands. MacDonald (1968) proposes that Debert was chosen because it provided the perfect location for intercepting herds of caribou moving between the uplands and floodplains. Also, it was close to remnant icecaps in the Cobequid Mountains and therefore allowed caribou to settle around bug-free ice margins.

Prior to the flooding of the Minas Basin, the area suitable for human occupation around the Debert site would have been larger than it is now and likely would have been occupied during the Paleoindian period and later. In this case, the landscape they once occupied is now under Cobequid Bay.

MacDonald (1968) set the timing of the occupation of the area which is now Debert, at 10 600 ^{14}C yrs BP, based on carbon samples he had collected, but this age has since come under question. Bonnichsen et al. (1993) suggest that the region at 10 600 ^{14}C yrs BP would have been "vegetated by tundra and therefore one would not expect to find much charcoal" (Bonnichsen et al., 1993, p. 17). Instead, it has been suggested that Debert should be dated to a similar period to that of the Vail site in northern Maine at 10 300 ± 80 to 11 120 ± 180 ^{14}C yrs BP. The Vail site's lithic assemblages — type, proportion of tools and stylistic similarities in projectile points — resemble those found in Debert (Bonnichsen et al., 1993). This is significant because should Debert have been settled at the earlier date of 11 120 ± 180 ^{14}C yrs BP, as Bonnichsen et al. (1993) suggest, it would mean that the Paleoindians arrived and settled the area well in advance of the Younger Dryas episode (10 950 ^{14}C yrs to 10 150 ^{14}C yrs BP) and not in the middle of it.

Because of the acidic nature of the soil in Nova Scotia, very little organic material culture is available to be analyzed. This means stone tools are the main source from which to make archaeological interpretations. The collection of lithic tools found at Debert and the nearby Belmont site is a broad range of formal tools which represents a full complement of domestic, manufacturing, resource procurement and processing activities (Rosenmeier

et al., 2012). The tools found were used for the hunting and processing of large game animals such as caribou. The tool kit included a high percentage of side and end scrapers. The number of fluted points was noticeably fewer than the number of scrapers (MacDonald, 1968). MacDonald believes that this assemblage indicates that these early migrants lived in large communal residential groups during a relatively brief but intensive occupation (MacDonald, 1968). This makes sense given the environmental conditions of the region at the time. In 10 600 ^{14}C yrs BP (using the still accepted date), the Debert region was a tundra landscape, ideal for caribou and other larger terrestrial animals. However, after the Younger Dryas, the area warmed and became forested and these traditional prey animals would have left in search of grazing lands. This left the Paleoindians to either follow them out of the region or stay and adapt to a marine resource economy (Davis, 1994). Missing from the Debert area (and all other Paleoindian sites) are ground and pecked wood-working or plant-processing tools. This strongly suggests that these groups subsisted on a largely meat-based diet.

Lithic sourcing is critical to understanding Paleoindian settlement patterns in the northeast. There appears to be a correlation between settlement sites and high quality raw lithics sources (Gardner et al., 1989). Until more sites have been uncovered and studied, there will remain a debate amongst researchers on this statement, however. Dellers and Ellis (1988) contend that Paleoindians covered large areas, possibly as far as 400 km in diameter, in the search of high quality lithics. This idea is contentious, however, because it precludes the idea that trade for raw lithic materials amongst the Paleoindians was

occurring (Carr & Advosio, 2012). On the other hand, some argue that the evidence that Paleoindians were dependent on high quality raw lithics and traveled long distances to get them is tentative at best. They believe that a lithic source within 10 km can usually be found (Moeller, 2002, as cited in Carr & Advosio, 2012). Although not completely endorsing Moeller's premise of the "10 km quarry", Adovasio and Carr do believe that Paleoindians in the northeast probably used a majority of tools quarried from local sites (2012). However, they cite evidence from other sites, particularly from the Early Paleoindian Period, where 80% of the assemblage apparently originated from a distance of over 200 kilometres. One of the most extreme examples of this type of movement is the Early Paleoindian Shoop site where lithics have been identified as originating from quarries 350 km away (Carr et al., 2010).

Again, according to Carr and Advosio, because of the lack of high-quality lithic sourcing studies, there are far too many missing pieces to confidently state from where and how lithics were procured during the Paleoindian occupancy of the Northeast. What the limited evidence does suggest is that in the northeast region:

> lithics are moving over 200 km during the Early Paleoindian phase and very commonly moving 100 km during the Middle Paleoindian, Parkhill and Michaud-Neponset phases. These patterns are probably a product of large territories (seasonal rounds), long-distance movements and communication in the form of trade between groups (Carr & Adovasio, 2012, p. 290).

All that can be said is that some groups traveled more than others, some groups traded, and some made do with local sources. The collection of tools at Debert and Belmont, were made from raw materials from local sources. Hammerstones and anvils were collected in and around the site while better quality materials were acquired elsewhere. The most common raw material was chalcedony, which probably originated along the north shore of the Minas Basin (Deal et al., 2006).

3.4.4 Younger Dryas

The early settlers in the Debert area would have arrived in an area recently occupied by the retreating Laurentide Ice Sheet (Figure 3.17). This hunter/gatherer group would have encountered a wide variety of plants and animals (Carr & Adovasio, 2012).

Figure 3. 17: Map of Maritime region 11 000 yrs BP. Shaw et al., 2002.

During an earlier warming episode, referred to as the Allerød episode, which lasted from 11 400 to 10 900 ^{14}C yrs BP, lakes and swamps would have been plentiful though somewhat smaller. This warming trend would have caused a migration of plants and animals, followed by people into the region. This episode allowed for the movement of deciduous trees into the formerly glaciated region and would have provided a hospitable environment for elk and moose (Carr & Adovasio, 2012). This warming period which favoured the colonization of the region, abruptly ended. While the Allerød episode created a region hospitable for habitation, it also caused a large amount of melt water. This huge amount of melt water flooded from Lake Agassiz into the north Atlantic,

disrupting the thermohaline ocean circulation. This influx of fresh water caused the temperature in the Maritime region to drop 3-4° C, thereby reversing the effect of the Allerød episode. This plunged the region into a mini-glacial event that lasted from 10 950 to 10 150 ^{14}C yrs BP or 12 900 to 11 600 cal yrs. BP (Bradley, 2001; Teller et al., 2002; McWeeney, 2007). This cooling period is known as the Younger Dryas period or Younger Dryas stadial (Deal, 2015a).

Figure 3.18 depicts the area covered by the Younger Dryas glacial re-advance at 10 500 ^{14}C yrs BP (Keenlyside, 2005; Stea & Mott, 2005). Keenlyside added known Paleoindian sites in the Maritime region to the map. They include the locations now known as the Medford site (M), Blomidon site (B), Debert site (D), Amherst Shore site (A), North Tryon site (T), New Horton Creek site (NH), and Quaco Head site (Q). This shows the relation of the ice fields to Paleoindian hunting campsites (Keenlyside, 2005).

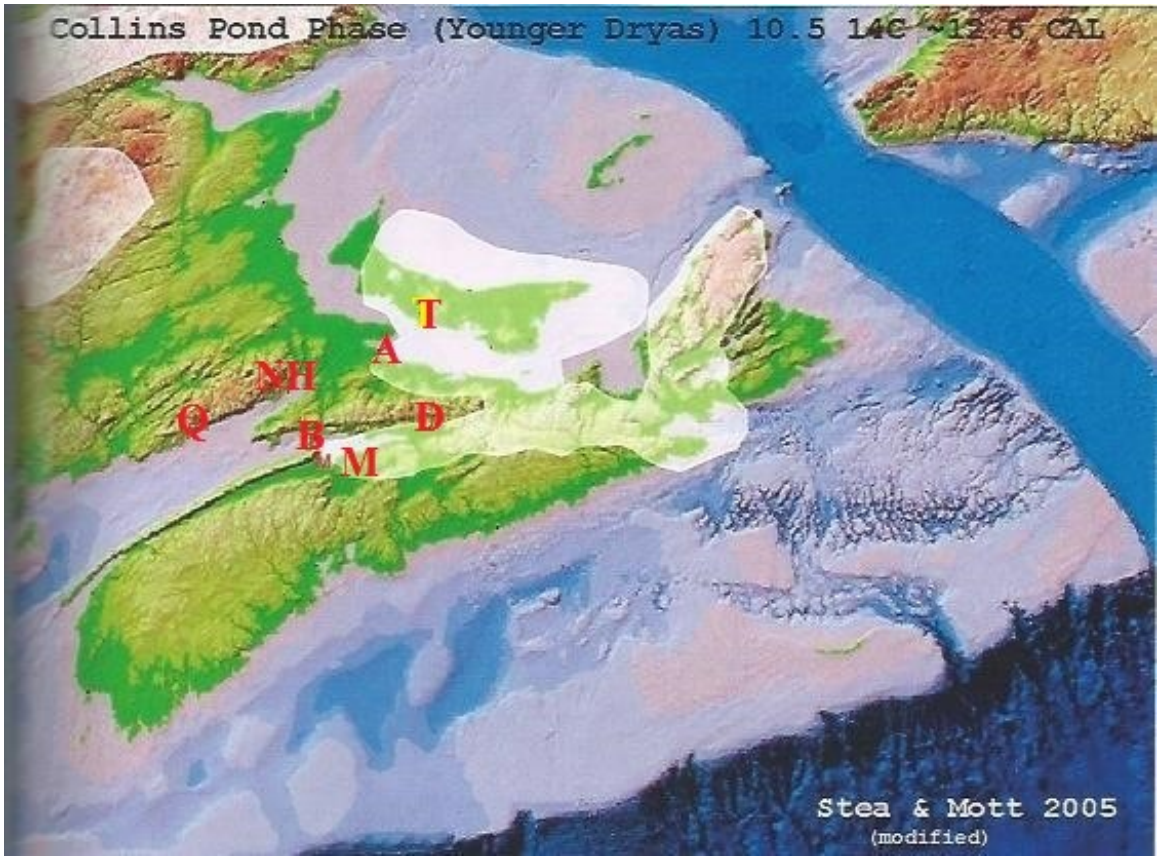


Figure 3. 18: Younger Dryas Episode in Nova Scotia with Paleoindian sites added. Stea & Mott, 2005. Modified by Keenleyside, 2005.

Far from needing to abandon the region, as some have suggested in their support of the "Great Hiatus" theory, the Younger Dryas episode may have provided an opportunity for adaptation. In fact, some researchers believe that the mixed vegetation created by the Younger Dryas:

> created a diversity of high biomass ecotones which offered a variety of potential food sources for humans…and although the Younger Dryas environment was cold, the Northeast may have contained more food

> resources during this time than during the late Pre-Boreal period of the early Holocene (Newby et al., 2005, p.17).

Inland swamps and glacial lakes seem to have provided the greatest variety of food sources. Because of their higher elevations, the upland areas took longer to establish populations of deciduous trees thereby leaving areas open longer for grazing animals (Delcourt & Delcourt, 1987; Newby et al., 2005). These statements are general in nature and are not specific to the area now known as Debert. However, they suggest that the Cobequid Mountains, for example, might be an area of interest for future Paleoindian settlement pattern research.

As abruptly as the Younger Dryas came, it was replaced by the warmer and dryer Pre-Boreal episode (10 150 to 9 100 ^{14}C yrs BP) and some suggest that this episode saw a rapid change in vegetation unprecedented since the glaciers retreated (Jacobson et al., 1987). This warming period changed the landscape from an open patchwork of tundra, open glades, and boreal forests to a Holocene pattern of predominantly closed temperate deciduous forests. As these deciduous forests began to dominate the region, grazing animals would have left in pursuit of open tundra. The Boreal episode followed and would last for approximately 4 000 years leaving much of the region void of large game animals. Flood plains became more favourable for human occupation as they provided a greater variety of seasonally available food resources (Carr & Adovasio, 2012). This is significant to the Debert region because the Paleoindians would have had access to

reliable food sources on the flood plains. This would have likely placed their settlements within the Minas Basin. According to Shaw et al. (2010) and Mi'kmaw oral tradition, this area was not submerged until 3 500 ^{14}C yrs BP — or roughly the time allotted for the "Great Hiatus" when the proposed barrier across the Minas Basin was breached by rising sea level.

The occupation of the flood plains might also provide researchers with study areas other than the Minas Basin and Cobequid Mountains. Shaw's map of the Maritime region at 10 000 yrs BP (Figure 3.19) depicts the Nova Scotian mainland connected to Prince Edward Island (PEI). Based on the sea level curves for the Fundy, Chignecto and Minas Basins (Figure 3.15), the Northumberland Strait experienced sea level change much differently. In the 1960's, a private citizen and later a combined crew from the National Museum of Man (now the Canadian Museum of History) and the University of PEI excavated Paleoindian artifacts at the Jones Site in northeastern PEI. It is believed that the Jones Site was at one time a major occupation area but has now mostly eroded away (Bonnichsen et al., 1993). A fluted point collected by a private citizen while gardening on the south shore and an ulu caught in a scallop fisherman's dragger off the north coast provide further evidence that an early group traveled to the region and most likely settled it (Keenlyside, 1984). The area between Nova Scotia and PEI, which is now submerged but was once a flood plain, may hide evidence of its earlier occupiers. There may still be Paleoindian sites along the shores of the Northumberland Strait not yet disturbed by coastal erosion.

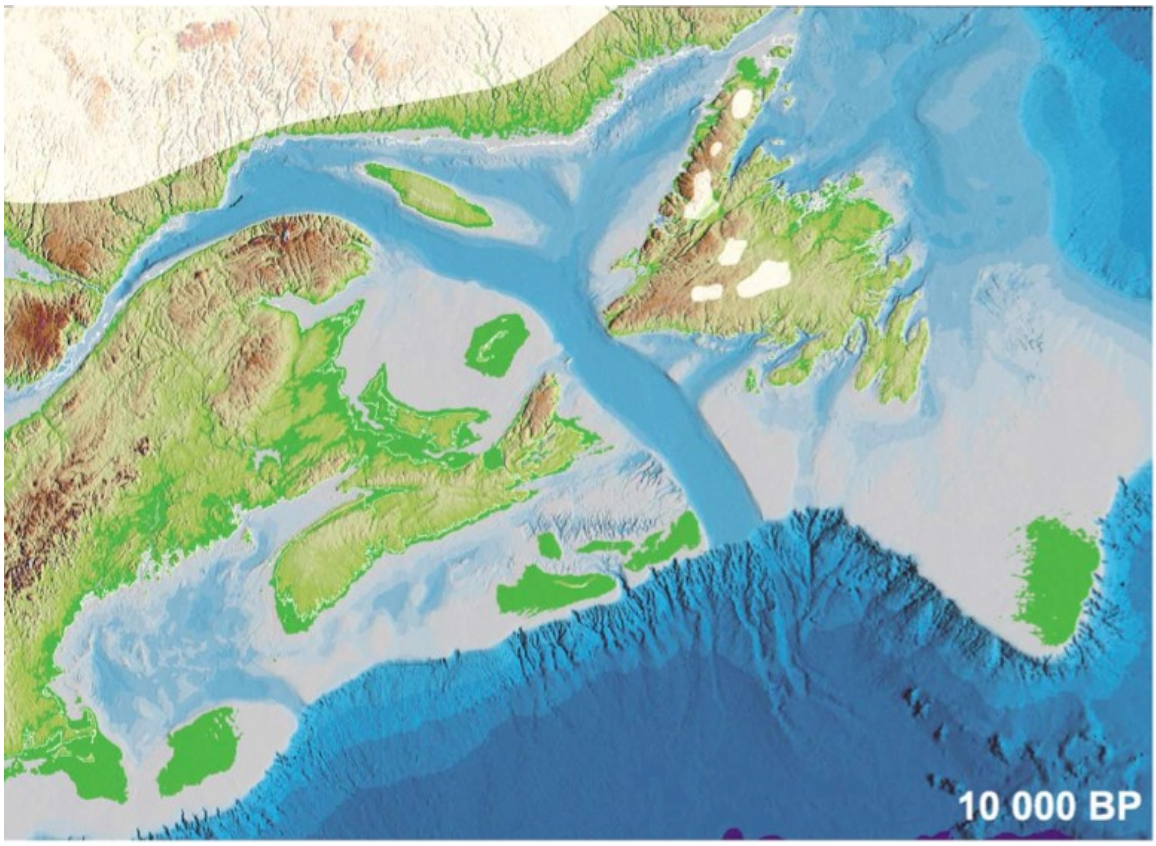


Figure 3. 19: Maritime region at 10 000 BP. Shaw et al. 2002.

Cultural changes may have been concurrent with environmental changes. Lothrop et al. (2011) believe that the end of the Younger Dryas caused a change in the Paleoindian's fluting technology and new regional site distribution. The transition between Paleoindian and its replacement, the Archaic Tradition, has confounded researchers. Bradley et al. (2008), however, believe that an examination of fluted point technology in the northeast region may provide some clarity. Figure 3.20 is a chart of fluted point styles found at confirmed Paleoindian sites in the northeast. The points are listed chronologically (see Table 3).

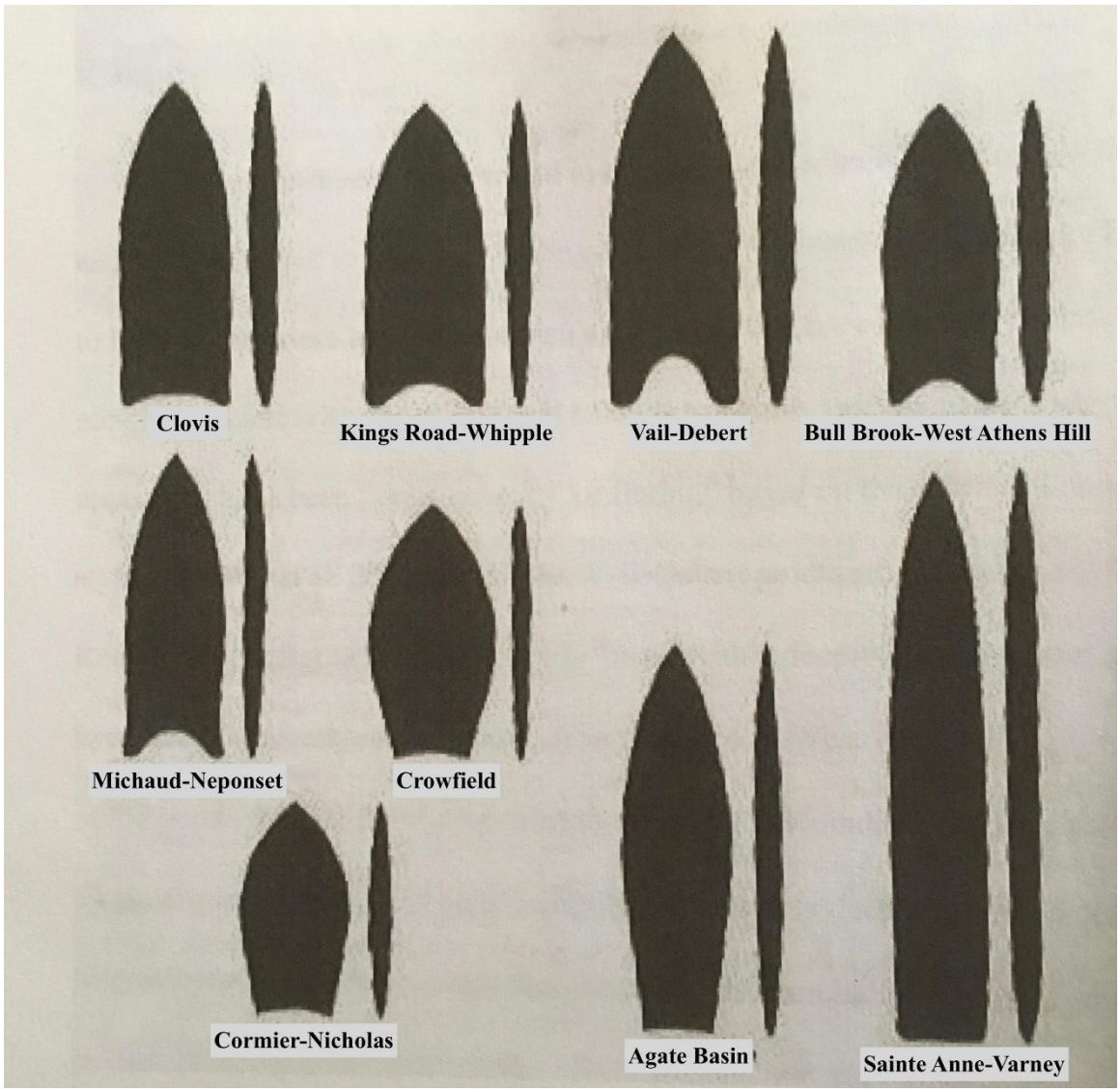


Figure 3. 20: Top row, left to right: Clovis, Kings Road-Whipple, Vail-Debert, Bull Brook –West Athens Hill, Michaud-Neponset, Crowfield, Cormier-Nicholas, Agate Basin and Sainte Anne-Varney. Bradley et al., 2008.

Table 3: Paleoindian points chronology in the northeast. (Bradley et al., 2008)

Chronology	New England- Maritimes Region
Early Paleoindian	
~12,900 to 12,400 cal yr BP	Kings Road-Whipple
(~11,000 to 10,400 BP)	Vail-Debert
	Bull Brook-West Athens Hill
Middle Paleoindian	
~12,200 to 11,600 cal yr BP	Michaud-Neponset
(~10,300 to 10,100 BP)	Crowfield-related
	Cormier-Nicholas
Late Paleoindian	
~11,600 to 10,800 cal yr BP	Agate Basin-related
(~10,100 to 9,500 BP)	Ste. Anne-Varney

Bradley has divided the fluted points into eight Paleoindian biface types. He has categorized them by their main attributes, which include overall dimensions, degree of divergence or convergence of the sides, basal treatment and fluting (Bradley et al., 2008).

The earliest point style found in the northeast is the Kings Road-Whipple point and has been dated to just prior to the onset of the Younger Dryas period (Table 3). These medium to large sized points have sides which are divergent, a base which is a moderately deep arc-shaped concavity and a flute that extends to almost half the point's length. A great concern for fluting is shown on the points based on the emphasis on aesthetics and style (Bradley et al., 2008). The Vail-Debert points are similar to the Kings Road-Whipple forms but are generally larger with a deeply indented base and seem to

have been frequently re-sharpened. The Bull Brook-West Athens Hill points are the last of the points thought to be connected to the Early Paleoindian period in the northeast. These display "slightly divergent sides and moderately deep arc-shaped concavity, frequently with basal ears and a flute that extends from halfway to the full length of the points" (Bradley et al., 2008, p. 137).

The Michaud-Neponset forms are defined as Middle Paleoindian and although similar in length, they are much more gracile than earlier Paleoindian forms. Their sides are divergent, with prominent basal ears and some have a fishtail appearance. The flute extends more than halfway and often the entire length of the point. These points are considered the most technically sophisticated fluted points in the northeast region (Bradley et al., 2008). The second Middle Paleoindian point type Bradley has classified is the Crowfield point. These broad, medium sized points are relatively common in southwestern Ontario and have multiple flutes that usually extend the length of the point. The final point Bradley has listed which was used during the Middle Paleoindian period is referred to as the Cormier-Nicholas point. These small to medium sized points often have irregular shapes, displaying divergent sides, bases that are either flat or with a shallow crescent-shaped concavity, and fluting that is highly variable, with both faces, one face or neither face fluted (Carr & Adovasio, 2012). It is believed that the Cormier-Nicholas points represent the end of the fluted point tradition and all its associated technological traits. It is believed that it is a response to the change from an open environment to a closed forest at the end of the Younger Dryas (Newby et al., 2005).

The last two-point types in Bradley's sequence are the Agate Basin points and the Sainte Anne–Varney points and are believed to have originated during the Late Paleoindian period. They are often referred to as Plano points. These points are large elongated lanceolate points with a lenticulated shape which are often collaterally flaked and whose sides are strongly divergent. Their bases range from slightly concave to convex and they are basally thinned but not fluted (Bradley et al., 2008; Carr & Adovasio, 2012). Bradley believes that these points were used in hunting large game in the northeast and are made from locally sourced lithics. The second Late Paleoindian point is the Saint Anne-Varney point and is characterized by "long thin points with a lanceolate shape and either a slightly contracting base or parallel sides with a square base. These points display precise collateral or parallel flaking and are not fluted" (Carr & Adovasio, 2012, p. 285). Like the Agate Basin points these also would have been used for large game hunting. Two Plano points, which were part of a private collection, were identified in the southwestern region of Nova Scotia near the town of Yarmouth. The exact location of the find is unknown so very little can be said other than Paleoindians seem to have occupied most of the province at some time (Davis, 2014).

The points likely changed because the prey changed. Another possibility is that the tool-makers became more conscious of the shape and aesthetics or a combination of both. The mystery in Nova Scotia is why so few of these early point types have been recovered. The identification and interpretation of the chronology of point types is useful in understanding how the inhabitants responded to the changing environment. Most research

in this field is devoted to interpreting fluted points and other lithic technologies. This, however, provides only a narrow glimpse into the culture. For a more complete interpretation of these early cultures, researchers need to reach beyond empirical data. One alternative may be to look at present day hunter-gatherer societies which might offer insights into how past groups with similar lifeways may have lived.

3.5 Examples of Applications to Archaeology

3.5.1 Head-of-tide - The Annapolis River

In the fall of 2016, a Centre of Geographical Sciences (COGS) researcher and I conducted an elevation and river depth survey of the Annapolis River from where the head-of-tide was located before the tidal power station was installed in 1972. We started the survey in the town of Paradise and paddled downstream for 5.8 km to the town of Bridgetown. A canoe with a single beam echo finder was used to conduct the survey and two maps were generated - one depicting land elevations (Figure 3.21) and the other depicting the depth of the river along the route (Figure 3.22).

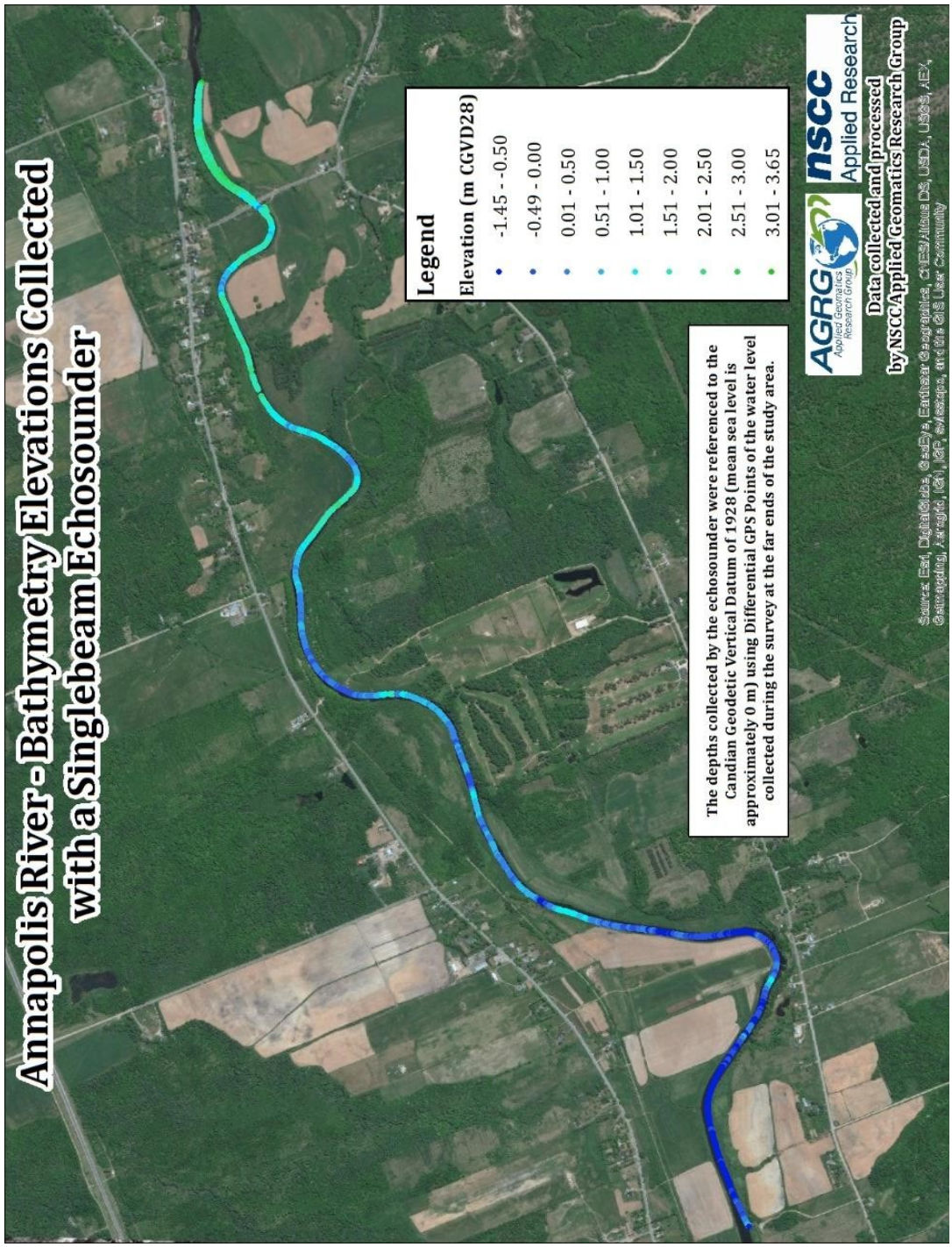


Figure 3. 21: Annapolis River-Bathymetry Elevations collected with a single beam echosounder. COGS and A. Taylor, 2016. The depths collected by the echo sounder were referenced to the Canadian Geodetic Vertical Datum of 1928 (mean sea level is approximately 0 metres) using differential GPS points of the water level collected during the survey at the far ends of the study area.

The land at head-of tide in Paradise is 5.1 m above the elevation at the end of survey location making the slope 0.88 m/km. Based on relative sea level rise of 3 mm per year or 3 m per thousand years for the last 2000 years (Webster, 2010), the approximate location of head-of-tide through time can be determined.

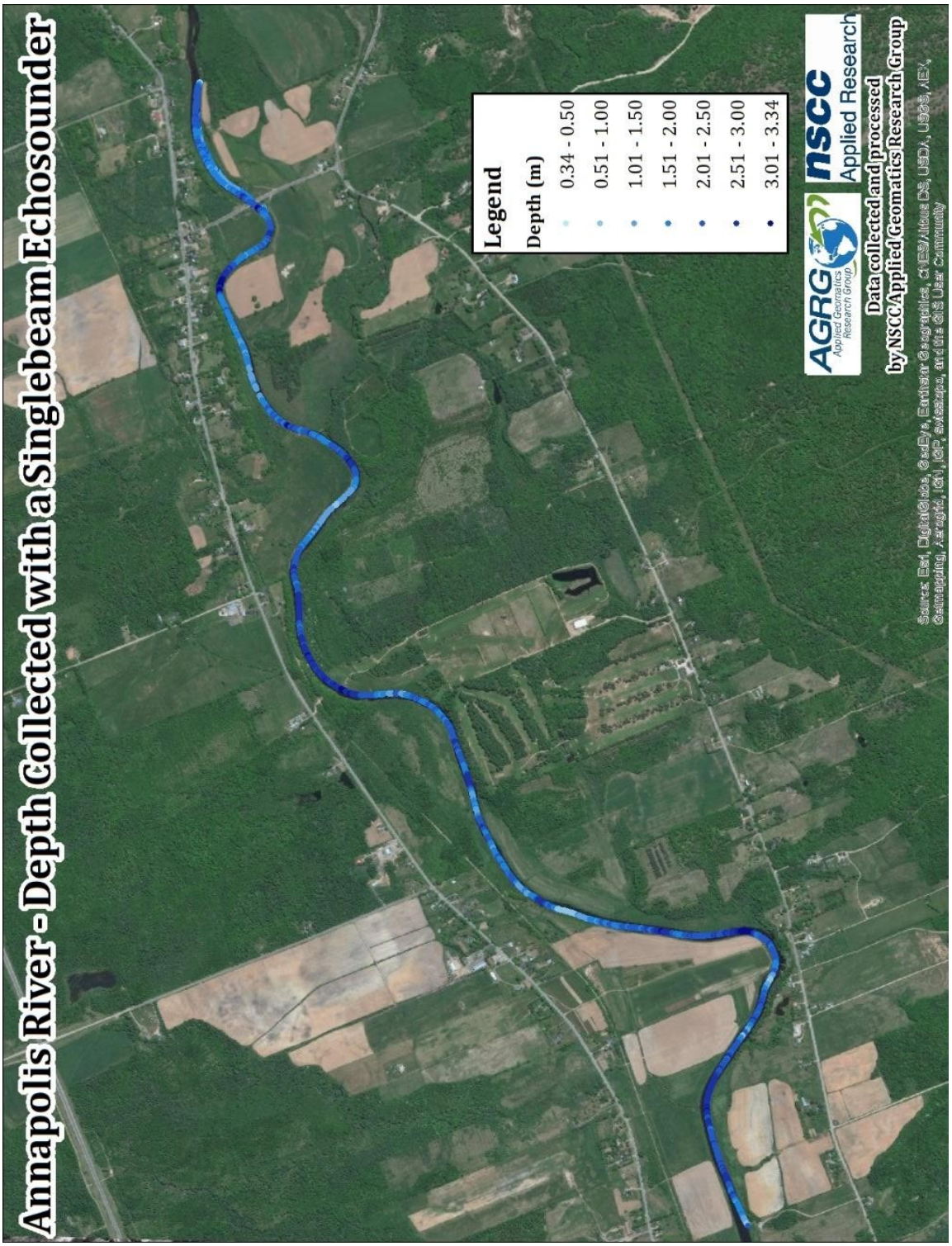


Figure 3. 22: Annapolis River depth survey collected with a single beam echo sounder. COGS and A. Taylor, 2016.

This is a crude analysis, as hydrodynamics, for example, would have an impact on the flow of water in the river which might also influence head-of-tide location. However, if we consider the head-of-tide to be a broad zone and one is not looking for exact location of head-of tide, this can be used on any tidal river as a tool to aid archaeologists in locating and interpreting precontact settlement sites.

Figure 3.23 is the proposed head-of-tide zone located between Bridgetown and Paradise as this zone travelled through time. This corridor covers precontact groups using the head-of-tide zone to procure fish (and of course hunt when the opportunity arose) from the Ceramic period, Protohistoric period, early Contact period and Historical period making it a potentially rich archaeological area for the study of the cultural transitioning of the Mi'kmaq.

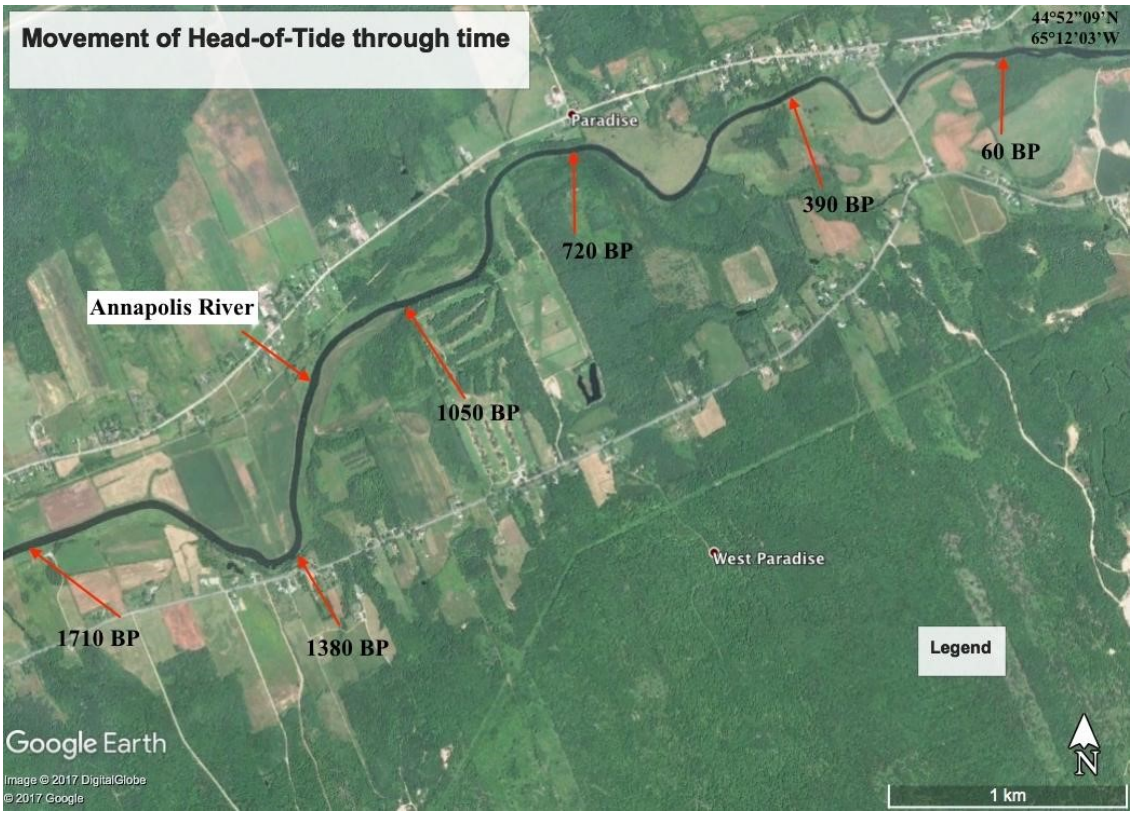


Figure 3. 23: Approximate head-of-tide location along the Annapolis River between the towns of Paradise and Bridgetown (surveyed route) through time.

The purpose of taking depth measurements along the river was to see if there were deeper sections, or pools. These pools provide fish with areas to rest and feed as they migrate upstream, thereby offering another location that precontact groups might have targeted for fishing. A deep fishing pool upstream from the Boswell site has been offered as a possible explanation for the reason this section of the river was inhabited for almost 4 000 years (Deal, 2015b; Lewis, 2015).

Using these measurements, head-of-tide fishing sites near the Annapolis River estuary would have been used roughly 2 000 years ago BP. This survey will be discussed in

Chapter 4. With accurate measurements, a more precise understanding of the shifting location of the head-of-tide over time can be generated and the location of precontact sites better predicted.

3.5.2 Off-Shore Sites on Paleo-shorelines

Reports of finds of stone tools by scallop fishermen provides evidence for the presence of drowned coastal sites in the Gulf of Maine, Bay of Fundy, and off Prince Edward Island. The size and shape of the dragger means that only large artifacts are generally recovered. This would exclude the recovery of most points and scrapers.

In 1997, a scallop fisherman in the Bay of Fundy, off Digby Neck, retrieved a ridged-back ulu. An ulu is a thin stone slate tool which in Inuktituk means “a woman’s knife”. It is an effective tool for butchering sea mammals and preparing hides for boots and other clothing. A metal version is still used in the Arctic. The location where the ulu was recovered was recorded as 44°, 33’ N and 66°, 09’ W. Figure 3.24 is a proposed map of the Fundy Basin off Digby Neck. A red triangle maps the approximate location of walrus tusks recently recovered by scallop draggers. At 7 000 ^{14}C yrs BP, this location would have been terrestrial. These tusks might indicate a walrus processing site used by late Paleoindians or early Archaic groups.

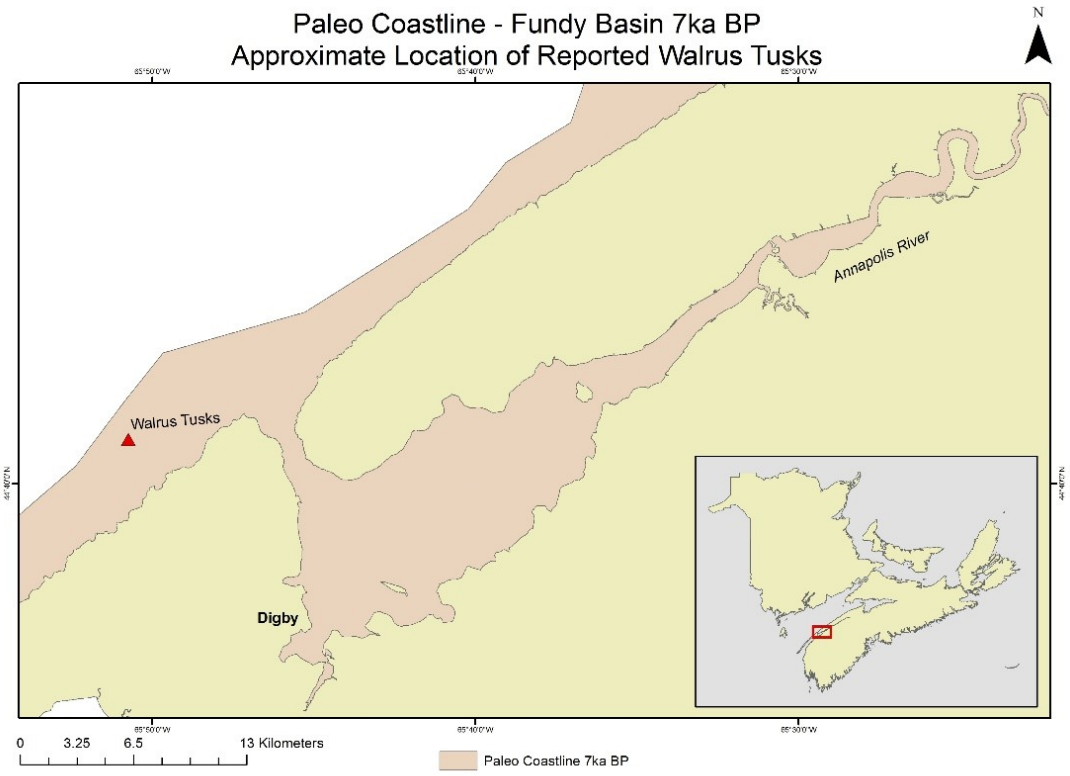


Figure 3. 24: A map proposed by A. Taylor (2017) of the Fundy Basin at 7 000 ^{14}C yrs BP using a -30 m contour line. A red triangle marks the general location of the recovery of walrus tusks by scallop draggers.

A biface and plummet recovered by scallop draggers off the shore of Eastern Blue Hill Bay, Maine, are believed to date to the Late Paleoindian and Early or Middle Archaic periods. A plummet is a stone artifact characteristic of the Archaic Period. It resembles a lopsided dumbbell in shape with one bulbous end separated from the other by a narrower neck groove clearly designed for wrapping a cord around it. Plummets of different sizes have been found in the region, and there is much speculation about what they were used for. They may have been worn as jewelry, or perhaps as weights for fishing nets or used in the making of twine (Crock, 1993). Three large bifaces and three plummets were

recovered off the shore of Mount Desert Island, Maine. This site in Penobscot Bay is located under about eight metres of water off the eastern end of Deer Island, Maine. Artifacts recovered by divers and draggers at this site include an ulu, ground stone adzes and biface fragments. These are believed to date to the Middle and early Late Archaic periods. Two large ridged ulus have been recovered in Passamaquoddy Bay and one other from off the northeastern coast of Prince Edward Island (Keenlyside, 1984). A full-channeled Archaic gouge was recovered off Indian Island, between Deer Island and Campobello Island, Passamaquoddy Bay, by marine biologists dragging for scallop samples (Black, 1997). Most of these materials are believed to pre-date the Late Archaic period on the Maritime Peninsula and lend support to the hypothesis of continual coastal occupation.

Figure 3.25 is map of a bathymetric survey off Digby Neck, to highlight areas that may be of high potential for archaeology. The circled area shows the remnant of the Annapolis River that is now underwater. It also depicts a long winding ridge of gravel and sand placed during glacial melt by the deposition of sediments from meltwater rivers flowing on the ice or beneath a glacier. It was probably too narrow for an occupation site but may have provided an area from which to fish and hunt and process walrus.

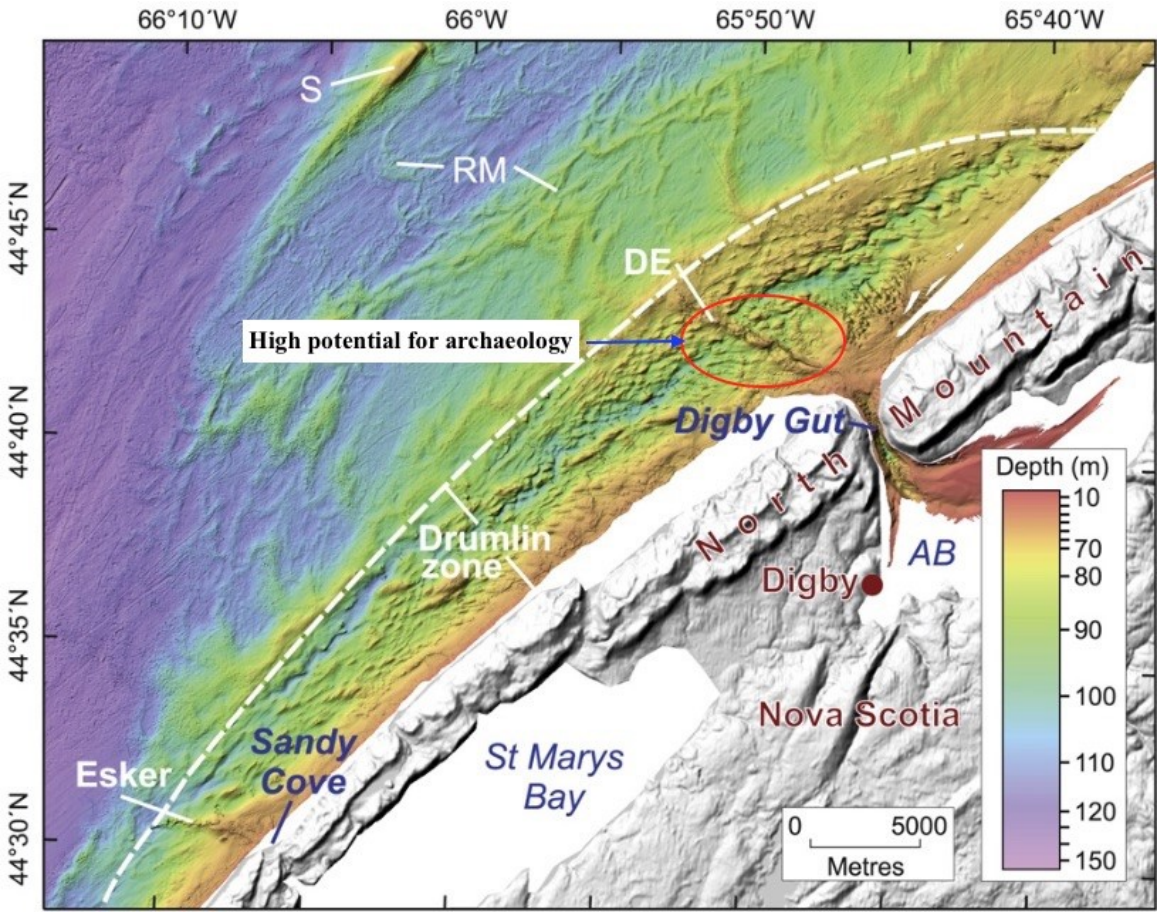


Figure 3. 25: Bathymetry of Bay of Fundy offshore Digby. AB denotes Annapolis Basin. DE denotes Digby Esker. RM denotes recessional moraine. Dashed white line denotes the offshore extent of the zone of drumlins. High potential area for archaeology circled in red. This area would have been a section of the Annapolis River, now submerged. Todd and Shaw, 2012. Modified by A. Taylor, 2018.

3.6 Conclusion

This chapter examined sea-level rise and the early peopling of the Maritime region. This chapter argued that the early migrants, following caribou herds, arrived in the region during a dynamic environmental period that saw the landscape change from tundra to woodland. Instead of following the herd out of the region, some stayed and adapted to a marine economy. It was hypothesized from where these hunters originated, to explain

why some probably stayed and adapted rather than a mass exodus. Numerous sources were used to create a sea-level curve for the Fundy Basin. This provides evidence of the impact sea-level rise had on the landscape occupied by the Paleoindians which is now submerged along with the evidence of their occupation. Stone tools and concentrations of walrus tusks, recovered by scallop draggers off the Fundy coast, provide compelling evidence for this occupation. Predicting site locations is dependent on knowing the rate of sea-level rise and fall over time.

Through an understanding of relative sea-level rise, areas which should be considered for the recovery of material culture can be better predicted. For example, raised beaches in the Chignecto Basin, which were beaches during the Paleoindian occupancy is one area that should be explored. A second area affected by sea-level rise are tidal rivers. These rivers were well used by precontact groups for both transportation and fishing. Using the relative sea-level curve, it is possible to reconstruct the movement of head-of-tide over time. This provides better prediction of the location of fishing sites. The excavation of these sites may lead to a more comprehensive understanding of precontact societies.

CHAPTER 4: ARCHAEOLOGICAL CASE STUDY

4.1 Introduction

The Annapolis River has long been a highway for the movement of people and trade between central and southwest Nova Scotia

> and it provides an important link between the clusters of Terminal Archaic sites in these regions of the province.
>
> Michael Deal, *The Collection of Ages* (2015, p. 78)

In the introductory chapter we saw that the standard historical accounts of precontact life of the Mi'kmaw people of the area about present-day Nova Scotia was incomplete in the way the old life was filtered through the lens of the settler descriptions. In chapter 2 we saw how study of the coastline can considerably broaden our understanding of precontact lifeways with this new perspective of physical geography. This chapter presents original on-site research undertaken by the author and various colleagues and volunteers, through test excavations conducted over three years along the Annapolis River in the town of Paradise, Nova Scotia (Figure 4.1). This chapter examines the way both new data can be recovered as well as the data itself.

Figure 4. 1: Map of southwestern Nova Scotia with town of Paradise.

This location was selected for several reasons.

1. The Annapolis River is one of the largest rivers in Nova Scotia, with documented use by both precontact and early historical groups (some of the earliest European colonizers in North America chose the Annapolis Basin and River from which to launch their exploration and settlement).
2. Paradise is near the last known "head-of-tide" - the furthest point (zone) on the river the seawater reaches at high tide. In this zone large fish such as salmon and sturgeon spawn.
3. A small collection of lithic flakes was identified in a field southeast of the Paradise Line Bridge (PLB) by archaeologist Stephen Davis in 1981 (not collected).

4. Archaeologist Michael Deal suggested an area northeast of the PLB based on its Oxbow shape because he felt, from prior experience on other rivers, it held a high potential for finding lithics.
5. Although it is considered a major river system, very little archaeological research has been conducted on the Annapolis River.
6. Finally, it is an area where the landowner gave permission to conduct archaeological investigations (an often under recognized or appreciated restriction on archaeological research).

The following two maps, Figure 4.2 and Figure 4.3 are Maritime Archaeological Resource Inventory (MARI) maps that provide evidence for how little archaeological research has been conducted on the Annapolis River system in comparison to the Mersey River system in southwestern Nova Scotia. These MARI maps give the location of archaeological sites that have been registered with the province. Figure 4.2 is a map depicting registered archaeological sites along the Annapolis River and Figure 4.3 is a map depicting sites along the Mersey River system.

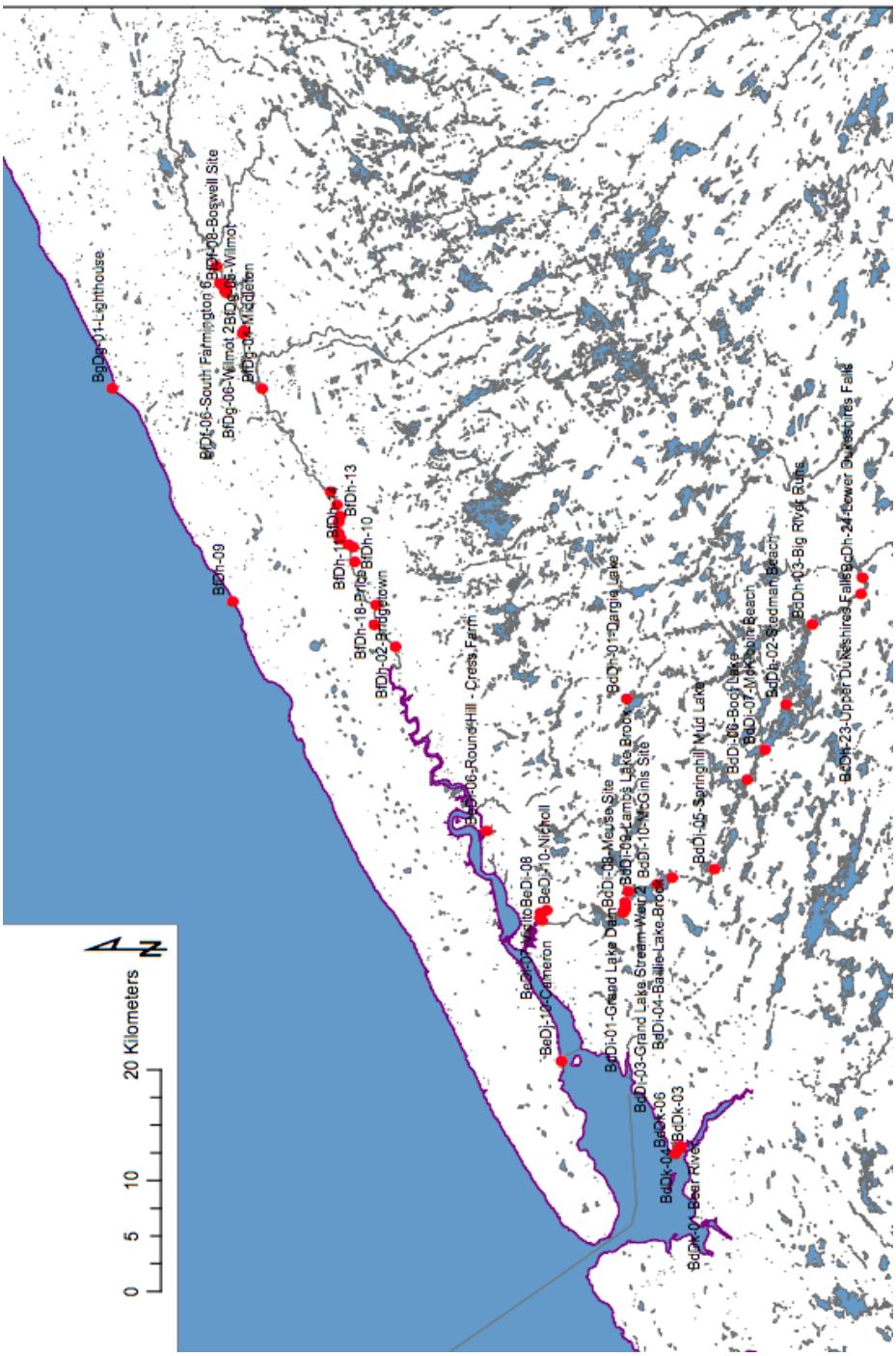


Figure 4. 2: MARI Map of Annapolis River depicting precontact sites. Stephen Powell. Museum of Natural History, 2015.

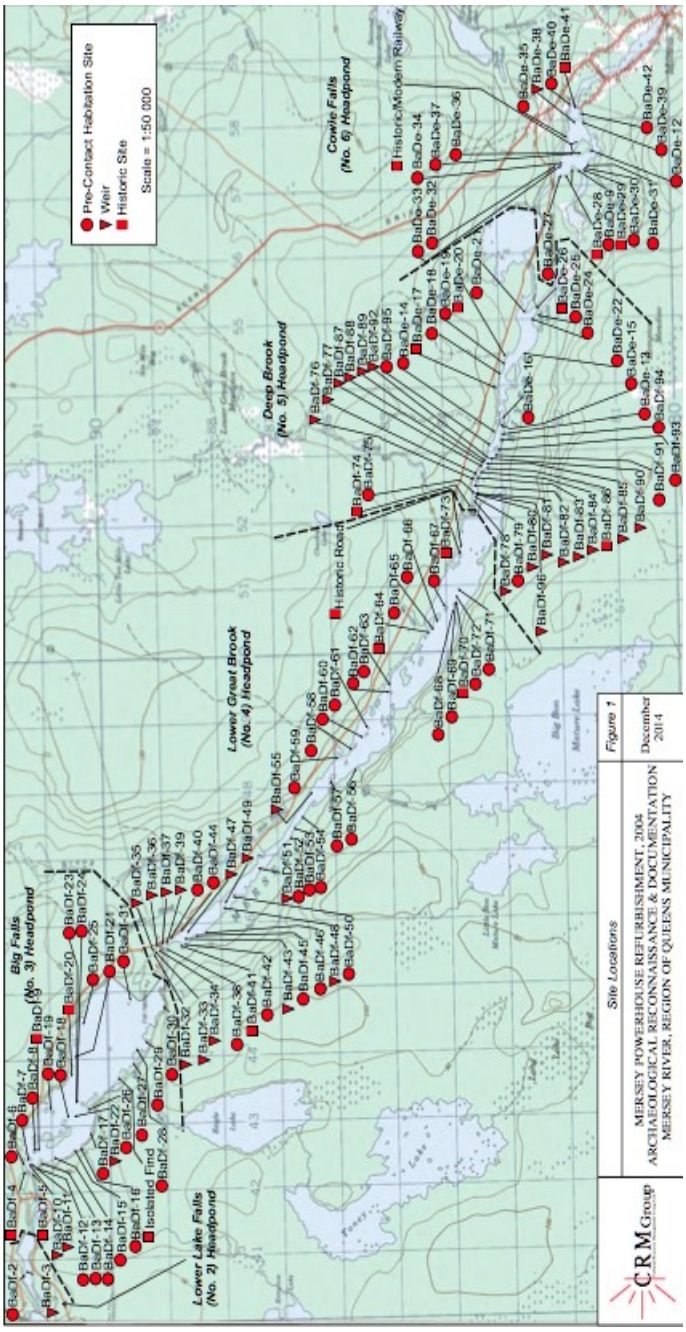


Figure 4. 3: MARI map of the Mersey River system depicting pre and post contact sites. Courtesy CRM Group, 2004

Most of the sites registered along the Mersey River are due to a mitigation project undertaken by a private archaeology company in 2004. The water was lowered in the river thus leaving an exposed surface, a unique survey opportunity for archaeologists to

examine. As the project was time sensitive very little analysis was conducted on these sites. They were simply recorded, and a report submitted to the Museum of Natural History in Halifax. A Master's thesis (Pentz, 2008) discussed these recorded sites, but no further subsurface investigations were conducted. No similar mitigation projects have taken place on the Annapolis River and most registered sites have come about because of chance finds.

4.2 Annapolis River Physiography

Annapolis County, through which the Annapolis River runs, is situated in southwestern Nova Scotia between the latitudes 44° 19' and 45° 04' north and longitudes 64° 47' and 65° 46' west. It is bounded by the counties of Kings to the northeast, Queens and part of Lunenburg to the southeast, Digby to the southwest and an approximately 90 km shoreline on the Bay of Fundy to the north (MacDougall, Nowland & Hilchey, 1969). Annapolis County's main physiographic features are an approximately 6 to 10 kilometre (km) wide trough bounded on the south by the South Mountain and on the north by the North Mountain. The southern features are part of the Atlantic peneplain and rise about 230 metres above the valley floor. Most of the county is drained by the Annapolis River and its tributaries. Almost 80% of the county is covered by forest, which consists mainly of red spruce, balsam fir, red maple, birches, white pine, and white spruce (MacDougall, Nowland & Hilchey, 1969).

Approximately 90% of the soils have developed on glacial till. The remainder of the area is occupied by peat and soils developed on water-deposited glacial and postglacial sediments. Over three-quarters of the soils are moderately coarse to coarse textured, ranging from sandy loam to sand. The remainder comprise of medium-textured soils (7.6%), moderately fine textured soils (8.9%) and rockland and peat (together 6% of the land area) (MacDougall, Nowland & Hilchey, 1969).

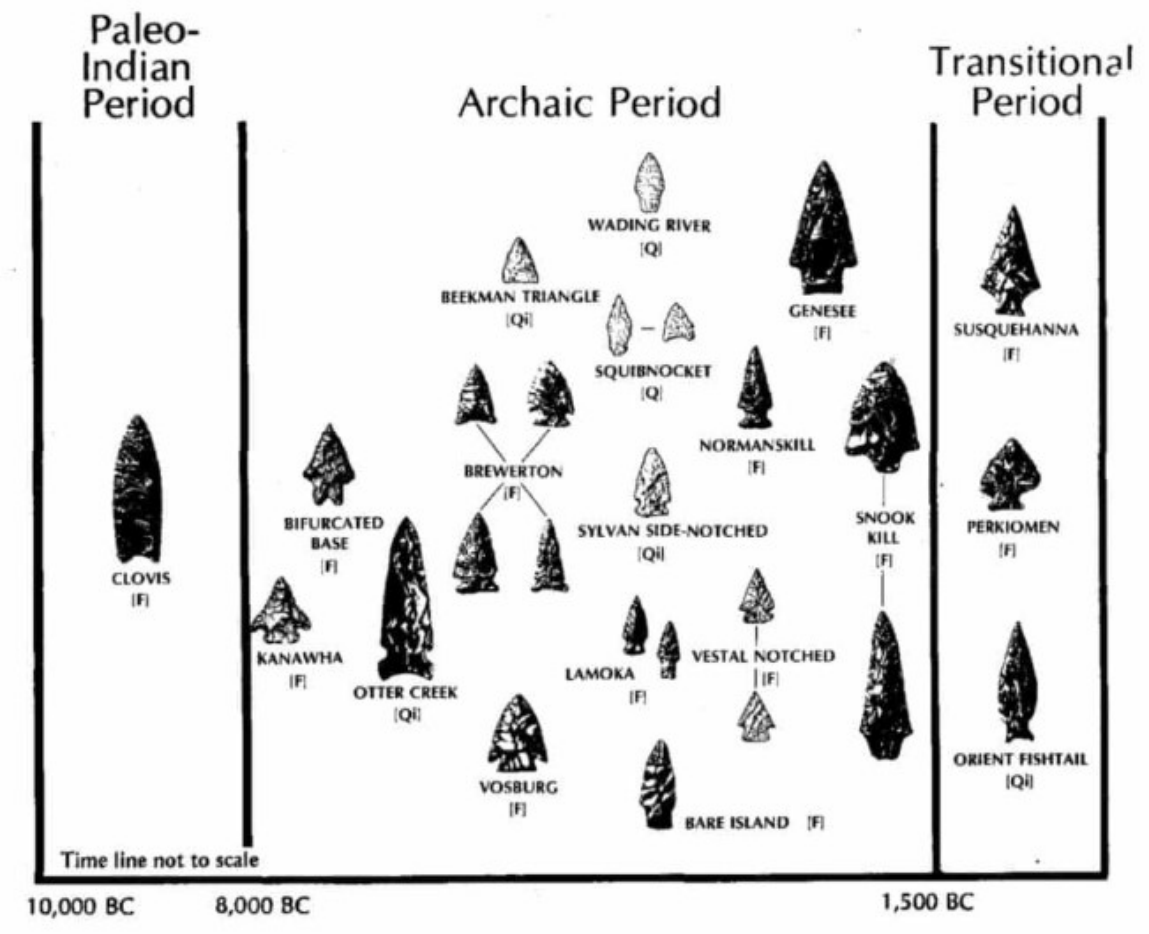
Well-drained and moderately well drained soils occupy 83% of the land area. These are dominantly Humo-Ferric Podzols, some Ferro-Humic Podzols, some Gray Wooded (Gray Luvisols) and small areas of Brunisols and Regosols. Soils with imperfect drainage occupy 5.6% of the area and are dominantly Gleyed Humo-Ferric Podzols with the Gleyed Regosols. Poorly drained soils other than peat and salt marsh (5.4%) include Gleyed Podzols, Gleysols and Rego Gleysols (MacDougall, Nowland & Hilchey, 1969). The implications for archaeological research are that the acidity of the soils in Nova Scotia greatly impacts studies of the economy because faunal/bone remains are degraded.

4.3 Precontact Cultures in Southwestern Nova Scotia

As of this writing no Paleoindian artifacts or sites have been located along the Annapolis River, however, two distinct precontact traditions, the Terminal Archaic (Broadpoint or Susquehanna), and later Ceramic/Woodland tradition have been located. In addition to precontact traditions early European explorer and colonizer sites have also been identified

on or near the river. These precontact traditions and early European travelers are briefly discussed to provide context for the archaeological investigations which were conducted.

Figure 4.4 is a chronological lithic (points) sequence for precontact and protohistoric traditions found New York state. A sequence for the Maritime region has yet to be created, however, the New York sequence contains many of the traditions identified in the Maritimes. Missing in this sequence are many of the Archaic traditions, including the Maritime Archaic/Moorehead traditions. Sea-level rise drowning the landscape once occupied by these traditions is the generally accepted reason for their absence in the archaeological record in Nova Scotia (Deal, 2015b; Davis, 2014; Tuck, 1975).


Paleo-
Indian
Period
Archaic Period
Transitional
Period
WADING RIVER
[Q]
BEEKMAN TRIANGLE
[Qi]
GENESEE
[F]
SUSQUEHANNA
[F]
SQUIBNOCKET
[Q]
NORMANSKILL
[F]
BREWERTON
[F]
SNOOK
KILL
[F]
BIFURCATED
BASE
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SYLVAN SIDE-NOTCHED
[Qi]
PERKIOMEN
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CLOVIS
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KANAWHA
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OTTER CREEK
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LAMOKA
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VESTAL NOTCHED
[F]
ORIENT FISHTAIL
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VOSBURG
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BARE ISLAND
[F]
Time line not to scale
10,000 BC
8,000 BC
1,500 BC

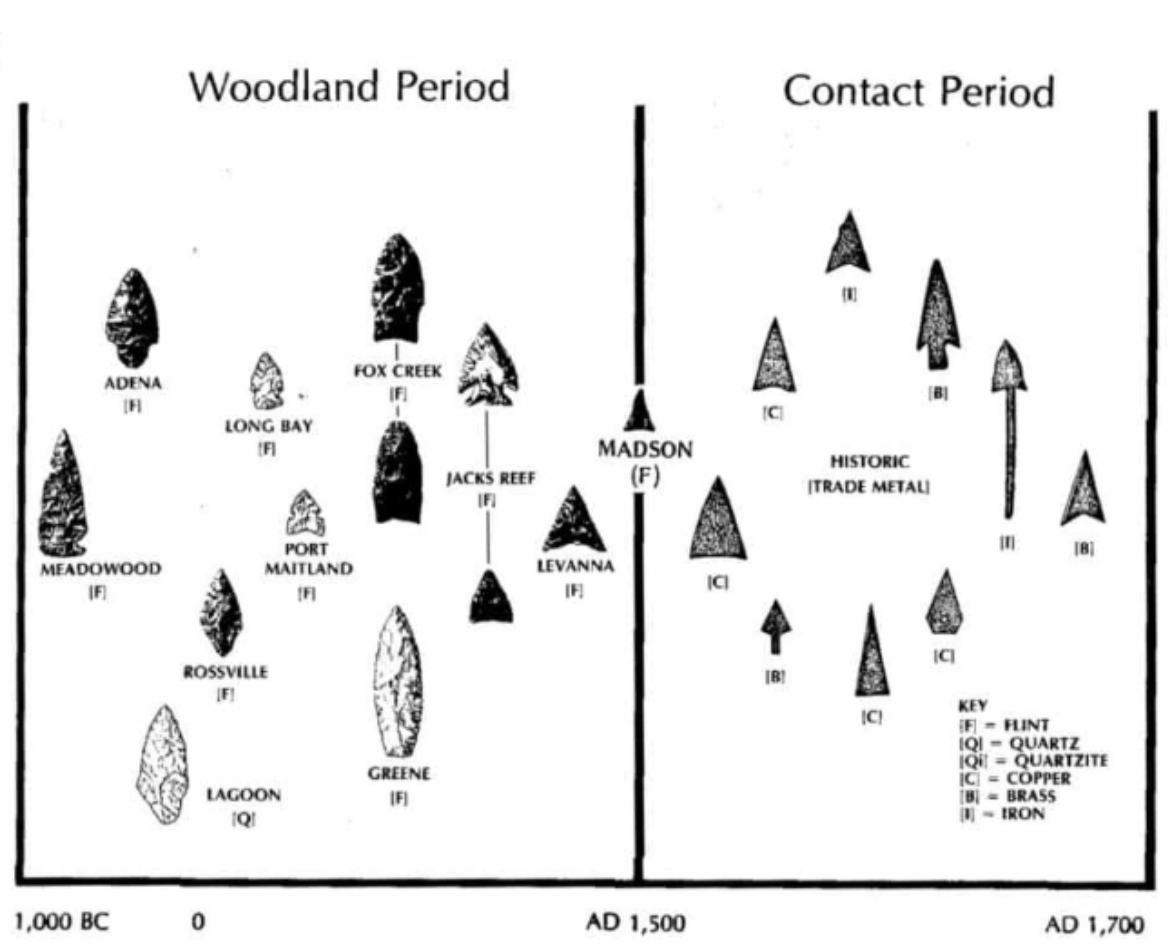

Figure 4. 4:(The sequence is divided into two images for greater visual clarity.) New York state lithics sequence. Long Island's First Inhabitants. (W. Golder, 1998, pp. 86-67).

4.3.1 *Mu Awsami Saqiwe'k* - Not so Ancient People

Near the end of the Archaic Period, a new tradition (or perhaps only new customs) appeared in the Maritime peninsula. This tradition entered the region as early as 4000 yrs BP (Sanger, 1975; Spiess et al., 1983; Deal, 1986; Tuck, 1993; Bourque, 1992) and is identified as the Susquehanna Tradition. This tradition, which was well established in southern New England, was the last major one of the Archaic Period in the northeast. Carved steatite bowls, ground stone tools and a variety of broadspear points are the usual

materials associated with this tradition (Pagoulatos, 1988). This new tradition in the northeast is also characterized by a more diversified subsistence pattern than that of other Archaic groups in the region. Sites are located both on coastal and interior riverine and lacustrine locations (Deal, 2015a). A focus on deer, bear, and moose hunting has been suggested by Tuck (Tuck, 1978) and evidence from Turner Farm expands the staple foods to include seals, waterfowl, cod, and shellfish (Spiess & Lewis, 2001). Evidence uncovered at interior sites in the form of calcined fish bones suggests anadromous fish exploitation as well (Borstel, 1982; Deal, 1985, as cited in Deal, 2015).

There have been few sites with Archaic components excavated in the Maritimes and these have mostly been in New Brunswick (Figure 4.5). Most of the recorded ones are surface finds or Archaic material in disturbed context. It is for this reason that this cultural presence remains somewhat of a puzzle for researchers. This has led to much debate. The debate is centred on three hypotheses: a) whether the appearance of this new group represents full scale migration, b) a minor migration by small bands or c) a major cultural change by groups already in the region (Dincauze, 1975).

Figure 4. 5: A map of Archaic sites in the northeast. Coast representing the shoreline around 6000 yrs BP. 1. L'Anse Amour 2. Port au Choix 3. Canavoy 4. Savage Harbour 5. Rix and Wedge sites 6. Steele's Island 7. Upper Bay, Sackville 8. Gerrish 9. Ruisseau-des-Caps 10. Big Clearwater 11. Cow Point 12. Gaspereau Lake 13. Boswell 14. Bear River 15. Eel Weir 16. Indian Gardens 17. Tusket Falls 18. Bain 19. Mill Lake 20. Rum Beach 21 Teacher's Cove 22. Rouen Island 23. Diggity 24. Mud Lake Stream 25. Sharrow and Brigham sites 26. Hirundo and Young sites 27. Nevin 28 Turner Farm 29 Stanley 30. Neville (Courtesy of M. Deal, 2015a).

This section examines the literature on three Terminal Archaic sites in southwest Nova Scotia; the Boswell site (BfDf-08), Tusket Falls site (A1D1-17), and the Bain site (A1Dm-1) to find which hypothesis should be favoured. Finally, this section discusses strategies that might be useful in locating other precontact sites. These strategies are

based on an understanding of the changing nature of landscapes associated with river systems.

Before addressing the three previously mentioned hypotheses on the Susquehanna Tradition in Nova Scotia, there is a final area of debate that exists in the literature. This revolves around how we define terms. In this case, it is a question as to what constitutes a tradition and whether or not the Susquehanna Tradition is merely an arbitrary conceptual construct. Alexander Michaud writes in *Susquehanna in Northeast Archaeology: A Conceptual Conundrum* that we construct the idea of a tradition in order to "help us understand past phenomena and can influence our reasoning and interpretations and whether such constructs are employed because of unconscious bias or purposefully as a means of supporting one's ideas" (Michaud, 2015, p. 2). Essentially this argument is a common one, creating complex questions as to how confidently one can interpret a past culture based solely on their lithic technology (which in the northeast is quite scant). This is an important issue for researchers, and it is imperative to keep an open mind and allow the data to create the model and not the reverse. This section is not about this debate. It is included to illustrate the complexities that exist when discussing groups of people that have not existed for thousands of years and have left scant artifacts for interpretation. The Willey and Phillips (1958) definition found in *Methods and Theory in American Archaeology,* is used here to describe tradition as "a major large-scale space-time-cultural continuity, defined with references to persistent configurations in single technologies or total (archaeological) culture, occupying a relatively long interval of time and quantitatively variable but environmentally significant space". (This definition was later

revised removing the emphasis on whole cultures and rewording it as "a (primarily) temporal continuity represented by persistent configurations in single technologies or other systems of related forms") (As cited in Michaud 2015, p. 5).

Hypothesis one argues for a Susquehanna migration northward along the eastern seaboard. It is based, believes Michael Deal, on criteria resulting from Irving Rouse's research on migration theories. David Sanger, one of the leading proponents for the migration of the Susquehanna people into the northeast, argues that the Susquehanna people meet Rouse's criteria for migration because:

1. The homeland of the Susquehanna population can be identified and all occurrences of the complex in New England are contemporaneous.
2. Environmental conditions for a population movement were favourable since the Susquehanna people were moving into a region with which they were familiar.
3. There is no explanation, such as *in situ* development, for their appearance.
4. And all subsystems of the culture, as opposed to a single subsystem such as mortuary practices, appear to be present in New England (as cited in Tuck, 1993). Deal, (2015a), includes Maine and New Brunswick. Both habitations and mortuary sites have been

> identified, as well as toolkits comparable to those of southern New England (as cited in Deal, 2015a).

Turnbaugh also supports Sanger's migration hypothesis and suggests around 4 500 yrs BP the Indigenous groups had turned to a marine economy based on shad, alewife and shellfish originating along the southeastern coast of the United States (Turnbaugh, 1975). This new technology, which he refers to as the *Broadpoint Culture*, then spread north up the coast for three different reasons. First there was improvement in and expanded usage of dugout canoes, cooking vessels, fish weirs, nets, and the broad-blade projectile point. Turnbaugh believes that this new technology was created for procuring marine resources. Second, he proposes that due to a warming climate and subsequent sea-level rise, the ecosystem expanded thereby providing more food. Finally, he argues that the improved technology caused populations to increase so expansion was necessary (Turnbaugh, 1975).

Hypothesis two offers a subtle difference to the first. Some researchers, such as Dena Dincauze agree with Sanger and Turnbaugh in that new groups of people probably entered the region. However, she believes that no large-scale migration occurred, but rather an infiltration of small groups whose traditions were recognizably different from those of the resident populations (Dincauze, 1975). It is clear that the Susquehanna Tradition was more established in Maine than in the Maritime region with only evidence of a transient population east of the St. Croix River Drainage and into southwestern Nova Scotia as reflected by the archaeological record (Deal, 2015a). Bourque interprets the

decreased use of steatite bowls and spear thrower weights from south to north as evidence of short-term incursions of an exploratory nature. He sees the process as a one-way distribution of exotic lithics rather than a wholesale change in the Indigenous culture (as cited in Deal, 2015a).

The third hypothesis contends that it is possible that this importation of exotic lithics was just that. Thomas Cook believes that the Susquehanna blade was simply adopted by the local populations when they saw that this blade was more effective in the cutting and scraping of large animals than their narrow points were. The change in technology was not necessarily the result of an incursion by a new population (Cook, 1976). Instead of a new tradition being established in the Maritime region, Cook argues that these broad-blade artifacts represent a horizon (a horizon is uniformity across space at a single point in time) (Ashmore & Sharer, 2006). The change in lithic technology, he continues, was due to the need for heavy duty cleaving required for the butchering of large marine animals (Cook, 1976). It is quite likely a combination of the three-hypotheses occurred. As migration into the northeast petered out in the Maine and New Brunswick region, it became more of a cultural transfer of ideas into Nova Scotia.

The following is an examination of three Terminal Archaic sites in southwestern Nova Scotia.

4.3.1.1 Boswell

The Boswell site is located along the Annapolis River in South Farmington. It was discovered by two people fishing in 2009, who, when washing their hands in the stream, saw two unusually shaped stones- a broad-blade point and biface. They contacted the Museum of Natural History in Halifax. Archaeologist Mike Deal, along with students from Memorial University began excavations on the riverbank in 2014. They uncovered a chipped stone celt and a ground bit that Deal says is similar to specimens from the southwestern New Brunswick and northern Maine region in Terminal Archaic or Early Woodland traditions (Deal, 2015b).

Figure 4.6 is a photo taken by this writer and provides a sense of the diverse source areas at this location. The lithics recovered include Vinalhaven, Keneo rhyolite, North Mountain rhyolites and White Rock quartzite materials. Figure 4.7 is an image of selected artifacts (including those from Figure 4.6) from the Boswell and nearby Wilkins site. They include bifaces, a bi-pointed biface, stemmed projectile points, a strike-a-light, a complete drill and drill tip and a ground stone axe. A point recovered in the stream and designated with the letter "P" (Figure 4.7) is quite similar stylistically to points found at the Mud Lake Stream site in southwestern New Brunswick (Deal, 2015b). Charcoal samples from the Mud Lake Stream site date to about 4000 ^{14}C yrs BP (Deal, 2015a). The chipped stone tool assemblage from this site is very similar to that of the Hirundo/Young sites (Deal, 2015a). Many of the artifacts from the Boswell site were recovered in the stream because of bank erosion. The property owner recalls that when he was a boy, the bank extended five metres out from its present location. The

context therefore for these artifacts has been lost. Fortunately, several other artifacts were recovered *in situ* at a depth of approximately 1 metre below surface. A radiocarbon date of 3 630 +/- 30 yrs BP was obtained from charcoal recovered in 2014. This site is interesting for reasons other than its lithic assemblage. A Ceramic period occupation, for example, is located directly above the Terminal Archaic period. Testing both up and downstream of the Boswell site produced no artifacts. Based on the radiocarbon date and the time ceramics entered the archaeological record in the northeast - ca. 3 000 ^{14}C yrs BP (Petersen and Sanger, 1993) these two occupations were probably separated by at least 600 years. There is something about this specific location on the river that drew both these groups to the same place. There is a similar site on the Miramichi River in New Brunswick. A large side-notched point was recovered at the Big Clearwater Brook site. It was recovered in the basal stratum of the site, which was separated by a 1metre sand layer from an overlaying deposit of ceramics (Pearson, 1962, as cited in Deal, 2015a). This site is one of several small sites along the Big Clearwater River, a cold, clear, rapid stream that is well known for its salmon and trout populations (Clark 1968, as cited in Deal, 2015a). This also describes the Boswell site.

Figure 4. 6: Artifacts recovered at Boswell site 2015. A-Groundstone Axe, B-Biface, C-unidentified, D-Pre-form biface, E-Stemmed projectile point, F-Groundstone Axe, G-Biface, H-unidentified. (Field photo: A. Taylor, 2015).

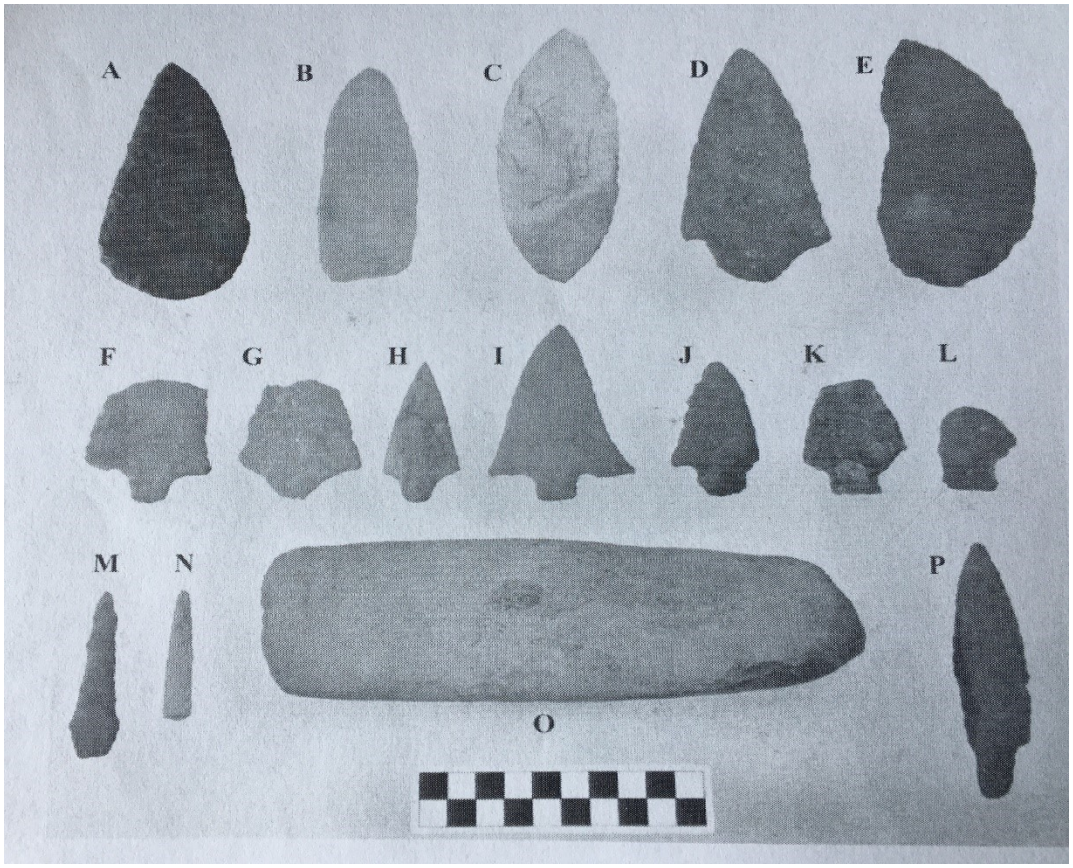

Figure 4. 7: Selected artifacts from the Boswell and Wilkins site A-B, D-E Bifaces (Boswell), C-Bipointed biface (Wilkins), F-K, P-Stemmed projectile points (Boswell), L-Strike-a-light (Boswell, M-N Complete drill and drill tip (Boswell) and O-Groundstone Axe (Boswell) (Deal, 2015a)

4.3.1.2 Tusket Falls

Figure 4.8 depicts artifacts from the Tusket Falls site (A1D1-17) in Yarmouth County. They were recovered by private collector, John Greene, and are considered part of the largest private collection in Nova Scotia. Because of the nature of their excavation, these artifacts have no context and cannot be dated by radiocarbon testing. A comparison of the point styles from the two sites suggests that they were made in the same or similar tradition as the Boswell site artifacts. The broad blade point from the Boswell collection,

“I” is very similar to” A” from the Tusket collection. The same can be said of “D” from Boswell and “B” from Tusket. Drills, “M” and “E” which are often found in Susquehanna caches are also evident in both collections. The Tusket collection also includes many Ceramic period points demonstrating that it was a site that was in use for a long period.

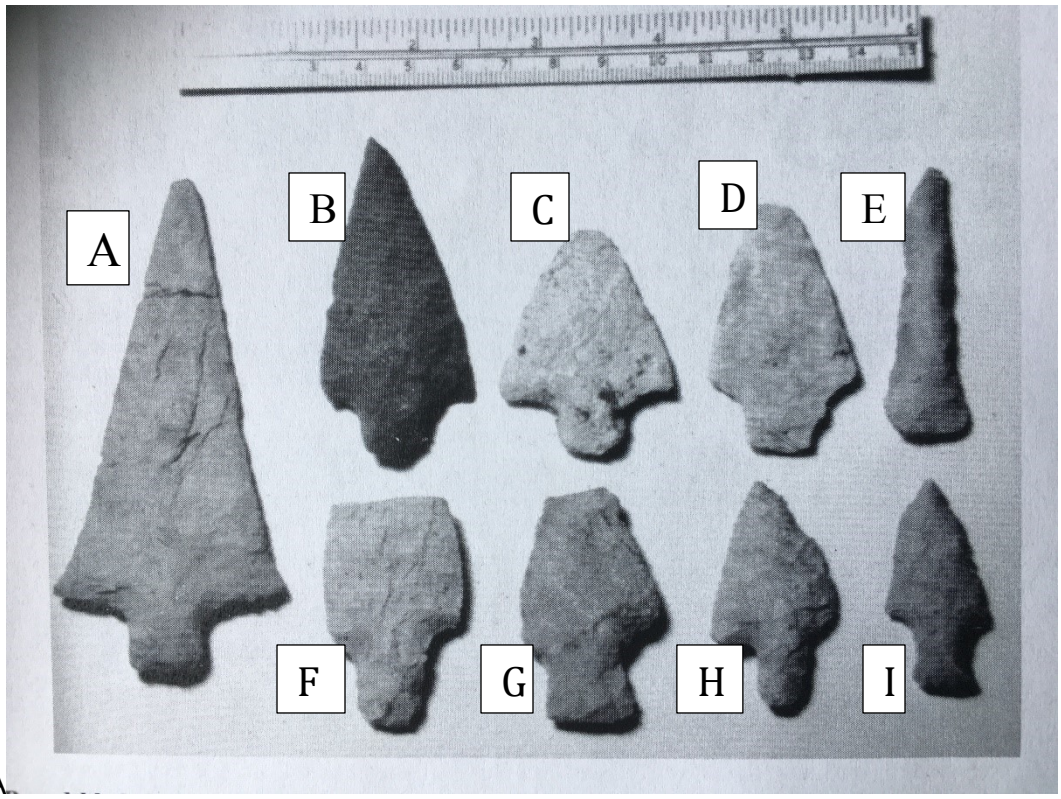

Figure 4. 8: Broad-bladed projectile points and drills from Tusket Falls (Deal, 2015a).

4.3.1.3 Bain Site

The Bain site is located along the Chegoggin River in Yarmouth County. It is named after Nate Bain, who over the years had amassed a collection of lithics and pottery (Sanger & Davis, 1993). Davis and Sanger classified these specimens as Late Archaic and from the

Maritime Archaic complex (Figure 4.9). They were also found with Ceramic period artifacts.

The Bain site area is located between two closely spaced drumlins that protect it from northerly winds while giving it maximum exposure to the sun (Sanger and Davis, 1993). Near the site one can find boulders of quartz and quartzite which have eroded out of the drumlins and which Davis and Sanger believe indicated precontact quarrying (Sanger and Davis, 1993).

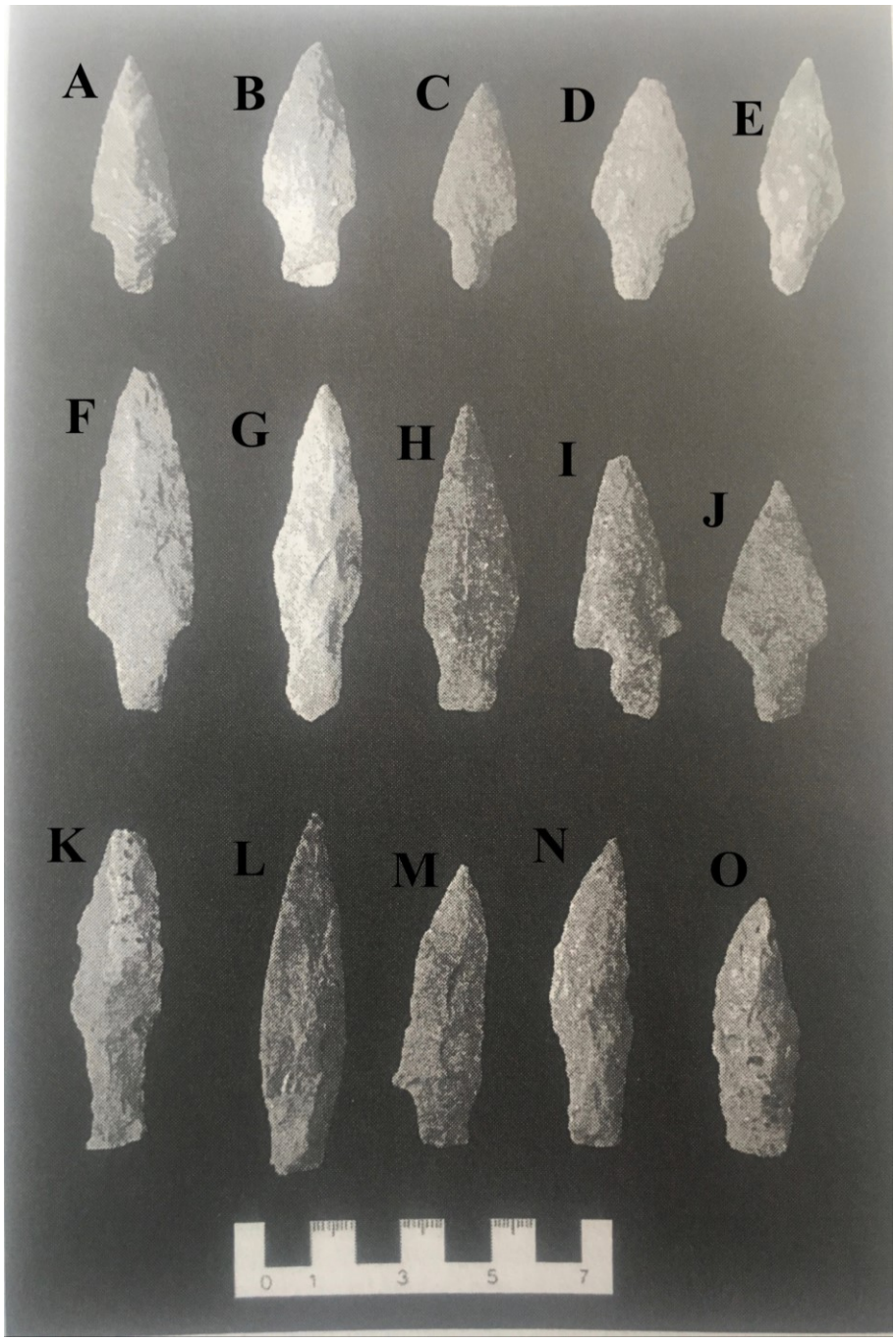

Figure 4. 9: Selected stemmed bifaces from the Bains collection (Sanger & Davis, 1991).

Several of the artifacts recovered by Bain, particularly the stemmed bifaces, match those found in Late Archaic coastal Maine sites such as those at the Turner Farm, Goddard,

Stanley and Nevin sites. These artifacts have been dated at between 3 800 and 5 000 yrs BP. As well as the stemmed bifaces, there are also several Ceramic period bifaces that were found together with ceramics and scrapers made of impure quartz (such as chalcedonies and jasperoids). These are usually associated with North Mountain basalts, an Early Mesozoic unit ranging from the Minas Basin to Cape Mary (Dostal & Dupuy, 1984, as cited in Sanger & Davis, 1991).

Although a visual comparison of the stemmed points from the three sites shows them to be of similar styles, a more in-depth attribute analysis needs to be conducted to more confidently determine the tradition. That said, based on a visual analysis, an asymmetrical point at Boswell, (Figure 4.7 "P"), which matches a point found at Mud Lake Stream, also appears to match one from the Bain collection (Figure 4. 9 "N"). Point "H" at Boswell appears to be quite similar to two points from Bain ("C" and "D"). Based on these points, it seems that this broadpoint tradition, which was well established in the northeastern states and New Brunswick extended to western Nova Scotia. To what degree remains to be determined because there has simply been too little archaeological research in the region.

The Bain site is located just past a bend in the river along a relatively straight stretch. This would make its location along the river similar to that of the Boswell site in Nova Scotia and Big Clearwater site in New Brunswick. Pools in the river are areas where fish congregate and therefore, areas adjacent to them should be considered as high potential areas to locate precontact sites. As previously stated, a large pool is located in close

proximity upstream to the Boswell site. A more thorough survey of river near the Bain site should be conducted to determine if a pool in the river is nearby.

4.3.2 Ceramic Period

The most obvious change from the Archaic period to the Ceramic period is based on the introduction of a new technology, pottery. Certain artifact types such as slate bayonets, gouges, ulus and plummets disappear. This new period began approximately 2 800 years ago in the Maritimes and lasted for approximately two thousand years (Tuck, 1984; Sanger, 1986; Davis, 1994; Allen, 2005). Figure 4.10 is a map of the Maritimes with selected Ceramic period sites.

Figure 4. 10: Selected Ceramic period sites on the Maritime Peninsula: 1. Mason, 2. Mud Lake Stream, 3. Minister's Island/Holt's Point, 4. Weir Site, 5. St. John Harbour sites (Bentley, Navy Island), 6. Lake Region sites (Jemseg, Fulton Island, Meadows, etc.), 7. Bristol/Shiktehawk, 8. Tracadia, 9. Skull Island, 10. Canavoy, 11. Giganish (Ingonish Island), 12. Ben Francis/Odaskanock, 13. Merigomish, 14. Scots Bay sites (Clam Cove, Davidson Cove), 15. Melanson, 16. End-of-Dyke (Gaspereau Lake), 17. St. Croix, 18. Skora (White Lake), 19. Rafter Lake, 20. Port Medway, 21. Port Joli sites, 22. Eel Weir, 23. Bear River, 24. Knox, 25. Rend Bank Complex sites. 26 Oxbow site (Deal, 2015a).

The major difficulty faced by archaeologists in comprehending this period is the lack of deeply stratified sites. Sites are needed where the sequences for the changing styles can be viewed *in situ*. Until that time only interpretations based on artifacts discovered in mixed contexts or present in shallow layers are available. One site that provides clarity

for researchers is the deeply stratified Oxbow site located along the shore of the Miramichi River in New Brunswick.

Although the Ceramic period in the Maritime region is poorly understood, it is not the case further south. Archaeologists in the states of Maine and New York have excavated several deeply stratified sites from this period and archaeologists have been using their findings as a guide for understanding this region. For example, the Ceramic period has been divided into three periods in the northeast; Early, Middle and Late based on stylized changes in points and changes in ceramics. It is assumed that it will only be a matter of time before such sites are recorded here.

Clay vessels with cord impressions on the interior and exterior characterize the Early Ceramic period. These have been classified as belonging to the Vinette family of pottery based on their mode of decoration (Davis, 1994). Most of these ceramic types have been unearthed in upstate New York and date to about 3 200 yrs BP. They do not appear in the archaeological record in the Maritimes until around 2 800 yrs BP (Tuck, 1984; Sanger, 1986).

Figure 4.11 is a photograph of a sample of pottery excavated from the End of Dyke site, located near Gaspereau Lake, Nova Scotia.

Figure 4. 11: Pottery excavated from End-of-Dyke site Gaspereau Lake, Annapolis Valley. (Courtesy of V. Smith, 2013.)

After the Vinette style, pottery of the Middle Period is defined by vessels with thin walls which were grit tempered. They appear to be decorated using pseudo-scallop or fine dentate stamping techniques. These ceramics have been identified in larger quantities than the Early Period ones and have been dated between 2 400 to 1 700 yrs BP (Davis, 1987b, as cited in Davis, 1994).

Davis describes the Late Ceramic Period (1 700 to 500 yrs BP) as a time of ceramic decline in both style and quality. He describes the vessels as thicker with coarser-grained

temper and with less attention paid to the firing technique. The decorations on the vessels also changed. There was a return to decoration by a cord-wrapped tool only appearing on the exterior of the vessels and not on the interior (Davis, 1994). The end date of this technology is vague, and it is assumed that it probably lasted until a few centuries before contact with Europeans. By the start of the contact period (500 years BP) the Indigenous populations had almost entirely abandoned their traditional technologies. This is evident in the archaeological record and includes their ceramics (Petersen & Sanger, 1993). This assumption is also based on the fact that there is no mention of ceramics in the early ethnohistoric record (Petersen & Sanger, 1993; Davis, 1993).

4.3.2.1 Oxbow Site

The following is a brief description of a Ceramic period site excavated in the late 1970s and early 1980s by archaeologist Patricia Allen. It is one of the few deeply stratified sites in the Maritimes and is located in close proximity to the head-of-tide on the Little Southwest Miramichi River. It is therefore quite relevant to this thesis.

The Oxbow site is situated on a low terrace along the Little Southwest Miramichi River, a branch of the main Miramichi River, in New Brunswick. Based on archaeological research conducted by Allen, beginning in 1978 and concluding in 1984, an approximate date of occupation to 2 600 to 2 800 yrs BP was obtained and shows a continuous occupation well into the Historic period (Allen, 2005). This time frame puts the site squarely in the Ceramic period. The Oxbow site is valuable, Allen believes, because it is

the only stratified and undisturbed campsite excavated to date (Allen, 2005). The Ceramic period people used and occupied the site continuously for almost 3 000 years.

Near the Oxbow site, archaeologists have uncovered and interpreted smaller sites as hunting and gathering camps. These locations, like the Oxbow site, were occupied during the spring, summer and early fall and used primarily as fish gathering and processing places, based on the faunal remains gathered during excavations. Of particular interest to this writer is the location of the campsites along the river. Allen comments several times in her report that these sites are located near the head-of-tide. The head-of-tide site was chosen because it is where the large anadromous fish species like sturgeon and salmon, came to spawn, making them easy targets for harvesting. Obviously, with rising sea-levels the head-of-tide would have been moving slowly upstream. For a short period of time this might seem insignificant, however, when viewed over several thousand years, this movement has strong potential as a relative dating tool for sites. If ancestral groups also used a head-of-tide fishing strategy, this information along with current understanding of the rate of Paleo sea-level rise might be used to locate other areas of habitation along this river.

Although the cultural material uncovered during the excavations at the Oxbow site varied in design, technique, or decoration, the type of activities and season of habitation there appear to have been the same (Allen, 2005). Ceramics (in varying quantities) were found in most layers of the units excavated and are classified as grit tempered. The ceramic vessels from the lowest levels were “relatively thin with vertically oriented upper rims

and flat lip surfaces. The vessels had no decoration on either their lip surfaces or on their interiors. The vessel exteriors were either plain or decorated with dentate pseudo-scallop and stamps that had been applied with either a simple stamp or a rocking motion" (Allen, 2005, p. 52).

The stone tool assemblage was also quite varied, which is not surprising given the length of time the site was occupied. The stone tools excavated at the Oxbow site include heavy scrapers, axes, large projectile points and formed bifaces. Allen believes that the earliest occupants were probably heavily involved in hunting, butchering, and wood, bone, or antler working (Allen, 2005). A projectile point with an expanding stem was discovered in the lowest layer and based on its style of manufacture probably came from the Terminal Archaic period (Allen, 2005).

Further up the unit, Allen has designated a transition from Early Ceramic to Middle Ceramic period based on the change in projectile point styles and ceramics. Based on radiocarbon dates from these levels, this period, Allen believes, existed from 2 200 to 1 600 yrs BP (Allen, 2005). These projectile points became bi-pointed and much smaller than the earlier ones with straight to contracting stems. The ceramics showed a greater variety in decoration and form. The use of dentate, pseudo-scallop, and punctate tools to decorate lip edges, lip surfaces and rim interiors are indicative of this period (Allen, 2005).

The upper-most levels, Allen designates as the Late Maritime Woodland period (Late Ceramic period), because of the small-stemmed projectile points uncovered which marked a change in style. Unlike the change in projectile points, the ceramics appear to overlap with ceramic decorating techniques of the Middle Maritime Woodland Period (MCP). A radiocarbon date for this level is roughly 1 675 ± 50 yrs BP (Allen, 2005).

Allen believes that the area along the upper reaches of the Miramichi River, was a spring to early fall gathering place for people as far back as 3 000 yrs BP. She suggests that during the warm weather periods, communities along the river were busy with:

> activities such as: canoe building and repairing, manufacturing and mending fishing and hunting gear; erecting drying racks and gathering wood for smoking fish and meat; collecting wild grains, fruits and vegetables; manufacturing ceramic pots, baskets and birch bark containers; cooking, preserving and eating; playing games; and numerous other important social and cultural activities (Allen, 2005, p. 73).

Unfortunately, sites such as this one are a rarity. Its true potential is to provide a stylistic base (standard) for understanding other sites. The artifact collection from the Ceramic period is too small to make any confident interpretations on the transitioning period with the earlier Archaic period. Instead researchers are left with small pieces and tantalizing clues to where and why these people settled where they did and how exactly they subsisted on the landscape. One such artifact recovered from the Oxbow site and which

Allen catalogues but does not discuss is the recovery of a small amount of red ochre. Could this be a cultural "left over" from the Archaic period, (some graves excavated from the Archaic period have contained varying amounts of red ochre) providing direct evidence of continuity or is it merely a coincidence? More study is needed.

Along with helping researchers date sites through an understanding of stylistic change over time, the arrival of pottery is also a strong indicator of a cultural change. Pottery required a more sedentary lifestyle because of the time required to gather the clay, produce the vessel and then use it. It was also much too delicate for continuous transportation. Found with these ceramics were small chipped-stone projectile points, notched to form an expanded stem for hafting. The small size of the points, Davis believes, were used to create a new type of weapon in the region - the bow and arrow (Davis, 1994). Another interesting characteristic of this period was its association with shell middens. This would have placed these groups close to bodies of water. Figure 4.12 is a map showing quarry sites and trades routes as based on archaeological evidence. Archaeologist Michael Deal has dated the quarry site at Scott's Bay to 1 540 yrs BP. This date places it comfortably in the Ceramic period. The trade routes hug the coastline and provide further evidence that these groups spent large portions of their time close to the coast. It also shows the importance of rivers as trade routes.

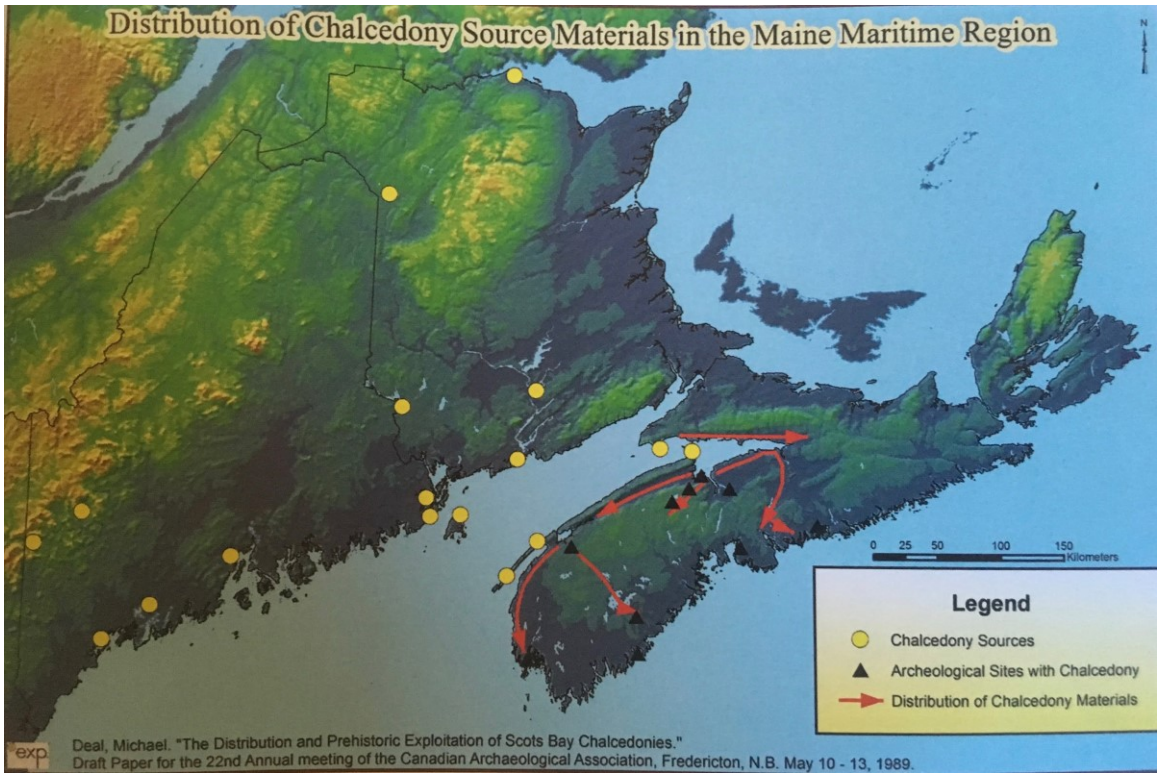

Figure 4. 12: Distribution of chalcedony source materials in the Maritime region. Dots indicate "general distribution of chalcedony sources area throughout the Maine-Maritime Region. The black triangles on the map indicate archaeological sites in western Nova Scotia where chalcedony from Fundy shore sources have been identified. The arrows indicate the most likely distribution routes for Fundy shore chalcedonies" (Deal, 1989, as cited in Sable and Frances, 2012, p. 67). Map compiled by William Jones and Trudy Sable.

Recent research, particularly that of then doctoral candidate, Cora Woolsey, who has been analyzing the large ceramic collection from the End-of-Dyke site, will hopefully provide more information from which to draw conclusions on this poorly understood period in precontact history.

4.4 Strategies for Predicting Precontact Sites Along a River

Archaeologists estimate that the Susquehanna arrived in Nova Scotia about 4 000 yrs BP. To gain a better understanding of this ancient culture, it is necessary to locate more sites and excavate them properly. Waiting for the next fisher or private collector to stumble upon a site is not useful. Since time and money are both scarce, it is important that investigations be done at places where settlements were likely to have occurred. The locations these precontact groups chose were not arbitrary. It would make sense that hunter/gatherer groups would look to areas along the river that were predictable and unchanging. The same spot in the river could be visited year after year to find the same supply of fish. The nature of rivers, however, for the most part is not static. They are constantly changing their shape and form because of the effects of flooding and bank erosion. Some areas are more static than others, particularly the straight stretches flowing over exposed bedrock.

In conclusion, regarding the Susquehanna in Nova Scotia and based on limited data, I support the hypothesis set forth by Dincauze, that instead of a mass migration to the region, it was a slow trickle of foraging bands which exchanged ideas with local groups (Dincauze, 1975). This belief is based on the few steatite bowl fragments, which can be found in the collections at Port Royal, that have been uncovered in Nova Scotia. If larger groups had entered the area, more of these vessels would have been uncovered. It is believed that these steatite bowls were the precursors of ceramic technology and there is some consensus, that this new technology originated in southern New England.

Until a deeply stratified site is located in Nova Scotia, hypotheses and theories will remain just that. With so much debate regarding the Mi'kmaw people of Nova Scotia who claim continuous occupation in the province for over 10 000 years, knowing how and by whom the region was settled is not just an interesting question for scholars to ponder. A greater commitment by all stakeholders, to provide resources for researchers studying this period in Nova Scotia's history, is essential if knowledge and understanding is to increase.

4.5 Selected Sites for Archaeological Investigation

4.5.1 Paradise

Paradise is a small picturesque town located along the Annapolis River, between the larger towns of Bridgetown to the west and Lawrencetown to the east. Prior to the construction of a tidal dam in the Annapolis Basin in 1972, the river was affected by the Bay of Fundy's 10 metre tides as far upstream as Paradise (MacDougall, Nowland & Hilchey, 1969).

Paradise is shortened from the original French name, Paradis Terrestre, meaning Terrestrial Paradise and on a bright summer day the name seems appropriate. It was also referred to by Gargas in the *Census of Acadie* in 1687-1688 as "Au Bout du Monde" which can be translated as "End of the World" or "End of Settlement" and a map made in 1684 shows Paradis Terrestre as the last village along the Annapolis River (Figure 4.13). The census conducted by Gargas, a French clerk, lists the settlements along the river as: "1 priest, 1 nun, 471 people, including Indians, 78 houses, 3 mills, 1 sawmill, 5

wigwams, 580 cattle, 687 sheep, 254 arpents marshland, 44 arpents (an old French unit of land area equivalent to 3,420 square metres (about 1 acre), the standard measure of land in those areas settled during the French regime and in use until the 1970s) upland and 8 horses" (as cited in Coleman, 1969, pp. 15-18). For the village of Paradis Terrestre he lists "7 people, 1 house, 7 cattle, 12 sheep, 4 arpents marshland, 1 ½ arpents upland (as cited in Coleman, 1969, p. 18). This house site will be discussed later in the chapter.

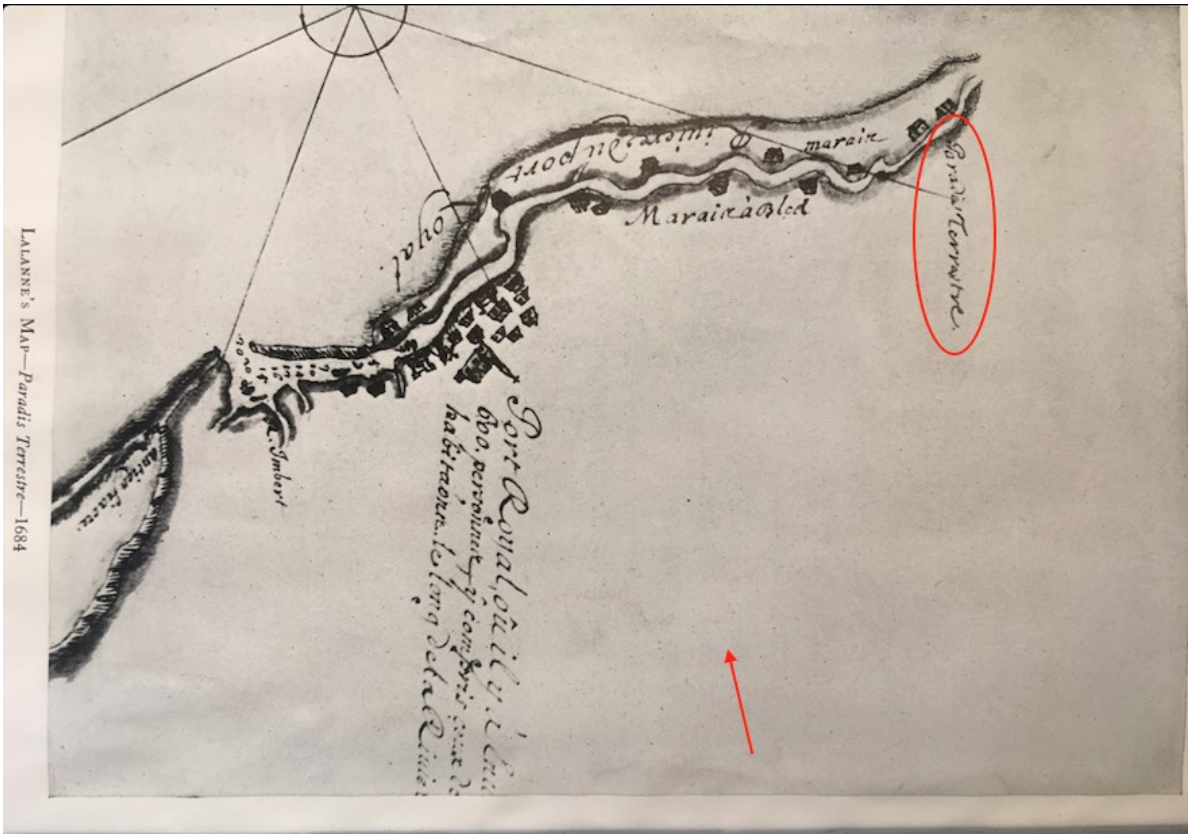

Figure 4. 13: Lalanne Map of Annapolis River 1684. Paradis Terrestre circled in red. North red arrow. (W.I. Morse, 1938).

There is ample evidence, both archival and archaeological, to support the idea that the French colonists were diversified both socially and economically. Saint Mary's

University archaeologist, Jonathan Fowler, claims that it is best to think of Acadie as a "clanscape" in which each hamlet must be viewed quite independently from one another (Fowler, 2008). Livestock indexes, for example, clearly show that some families did very well so much so that surpluses could be used to augment their farms, raise large families, and purchase valuable trade goods (Taylor, 2012). Gregory Kennedy, in his book *Something of a Peasant Paradise,* even touches on this aspect writing, "Once cleared, the fertile marshlands provided an exceptional return, as much as double that of the best arable land in the Ludunais" (Kennedy, 2014, p. 99). The relevance of this information is that although there has already been a good deal of archaeological research and a large historiography of the early French colonists and later Acadian settlers, each new location investigated offers the opportunity to bring new insight. Paradise, based on its location at the "End of Settlement" and lack of prior archaeological investigation, has high potential to encounter Acadian material culture and thus add to the archaeological record. The location of this "End of Settlement" site on the river may provide a greater understanding of the dynamic and complex relationship between the Acadians and Mi'kmaq. The dominant written narrative is that of a deep friendship and cooperation between the two distinct groups and includes several incidences of intermarriages (Faragher, 2005; Griffiths, 2005). Part of this positive relationship can be attributed to the fact that the Acadians farmed the marshlands, of little importance to the Mi'kmaq and therefore were not in competition for their traditional resources (Taylor, 2012). Kennedy touches briefly on the complexity of this relationship and notes that not all was harmonious. By the eighteenth century, he writes, there were clear signs of tensions between the two populations. Tensions that grew to the point that many Mi'kmaq moved away,

establishing new communities further inland (Kennedy, 2014). Was the location of this Acadian village, in the "head-of-tide" zone a cause for some of this friction? Unfortunately, the scope and breadth of this thesis does not allow for anything more than speculation. It is hoped that this researcher or others will make this area a priority for future archaeological examination.

Prior to the arrival of Europeans, the area encompassing the village of Paradise was called *Nisoqu'katik* by the Mi'kmaq which can be translated as "the lower ground" as previously stated. This is significant, because it shows that the Mi'kmaq believed the area important enough to name it and it reflects a geographical characteristic that determined how the area might have been used. Prior research has shown that high terraced areas along a river were more valued locations for setting up camp sites and settlements (Davis, 1986; Pentz, 2008; Deal, 2015b; Lewis, 2015). These high terraced areas were not as prone to flooding as the lower areas. The evidence for these flooding episodes in Paradise is clearly demonstrated in the stratigraphy revealed during archaeological excavations (Figure 4.14).

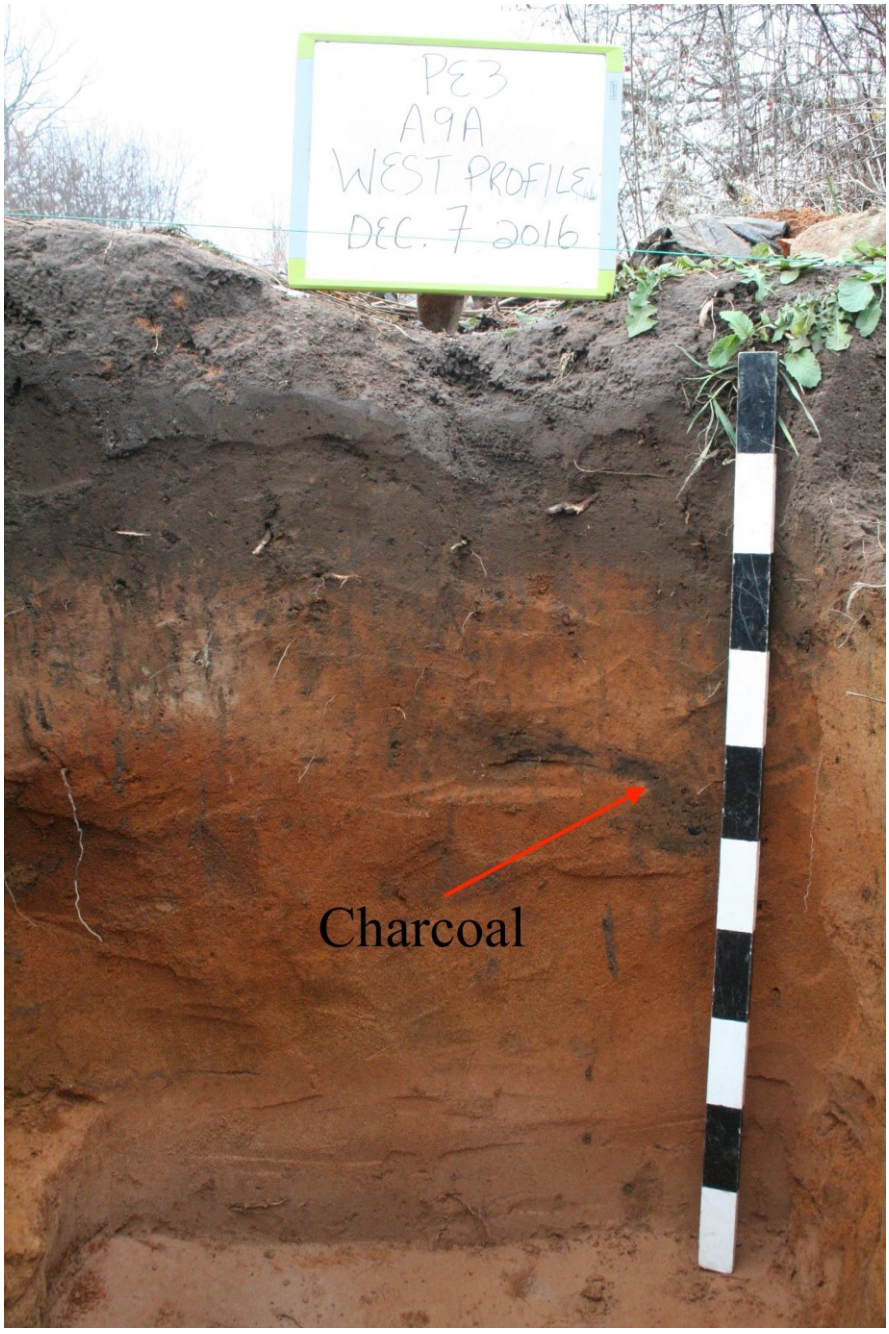

Figure 4. 14: Test unit in Paradise. The different coloured bands indicate flooding events. PE3 A9A West profile. December 7, 2016.

Trudy Sable and Bernie Francis, in their 2012 book *The Language of this Land, Mi'kma'ki,* discuss the importance of place names to the Mi'kmaq. As discussed earlier, the place names they believe, not only tell of different features on the landscape,

historical events and important resources, but act as a mnemonic device to remind people of how to 'live right' (Sable & Francis, 2012). Essentially place names, they contend, tell the story of the land.

Thomas Andrew, writing about the Dene Culture stated:

> ….it is clear...that within many societies possessing rich oral traditions, landscape may be viewed as a collection of symbols which record local knowledge and meaning, and where place-names become memory aids for recalling the relevance of a "message" encoded in associated narratives. Physical geography is transformed in "social geography" where culture and landscape are fused in semiotic whole. In essence, one cannot exist without the other (as cited in Sable & Francis, 2012, p. 50).

Sable and Francis believe this is true of the Mi'kmaw culture as well. The naming of the landscape reflected the intimate knowledge of these areas, writes Roger Lewis, an archaeologist and ethnologist at the Nova Scotia Museum. The Mi'kmaq had a deep understanding of the landscapes which allowed them to exploit the various plant and animal life critical to their sustained existence (as cited in Sable & Francis, 2012). It is along these rivers, their rich estuaries, tributaries and surrounding landscapes that the Mi'kmaq settled, prior to the creation of reserves in the 1800s. Lewis refers to these as "'critical land use areas" of an approximately 50 km radius around each settlement

(Figure 4.15). These areas provided a diversity of overlapping and seasonally available resources" (Lewis & Sable, as yet unpublished, as cited in Sable & Francis, 2012, p. 22).

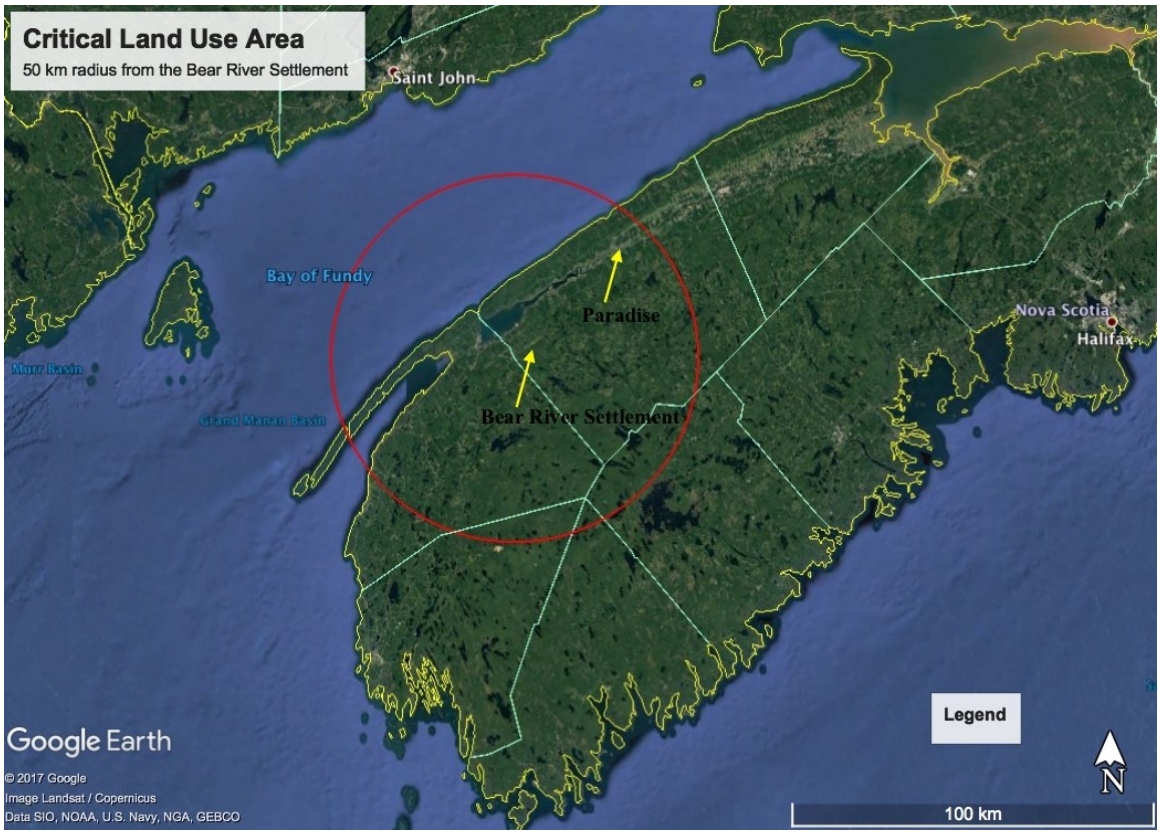

Figure 4. 15: Map indicating Critical Land Use Area proposed by Roger Lewis.

Figure 4.15 is a map showing the location of the Bear River Mi'kmaw Community and the town of Paradise. The red circle indicates the 50 km radius suggested by Roger Lewis as a "critical land use" area. One can see that the town of Paradise falls within this radius. If a 50 km radius is created around the Annapolis Valley Mi'kmaw community near the town of Kentville, Paradise would also fall within its boundaries. Should Lewis' theory be true, then there must have been some fluidity around boundaries and fishing in the

head-of-tide zone on the Annapolis River. Of course, as head-of-tide has been constantly moving upstream for thousands of years, one can see from the map that during most of the time it would have fallen within the radius of the Bear River settlement.

Louis Binford writes that precontact groups would exploit resources at local task-sites with a foraging radius (half day travel) from a residential base camp, and the processing of those resources would take place at or near the basecamp. With the introduction of canoes, the distance from the task-site to the basecamp would have been larger than that of the pedestrian foragers/collectors (Binford, 1983).

In the fall of 2015, this writer canoed the Annapolis River between the towns of Kingston and Paradise, roughly 20 km, along with an experienced canoeist and we were able to cover the distance in eight hours. Although one cannot make a direct comparison of our trip with that of precontact canoeists (possibly loaded with fish and game) it does allow for an estimation of where a base-camp might be with respect to the head-of-tide.

Task-groups, Binford continues, ventured out from a centrally located base camp to conduct specific activities such as resource acquisition and monitoring, at remote task-sites. They would then set up field-camps, which served as bases close to the targeted resource for either a temporary or extended period. The task group may have conducted preliminary processing of resources, such as cleaning fish, primary reduction of lithic blanks, and primary butchering, before returning to the main group at the base-camp with

both refined goods for consumption and information about the observed status of other resources in the area (Binford, 1983; Kelly, 1983; Pentz, 2008).

Based on a 2006 archaeological survey of the Mersey and Allen River systems, archaeologist Ben Pentz states that the first lake heading upstream on a river, is given a specific name by the Mi'kmaq — *Ponhook*. This, he believes is a 'central place' most likely used as a seasonal interior basecamp (Pentz, 2008). Unfortunately, for the purposes of this thesis, there is no "Ponhook" on the Annapolis River. There is, however, Paradise Lake, located a short distance from the Annapolis River and 1972 head-of-tide location may have been considered a "Ponhook" and should therefore be considered a high potential area for future archaeological research.

An outcome of Pentz's 2006 survey was the identification of Ceramic period artifacts near the head-of-tide on the Allen river and evidence of older occupants along the lower reaches of the Mersey River. This would seem to support the idea that settlements moved upriver with the head-of-tide and that older sites should be found nearer the coast. Although without more in-depth archaeological investigations, including formal excavations, one should be cautious in drawing definitive conclusions.

4.5.1.1 Soils

The soils in Paradise have been designated as the Nictaux soils (MacDougall, Nowland, & Hilchey, 1969). These soils are excessively drained and occur over a range of

topography from nearly level areas to steeply sloping areas on the North and South mountains. The parent material is coarse, stratified outwash and deltaic sands and gravels. The Ae horizon (top layer) may vary in thickness over short distances and varying degrees of cementing may occur in the B horizon. The texture of the C horizon may vary from coarse sand to coarse gravel (Taylor, 2017).

Figure 4.16 is a map indicating the locations for the 2015 to 2017 excavations.

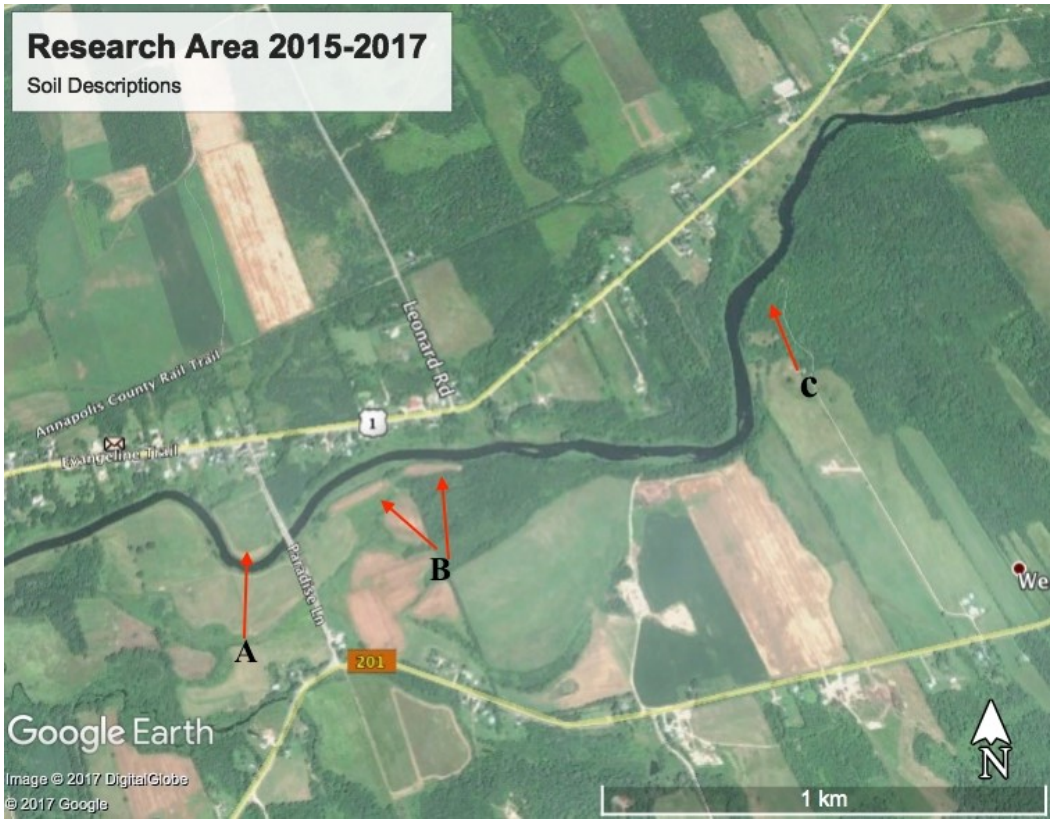

Figure 4. 16: Three locations that were shovel tested and have been designated at “A” (Oxbow west of Paradise Lane Bridge), “B” (two fields east of PLB) and “C” (Indian Lot).

4.5.1.2 Archaeological Research of Paradise Site

The methodology used during the archaeological investigations along the Annapolis River consisted of field walking, shovel testing, formal test units excavated by hand troweling, examination of private collections and desk-based research, including the examination of primary text, aerial photography and historical cartography (Taylor, 2017).

Figure 4.16 gives the location of the three areas where subsurface archaeological research was conducted. The "oxbow site" was investigated first and a five-metre grid was established. Eighteen test pits (Figure 4.17) were dug by hand, each measured 50 cm X 50 cm and were excavated to a depth of at least 120 cm. All the soil was sifted, and each test pit was photographed and documented. No material culture, either historic or precontact, was recovered from this site.

Figure 4. 17: “A” Test pit at Oxbow site. Depth 122 cm. West of PLB. Paradise A4. Nov. 6, 2015.

The soil had a uniform organic characteristic and lacked stratigraphy. These soils occur when there is a wet depression where organic materials accumulate. Most of these organic soils lack horizons such as those found in mineral soils. They do however display successive layers of vegetation in various stages of decomposition (MacDougall, Nowland & Hilchey, 1969). After eighteen negative shovel tests it was decided to test the other two areas “B” and “C”.

Figure 4.18 indicates two fields that were extensively walked and shovel tested.

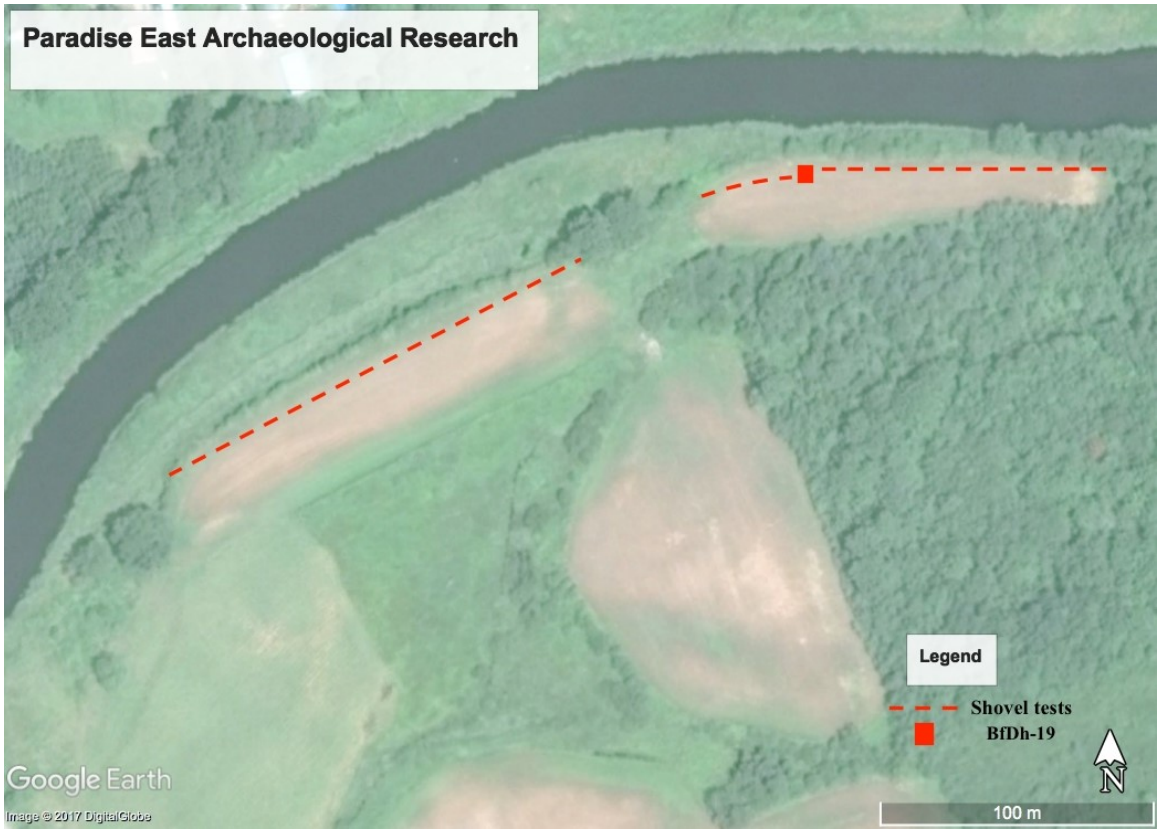

Figure 4. 18: Area "B". Two fields east of the Paradise Lane Bridge were investigated using both field walking and shovel testing.

The first phase of archaeological investigation at the next site consisted of field walking. This writer along with several volunteers walked back and forth covering the entire ploughed portion of the field. Cultural materials were collected. The second phase consisted of shovel testing. It was decided that due to time and labour constraints, a shovel test line, with shovel tests separated by 5 metre intervals, would be conducted (Figure 4.18). These shovel tests consisted of digging a 50cm x 50cm hole to a depth of 120 cm. All soils were sifted, cultural materials, if any, collected and the hole backfilled.

Of the almost 80 shovel tests conducted, only three contained cultural materials or features below the plough zone. Two contained small charcoal features but no other cultural materials. These shovel test units were opened to 1m x 1m units and excavated to a depth of approximately 1m. The third unit, BfDh-19 contained both charcoal features and small lithic flakes. Due to the recovery of these lithics the unit was expanded to a 2m x 2m unit and excavated to a depth of 110 cm (Figure 4.19).

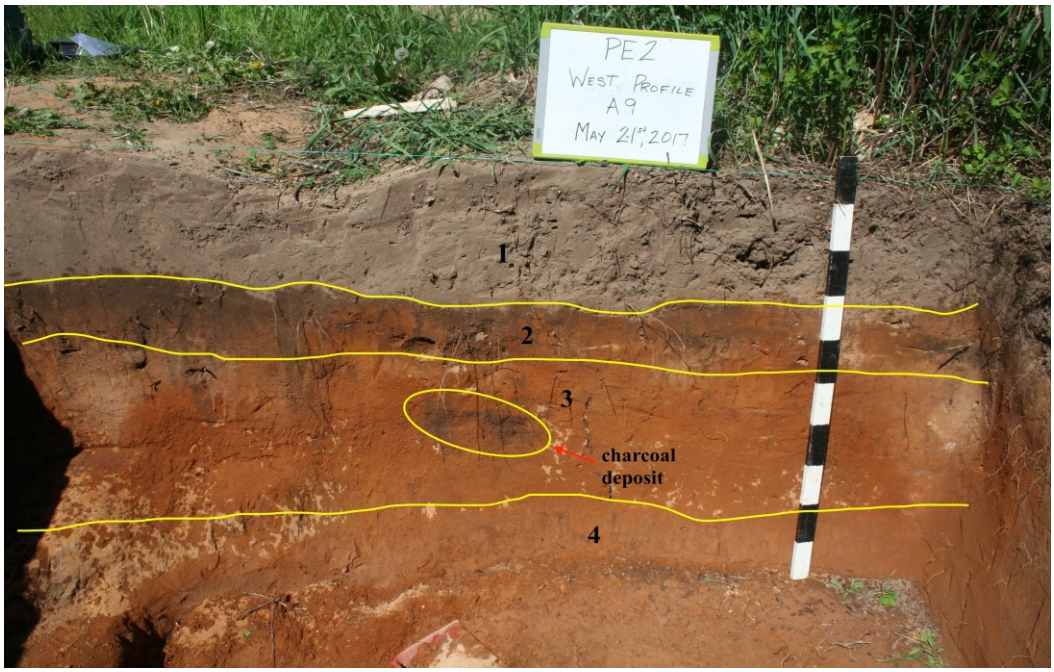

Figure 4. 19: "B" site test unit. Based on the recovery of small flakes and a charcoal feature a 2m x 2m unit was excavated to a depth of 122 cm in the southern section. PE2 West profile. A9 May 21, 2017.

Figure 4.19 is a photo of the west profile wall of an excavated unit near the southern bank of the Annapolis River near the 1972 head-of-tide zone. The top layer is a dark brown sandy loam. This layer is the result of several hundred years of farming activities and is rich in organic materials. This layer will be referred to as the *plough zone*. The depth of

the plough zone ranged from 28 to 34 centimetres. Most of the lithics were recovered in this zone.

The second layer is an orange/brown sandy loam. Approximately 6 cm of cementing occurred in this layer indicating that it had been wet for an extended period. The third layer is a yellowish-red sandy loam; structureless to weak, granular while the fourth layer is a weak light red silty sand.

Most of the lithics recovered from this site were in the deep plough zone. This agricultural activity which has occurred for the past two hundred fifty years would have not only moved the lithics from their primary context, it may have destroyed any ceramics, or charcoal deposits/features thereby making any radiometric dating impossible.

Figure 4. 20: Volunteers conducting shovel tests on site “B”.

Figure 4. 21: Charcoal feature in unit A7 on site “B”. PE3 A7 Lot 3. Charcoal feature. October 3, 2016.

Figure 4. 22 Volunteers excavating three 1m x 1m units on site “B”. A. These units were expanded from shovel tests based on the recovery of charcoal and lithic materials below the plough zone.

4.5.2. “The Indian Lot”

Figure 4. 23: Two Mi’kmaw woman basket weaving on the “Indian Lot”. Ca. 1920. Courtesy of D. Whitman, 2016.

The above photo of two Mi’kmaw women making baskets (Figure 4.23) was taken in the 1920s along the Annapolis River not far from the head-of-tide in Paradise and hangs in the cabin of the landowner, David Whitman. Mr.Whitman, a retired school teacher and local historian, thought I might be interested in viewing this site, which he claims has been traditionally referred to as “The Indian Lot” (and to which it is still referred). His grandfather, who owned the land, described how each spring to fall Mi’kmaw men, women and children would come to fish and “camp-out” at the site and did this well into

the 1930s. As well as the Mi'kmaq historically using the site, he also mentioned that there was a rectangular depression in the ground that might be of French origin.

Due to its relative proximity to the research location, the site was visited. It quickly became apparent as to why it might have been of interest to precontact groups and early European settlers. It is a high terraced area with a good view both up and downstream. A short distance downstream from the terraced area, the land slopes gently to the river, thereby making entrance and exit from the river by canoe an easy task. Figure 4.24 is a Google Earth image indicating the research area and areas which underwent archaeological investigations.

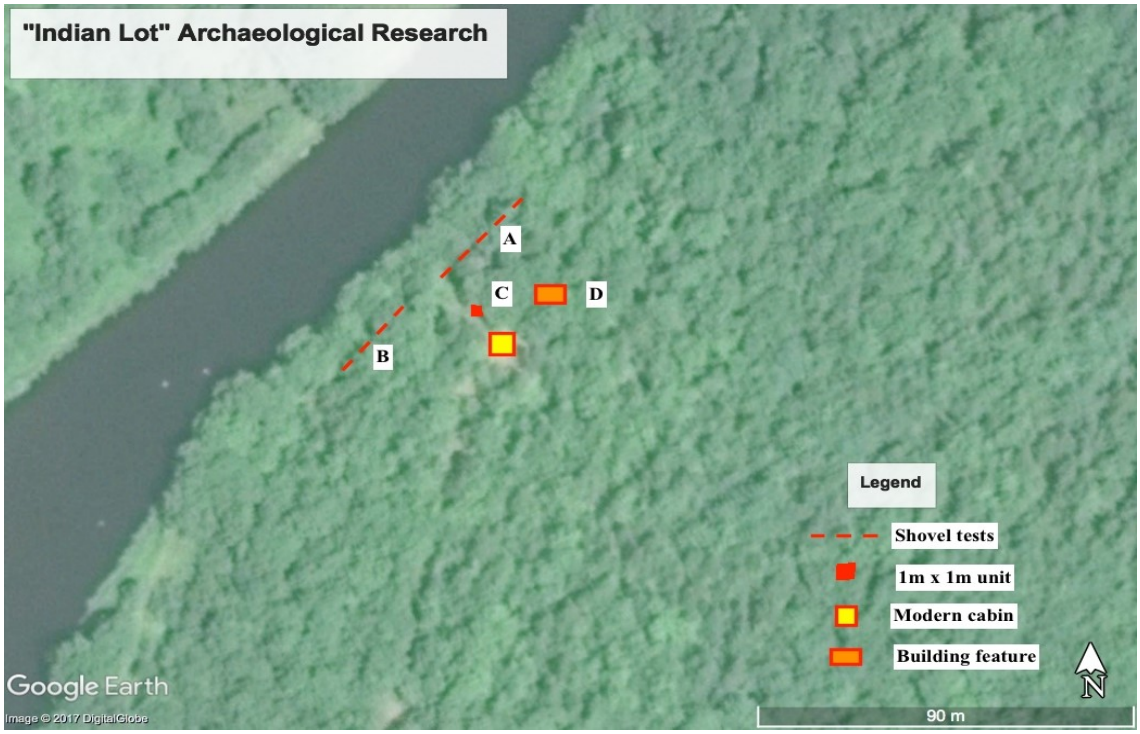

Figure 4. 24: "Indian Lot" research area.

Archaeological research at this location was conducted attempting to answer two questions; firstly, if the Mi'kmaq were using this area in historical times might they have used it used prior to the arrival of Europeans? Might we see this interface between the precontact, proto-historic and French settler periods in the archaeology? Secondly, could this area have been a seasonal base-camp the Mi'kmaq used while small groups fished and hunted at the head-of-tide'?

Using the same methodology (shovel testing) as was used on the two downstream sites, a grid was created on the terraced area near the river and shovel tests at 5 metre intervals were conducted. Due to a cabin built by the landowner in the 1970s in the middle of the terraced area, different designations were given to the area upstream from the cabin as "A", downstream from the cabin as "B" and a small area directly in front of the cabin as "C". The rectangular depression in the ground (proposed house site) was designated as "D" (Figure 4.24).

Grid "A" produced no material culture, however, there was evidence of burning in each shovel test close to the surface indicating that the area had experienced a large burning event in the not too distant past. The landowner, now in his 70s, has no recollection of any fire taking place and does not remember his grandfather ever mentioning it. Grid "B" produced numerous lithics in test unit B4. Due to the positive shovel test the unit was expanded to a 1 metre by 1 metre unit. This again expanded to a 2 metre by 2 metre unit and upon each additional find the unit expanded. (See below for lithic analysis).

Grid “C” produced recent historic material culture which included 22 caliber bullet casings. There was also a charcoal layer at a similar depth of the other two grids. No lithic material was recovered.

“D” was the letter designated for the area of the rectangular depression. This rectangular feature is located about thirty metres south of grid “A”. A 1 metre by 1 metre test unit was established over what appeared to be the footing of the structure and was excavated until sterile soil was encountered. A large amount of melted glass was recovered as well as wire nails (modern). Preliminary results, based on the material culture recovered, combined with the fact that the landowner has no recollection of any fire occurring in his lifetime, nor stories of fires on the property would indicate that this structure burned to the ground probably in the late 1800s. This does not rule out the possibility that an earlier house site may have been situated on the location and the foundation reused by a later group. Only by more extensive excavations can this question be resolved.

4.5.2.1 “Indian Lot” Soils

Figure 4. 25: North profile of unit B4C. October 2, 2017.

Figure 4. 26: Test unit with charcoal feature in the northwest corner of unit A2 Lot 3, July 7, 2017.

Figure 4. 27: South profile of test unit in front of cabin. Charcoal feature in top section of profile. IL C1. October 2, 2017.

When compared with the soils at the Paradise site, the soils at the *Indian Lot* (IL*)* appear much duller. This is probably due to a restriction in the drainage caused by the topography or impermeable layers in the soil or parent material. The soils remain moist for considerable periods and develop duller colours than their well-drained counterparts. Where drainage is moderately slow, the horizons are usually distinct, but have yellowish-brown, reddish-brown, or grey mottles. These mottles are more prominent as drainage becomes poorer. The soils that still have the characteristic horizons of Podzols but are mottled are called Gleyed Podzols.

Where water remains in the soil for a large part of the year, aeration is very poor and gleying becomes the dominant soil process. Horizons are less distinct and have colours of low chroma. Mottling is usually prominent but may be lacking in some horizons that are permanently waterlogged. These soils are called Gleysols (MacDougall, Nowland & Hilchey, 1969). Figure 4.27 is a photo of an excavated test unit. Its profile can be described as the following:

- The first layer (approximately 5 cm) is dark greyish brown semi-decomposed organic matter. Much of the accumulated organic material can be attributed to it being a forest floor.
- The second layer is a very dark grey sandy loam; high in organic matter.
- The third layer is a grey fine sandy loam; weak, granular; friable with an abrupt boundary.
- The fourth and final layer can be described as a reddish-brown sandy clay loam; cementing occurs at this layer.

These soils found on this high terraced area indicate that the *Indian Lot* did not experience as many flooding events as the Paradise site, as to be expected. This makes it a high potential area for a possible basecamp.

4.6 Lithic Analysis

The North Mountain is rich in high quality lithic source material-chalcedonies, agates and jaspers used traditionally by the Mi'kmaq for making stone blades and tools. Chalcedonies are only found in this area of Nova Scotia. The

> Mi'kmaq preferred these materials because of their fine, cryptocrystalline structure which could easily be flaked with the tip of an antler and stone hammer to make sharp edges for cutting, scraping and penetrating hides (Michael Deal, as cited in Sable & Francis, 2012, p. 66).

Many typologies have been developed for archaeological sites. One of these typologies for the classification of archaeological sites is by K.C. Chang. Chang proposed seven types based on the duration of its use. The length of time the site was in use determines the nature and position of the cultural material at the site (Chang, 1972).

The first type is single use, such as an overnight camp, which would not leave much occupational evidence. The second type is a seasonal site. These sites would be used for special tasks such as hunting, fishing, and quarrying. Such sites might have facilities for processing the resource being exploited but would probably not have generated a great deal of lithic material. The third type is a site used seasonally for several years. The fourth type is a seasonal site which is used for decades. These sites are quite likely to have had semi-permanent structures. Hearth features as well as lithic materials would be present in greater quantity than the three previous types but still relatively low in comparison with more permanent occupation sites. Such sites are more likely to have semi-permanent structures devoted to ritual and local cemeteries. At settlements with cemeteries, there is always a steady flow of functional items such as heirlooms, and/or religious artifacts. Types five, six and seven are sites occupied year-round. Type five is a site abandoned after one year and would present as a low level of development in facilities, activities, and disposal areas. Type six is a site in use for several years while

type seven is a permanent settlement. Both these types would yield similar archaeological results with seven being more deeply stratified (Chang, 1972).

Techniques for creating stone tools are learned behaviours. They are highly variable in time and space since specific lithic reduction processes are affected by different variables in response to different cultural needs (Plew et al., 1985). The method of reduction depends on many variables including (but not limited to), the degree of settlement mobility, subsistence practices, levels of flintknapping skill, raw material quality and availability, types of knapping tools that were employed and degree of specialization in lithic production (Collins, 1975; Flenniken, 1984; Pecora, 1990). Since the late 1800's, lithic analysts have recognized that groups of people developed differences in shaping devices and each region created varieties of shaped results (Holmes, 1894, as cited in Yerkes & Kardulias, 1993). However, some archaeologists believe that the differences may not be so great because there are only a limited combination of techniques and options for any culture to use in the manufacture of its lithics (Collins, as cited in Pecora, 1990). Flenniken propose that the method of manufacture of a stone tool can be deduced from the waste produced. This means that the waste (debitage and debris) at a site can be useful to decide which tools were made, which in turn enables differentiation of precontact groups (Flenniken, 1981, 1984, 1985, as cited in Yerkes & Kardulias, 1993).

When replication experiments have been conducted, almost identical debitage and debris will be produced (Flenniken, 1984). This, he believes, provides a means of identifying and differentiating between precontact groups by their distinctive methods of

manufacturing stone implements, including the by-products. Different occupation zones at multicomponent sites can be isolated by analyzing the lithic debitage and the lithic scatters encountered during archaeological surveys. This can aid in the identification of the settlement systems (Yerkes & Kardulias, 1993).

4.6.1 Paradise East Lithics

The majority of lithics recovered during the 2015, 2016 and 2017 field work seasons were debitage (flakes) and were either collected as surface finds or were excavated from the plough zone. These flakes were either quartz or quartzite- materials readily available in this region of Nova Scotia. One pre-form made from quartz, possibly a corner notched point, and one uni-faced basalt point were recovered. Based on the style and lithic material of these two points, they are most likely from the middle to late Ceramic period (2 000-450 yrs BP) (Pentz, 2008). One chert core was also recovered in the plough zone and would also be typical of the materials used during the late precontact period (Pentz, 2008). Chert was likely quarried from Scotts Bay and was either brought to *Nisoqu'katik* (Paradise) by its user or was procured through trade.

Figure 4. 28: Lithics recovered from the plough zone at the Paradise East site. A, B, C, D and F are quartz flakes. E is a basalt stemmed point.

Figure 4. 29: Lithics recovered from the plough zone in Paradise East site. G-unidentified, H-quartzite flake, I-quartz core, J-unidentified flake, K-quartzite flake, L-Scotts' Bay Chert.

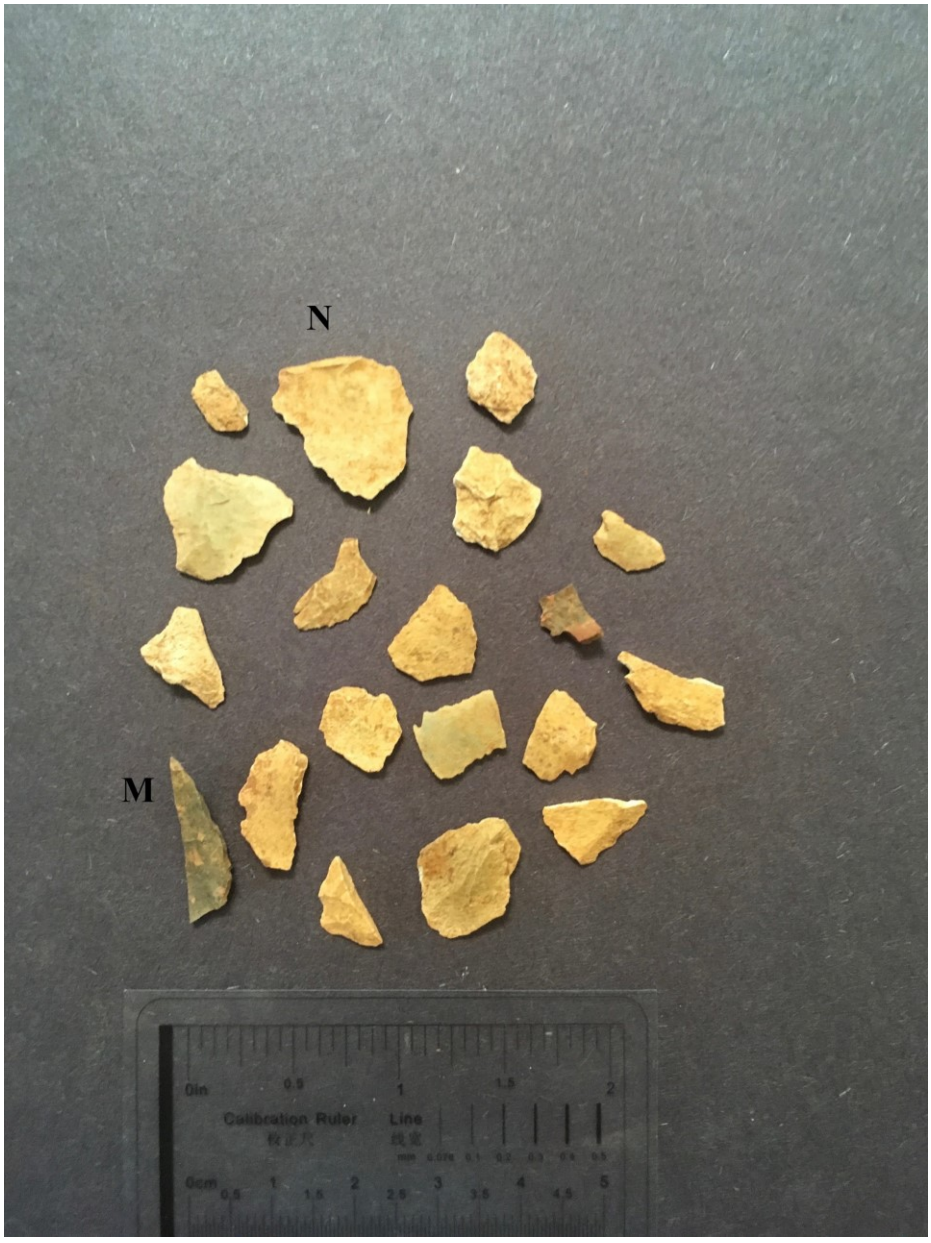

Figure 4. 30: Lithics recovered from test unit BfDh-19 (A9) to a depth of 94 cm. Rhyolite and felsite flakes.

Figure 4. 31: Possible side-notched quartz pre-form recovered from the plough zone in Paradise East.

Table 4 Lithics table from Paradise East site

Lithics-BfDh-19	Unidentified.	Quartz	Quartzite	Basalt	SBC	Felsite	Rhyolite	Chert
Flake	4	1	6	0	0	24	4	0
Point	0	0	0	0	0	0	0	0
FCR	17	0	0	0	0	0	0	0
Scraper	0	0	0	0	0	0	0	1
Core	0	0	3	0	0	0	0	0

Most finds were surface or plough zone recoveries. Fortunately, about half-way along the easternmost field, felsite and rhyolite flakes were recovered in a deeply stratified context. These flakes were located between a depth of 44 cm below surface to a depth of 92 cm. The shovel test pit was expanded to a 2 metre x 2 metre unit and excavated to a depth of 110 cm. No diagnostic materials were recovered during the field seasons, however, both felsite and rhyolite were used by Terminal Archaic groups (Deal, 2015b). Based on the material and the depths at which they were recovered during these preliminary excavations, the site has been registered with the province of Nova Scotia and given a provenience designation as BfDh-19. It is hoped that with more extensive excavations this site will yield more information.

The Boswell site, a Terminal Archaic site, located about 15 km upstream from this location has provided researchers with a great deal of diagnostic materials and is presently being studied by researchers at Memorial University. With the possible discovery of a new Terminal Archaic site with which to compare the Boswell site, it is hoped that we might gain greater insight into why certain locations on a river were

selected. This may allow researchers to better predict locations of high potential for Terminal Archaic artifacts.

Based on the lithic material, the Paradise East site falls under Chang's second typology classification; sites which would be used for special tasks such as hunting, fishing and quarrying. Such sites might have facilities for processing the resource being exploited but would probably not have generated a great deal of lithic material. The fact that there were so few diagnostic artifacts recovered may also indicate that the site was used as a manufacturing site where raw materials were transformed into points and scrapers and transported elsewhere.

4.6.2 "Indian Lot" Lithic Analysis

The lithic material recovered from excavations on the *Indian Lot* consisted of quartzite flakes and the base of one stemmed point made from quartzite. This type of stemmed point can often be found among the Late/Terminal Archaic assemblage. It was recovered at a depth of approximately 15 cm in a charcoal feature. A charcoal sample ((UOC-5680) was collected for radiometric dating and sent to AE Lalonde AMS Laboratory at the University of Ottawa. The results have given a date of 1 263 ± 22 ^{14}C yrs BP (1 280-1175 cal. yrs BP [94%]). This date places it in the middle of the Ceramic period. Further excavations at this site are still needed before any conclusions can be offered. What can be said is that there was a group at this site 1 280 years ago and there was a Mi'kmaw group at this same site twelve hundred years later.

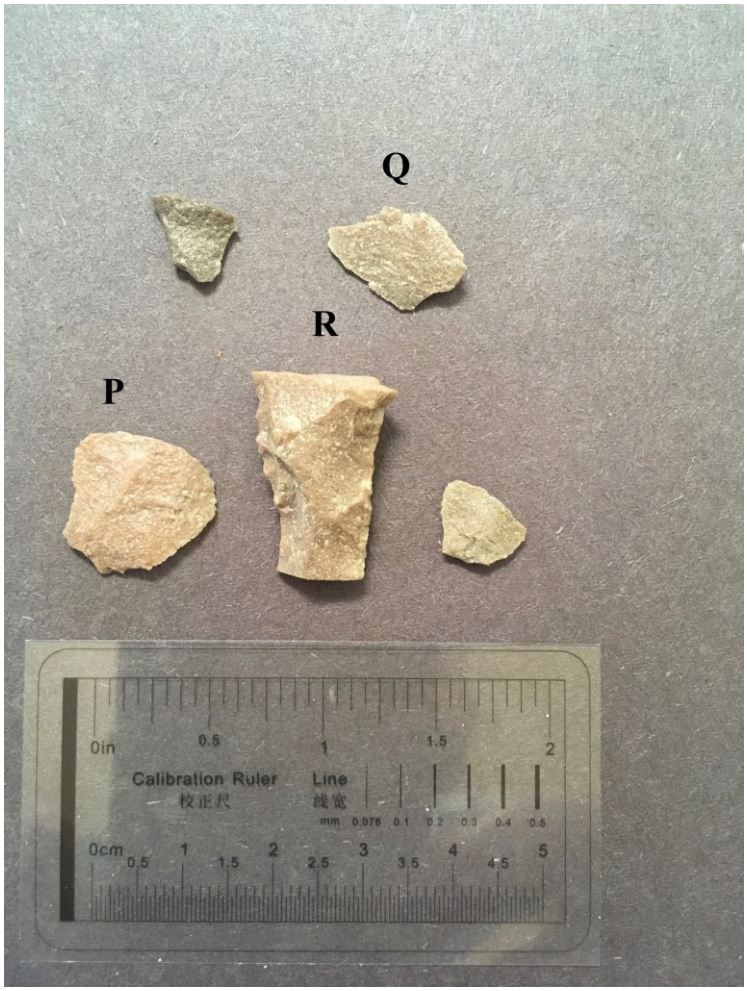

Figure 4. 32: Quartzite flakes and one quartzite stem fragment “R” from a biface point recovered at the “Indian Lot” site. “R” may also be a Terminal Archaic drill.

Figure 4. 33: Quartzite flake with noticeable striking platform at proximal end (top) recovered at the "Indian Lot" site.

Table 5 Lithics from "Indian Lot" site.

B-4 Excavated	Quartz	Quartzite
Flake		13
Point		1 (Stem)
FCR		0
Scraper		0
Core		0

4.6.3 James Price Property

One method archaeologists use when conducting research is to canvas the local population within the research corridor to gain information and stories regarding their time on the property, how it might have changed over their lifetime and if they had found any artifacts on their properties. While this method is very time consuming occasionally it pays off. In late October 2017, several days were spent knocking on doors between the towns of Bridgetown and Paradise. Several people remember a relative who had found some "arrowheads down by the river" but now have no idea what they had done with them. Although disappointing because they could not show me these points it did let me know that there was a precontact presence on the property. The many hours of knocking paid off when I met Diane and James Price whose family has owned their farm and field

for many generations (See Figure 4.34).

Figure 4. 34: James Price Property site.

In the 1950s James' father, after ploughing his field along the river discovered several points and preforms in the freshly tilled soil (Figure 4.35). Based on the head-of-tide model presented in this thesis this site may have been located near the head-of-tide just before 1380 BP.

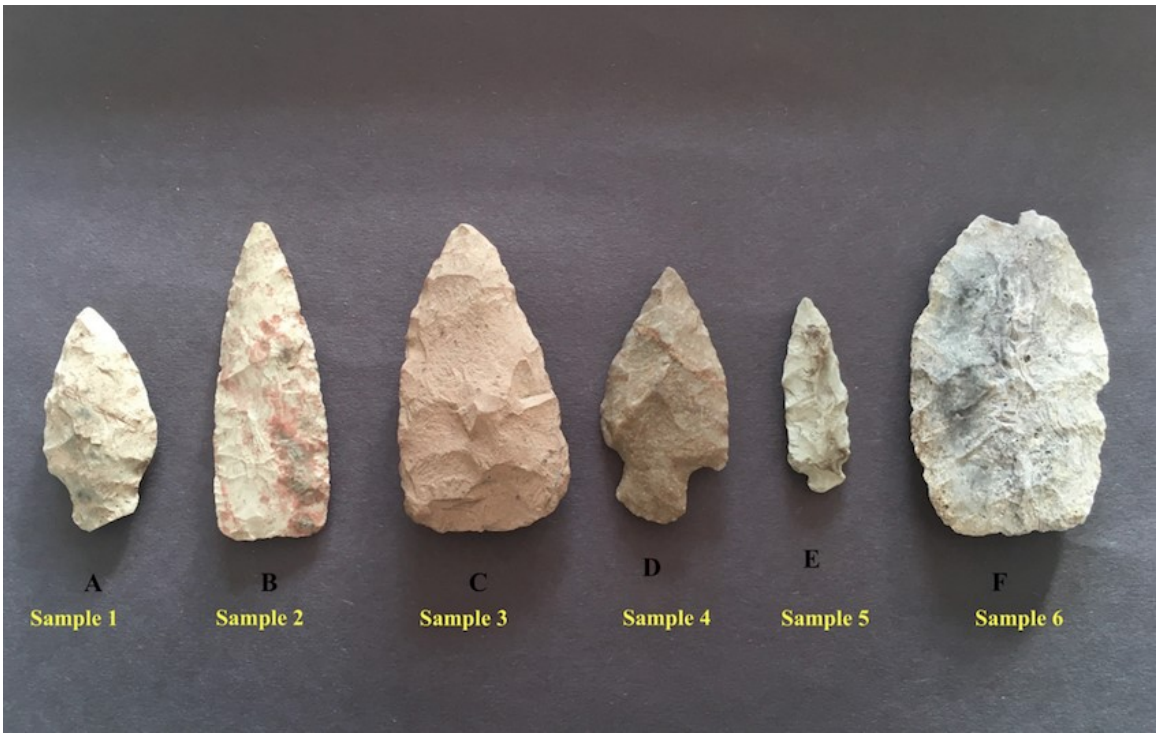

Figure 4. 35: A-Side-notched agate point, B-Davidson Cove dacite preform, C-Rhyolite Preform D-Stemmed quartzite point, E-Orient Fishtail dacite point, F-Rhyolite preform.

Table 6 Lithics collected on the J. Price site.

Surface Finds	Quartz	Quartzite	Dacite	Trachyte	Rhyolite
Flake	0	0	0	0	0
Point	0	1	0	0	1
Preform	0	0	1	1	1
Scraper	0	0	0	0	0
Core	0	0	0	0	0

Mr. Price, a retired schoolteacher, loaned me these artifacts to conduct XFR analysis to identify the material and its possible quarry source. Points are based on a comparison

with the New York Sequence (Figure 4.4) and similarities with already dated lithics in the region. Based on their style and XFR analysis "A" can be described as a preform made from a Davidson Cove dacite. Based on dacite samples originating from Davidson Cove and found on other sites in the region, it is likely from the Ceramic period. "B" is a quartzite point and based on its stem length and material it is probably from the Terminal Archaic period. "C" is a rhyolite preform. "D" is an agate point probably from the Ceramic period. "E" is a dacite point from the Terminal Archaic period and "F" is a rhyolite preform, undetermined period. Because all these artifacts were recovered as surface finds from a ploughed field, any context from which to make interpretations has been destroyed. Permission was given by the landowner to conduct sub-surface archaeological investigations in the future.

4.6.4 Trace Element Analysis

Several of these lithics recovered from the Paradise East site, including chipped flakes from the deeply stratified unit BfDh-19 and points and preforms from the J. Price site were taken to the Department of Natural Resources (DNR) in Halifax and examined by geologist Christopher White, PhD, PGeo. The lithics were compared with samples tested from the White Rock Formation on the South Mountain of Nova Scotia, the Fountain Lake Group in the Cobequid Mountains, Vinalhaven (coastal Maine), and Davidson Cove near Scot's Bay, Nova Scotia. The following is a report on our findings.

Lithics were visually examined to determine the original rock type. To better define the chemical character of the flakes, points and preforms were analyzed using a portable X-5 000 X-Ray Fluorescence (XRF) machine. Each lithic was analyzed twice (once on each side) and the average determined (Figure 4.36). However, some flakes were small (BfDh-19 A9 and 9D) and did not completely cover the 8 mm beam diameter on the XRF which typically results in lower values in the major oxide and trace elements. In this case ratios were used to classify the volcanic rock types following Winchester and Floyd (1977).

Two of the lithic fragments from Paradise East (PE2 and SUR-find) were visibly determined to be quartzite and the results of the XRF analysis verified this. The XRF analysis of volcanic lithic fragments A9-brown and A9-orange (brown chip 1 and orange chip 2 as seen in legend in Figure 4.40) (taken from BfDh-19) are low in SiO2 due to their small size and do not adequately reflect their rock type. However, based on Zr/TiO_2 and Nb/Y ratios (Fig. 4.36) they plot between the rhyolite and dacite compositions and hence these two samples are considered rhyodacites.

The direct source area for these lithic fragments is unknown but the XRF data can be used to compare with published chemical data from the local bedrock. The White Rock Formation is part of the South Mountain and it outcrops to the south of this locality. It has rhyolitic flows in the lower part of its stratigraphy (White et al., 2010; White et al., 2017) which look similar to some of the lithic fragments. A representative chemical analysis of a rhyolite flow in this area (Keppie et al., 1997) is used as a comparison to lithic

fragments A9-brown and A9-orange. Based on major element data, the rhyolite flow and the two lithic fragments display similar chemical patterns (Figure 4.37). Using the trace element data, it is clear that the chemical patterns of the lithic fragments are also similar to the rhyolite flow, however, Y values in the lithic fragments are significantly higher (Figure 4.37). These high values are unique and provide a distinct chemical fingerprint for these lithic fragments. Compared to the representative rhyolite sample from the White Rock Formation, these fragments did not originate from this formation. In Nova Scotia the only known high Zr and Y rhyolites are in the Cobequid Highlands (Fountain Lake Group), which may provide a possible source area (Figures 4.38, 4.39, 4.40. and 4.41).

Associated with rhyolite flows in the White Rock Formation are basalt flows (White et al., 2010; White et al., 2017) that appear similar to the two lithic fragments collected from the field in Paradise East (PE2 and 9D) (Figure 4.44). The north of the North Mountain Formation is also composed of several basaltic flows with similar characteristics to the fragments. A representative sample of the basalt from the White Rock Formation (Keppie, et al. 1997) and average basalt from the North Mountain Formation (Merle et al., 2014) are used as comparison (Table 6). Based on major element data the basaltic flows and the two lithic fragments display similar chemical patterns although concentrations of $Fe_2O_3^T$ and CaO are lower in the lithic fragments (Table 6). The trace element data for the basaltic flows and fragments show no clear common pattern and it is likely that the lithic fragments do not originate from either the White Rock Formation or the North Mountain.

Six lithics from the J. Price site were analyzed next. Sample 1 was determined to be a rhyolite. Sample 2 is an agate and is an almost exact chemical match, except for the amount of copper (2g) to rock samples taken from Davidson Cove near Scott's Bay in the Annapolis Valley (Figure 4.46). White believes that the difference in the amount of copper between the J. Price site preform and samples tested from Davidson Cove are probably a result of a small sample size. Sample 3 is a rhyolite. Sample 4 is a quartzite. Sample 5 is a rhyolite and Sample 6 is a rhyolite.

The initial testing of the lithics from the Paradise East, "Indian Lot", and J. Price sites have provided possible quarry locations. It would appear, based on the lithics, that the Paradise East and J. Price sites were occupied by both a Terminal Archaic tradition and a Ceramic period tradition. The "*Indian Lot*" lithics are from the Ceramic period with a local quarry source.

To determine if these initial findings are accurate, further excavations of these sites (and an initial one on the J. Price site) are needed. This will hopefully lead to the location of undisturbed, stratified sites and therefore more accurate interpretations. While these sample sizes are small, the findings are very promising. One lithic was matched to a quarry site and two other lithics were determined to be exotic to this region of Nova Scotia.

Table 7 Chemical analysis on lithics. (White, 2017)

Table 1.

Sample	SiO_2	TiO_2	$Fe_2O_3^T$	CaO (wt%)	K_2O	MnO	P_2O_5	Ba	Ce	Cr	Cu	Nb	Pb	Rb	Sr	Th	V	Y	Zn	Zr	Zr/ TiO^2	Nb/ Y	Rock name
A9-brown	59.54	0.27	1.62	0.70	2.55	0.04	1.037	649	49	23	0	42	0	105	196	0	64	193	24	672	0.25	0.22	rhyolite
A9-orange	64.73	0.24	1.36	1.04	2.01	0.02	0.973	331	0	19	0	2	0	85	202	21	41	144	12	599	0.25	0.01	rhyodacite
ILB4D-2-2	92.02	0.11	0.09	0.05	0.19	0.00	0.751	0	0	4	0	5	0	9	6	0	6	3	0	33			quartzite
PE2-surface-2	43.98	1.31	6.28	0.06	3.74	0.03	0.772	480	112	138	8	27	0	136	96	19	123	42	73	250	0.02	0.64	basalt
9D-2-2	67.03	0.18	6.06	0.00	0.33	0.30	0.854	161	0	0	7	6	22	17	84	0	22	10	12	34	0.02	0.62	basalt
SUR-find-2	85.68	0.05	0.14	0.08	0.16	0.00	0.785	0	0	0	0	1	0	2	5	0	10	0	0	22			quartzite
sample1	91.67	0.10	0.07	0.06	2.67	0.00	0.200	104	96	24	34	29	6	100	14	24	26	47	25	181	0.18	0.61	rhyolite
sample2	98.99	0.02	0.05	0.01	0.07	0.00	0.136	25	5	3	1	1	1	5	2	1	2	2	1	2			agate
Sample3	89.91	0.16	0.75	0.29	0.52	0.01	0.305	137	5	11	28	4	4	19	20	1	18	4	15	27	0.02	0.98	alkalic basalt
Sample4	97.81	0.18	0.27	0.26	0.56	0.01	0.423	77	5	15	16	2	4	15	5	4	17	4	11	37			quartzite
Sample5	74.98	0.79	0.56	1.48	7.16	0.01	0.279	1007	65	32	27	27	24	121	245	21	128	57	13	179	0.02	0.47	subalkaline basalt
Sample6	79.54	0.08	1.22	0.01	2.69	0.02	0.214	478	28	3	1	12	5	71	17	3	32	39	19	150	0.19	0.29	rhyolite
Davis Cove 1	99.17	0.01	0.14	0.48	0.05	0.01	0.193	10	5	3	74	1	1	5	16	1	2	2	1	3			agate
Davis Cove 2	98.02	0.02	0.21	0.02	0.09	0.01	0.101	10	5	3	50	1	1	5	4	1	9	2	1	1			agate
Fountain Lake Gp																							
high Rb rhyolite	77.00	0.18	2.39	0.45	5.26	0.04	0.032	98	79	15	5	66	38	300	30	27	12	74	65	332	0.18	0.89	rhyolite
high Ba+Rb rhyolite	73.33	0.33	3.26	0.40	5.25	0.06	0.035	630	132	22	5	44	16	205	49	19	8	71	74	532	0.16	0.63	rhyolite
high Sr rhyolite	73.43	0.33	3.33	0.88	3.94	0.06	0.075	732	125	22	8	40	16	90	258	16	26	67	122	458	0.14	0.60	rhyolite
high Zr rhyolite	76.52	0.25	3.75	0.25	5.22	0.07	0.012	139	242	22	11	88	40	226	34	25	7	165	131	###	0.56	0.53	comendite
White Rock Fm																							
rhyolite	74.58	0.33	2.77	1.04	3.58	0.04	0.166	420	60	41	5	32	23	143	118	18	27	41	72	219	0.07	0.78	trachyandesite
basalt	46.36	2.56	14.47	8.55	0.96	0.22	0.585	345	68	404	38	39	6	23	593	1	296	35	128	191	0.01	1.10	alkalic basalt
North Mtn Basalt	52.41	1.30	11.85	9.95	0.81	0.18	0.159	184	33	136	137	9	5	17	194	3	276	24	5	123	0.01	0.38	subalkaline basalt
Vinalhaven granite	74.50	0.26	1.69	1.08	5.19	0.03	0.068	327	94	5	5	14	25	247	54	21	15	38	23	193	0.07	0.38	dacite

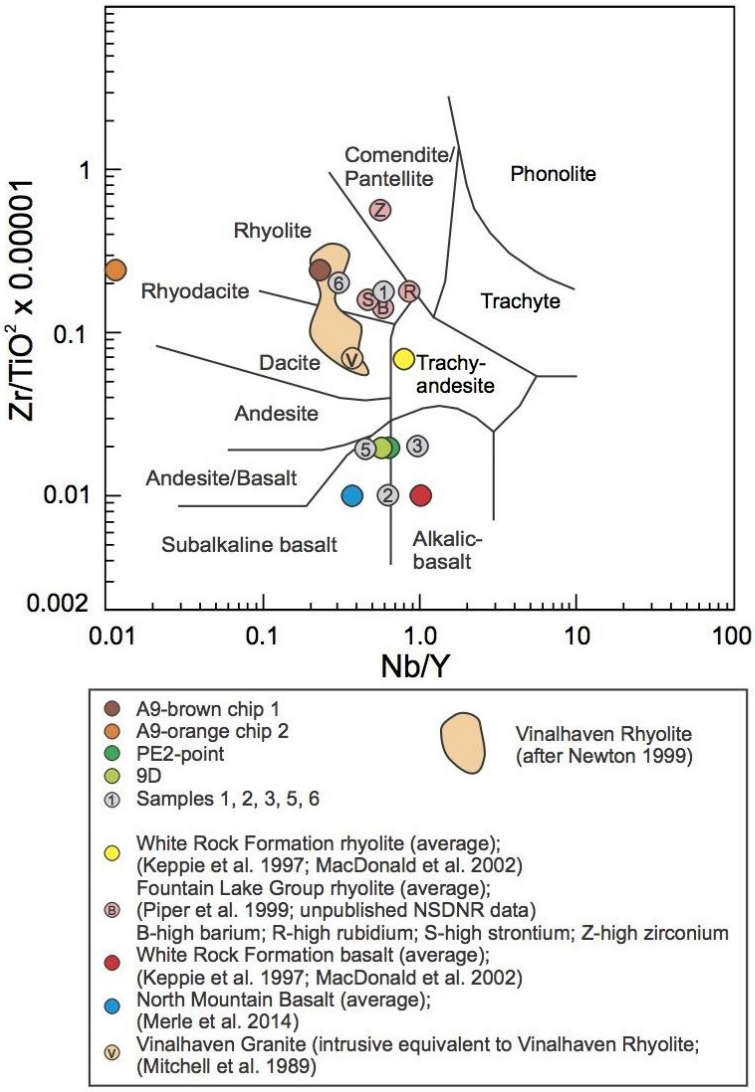

Figure 4. 36: Classification of lithic material (White, 2017)

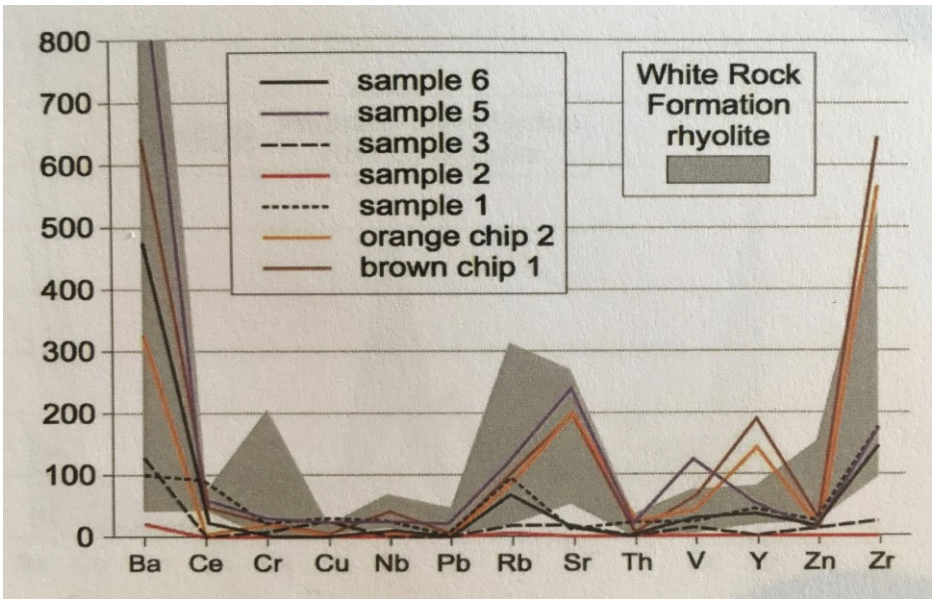

Figure 4. 37: Comparison of samples with White Rock Formation rhyolite. Brown chip 1 and orange chip are from Paradise East, samples 1-6 are surface finds from the J. Price property. (White, 2017.)

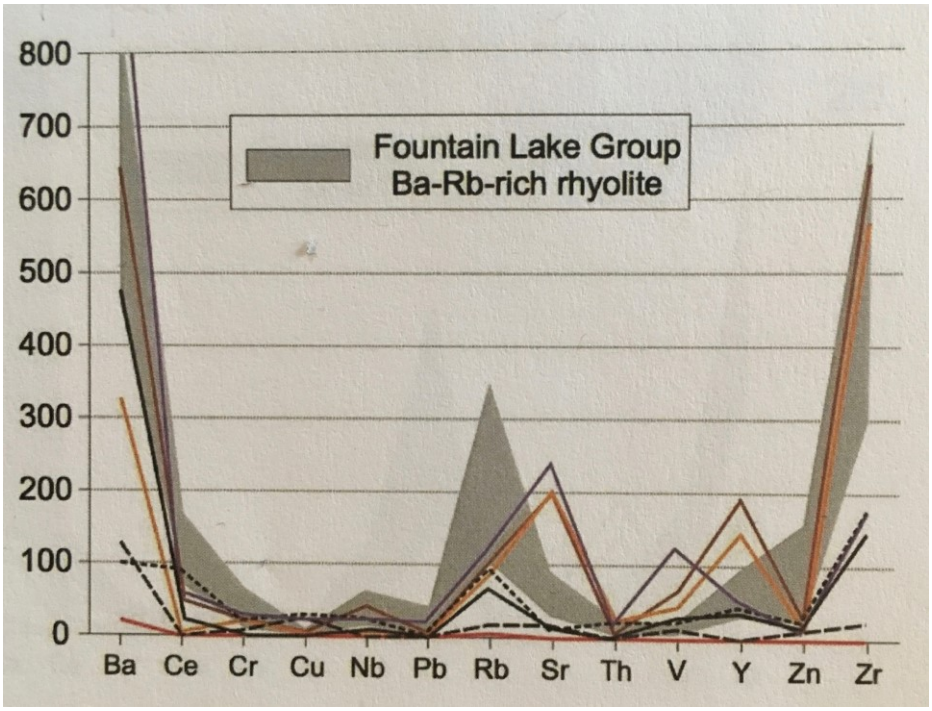

Figure 4. 38: Comparison of samples (see legend in figure 4.40) with Fountain Lake Group rhyolite. (White, 2017).

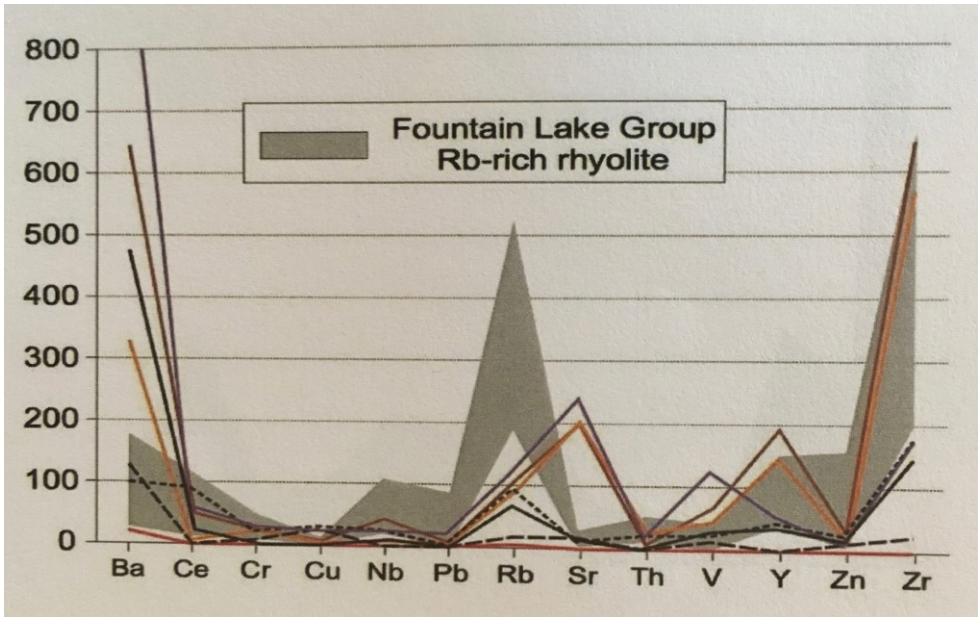

Figure 4. 39: Comparison of samples (see legend in figure 4.40) with Fountain Lake Group Rb-rich rhyolite. (White, 2017).

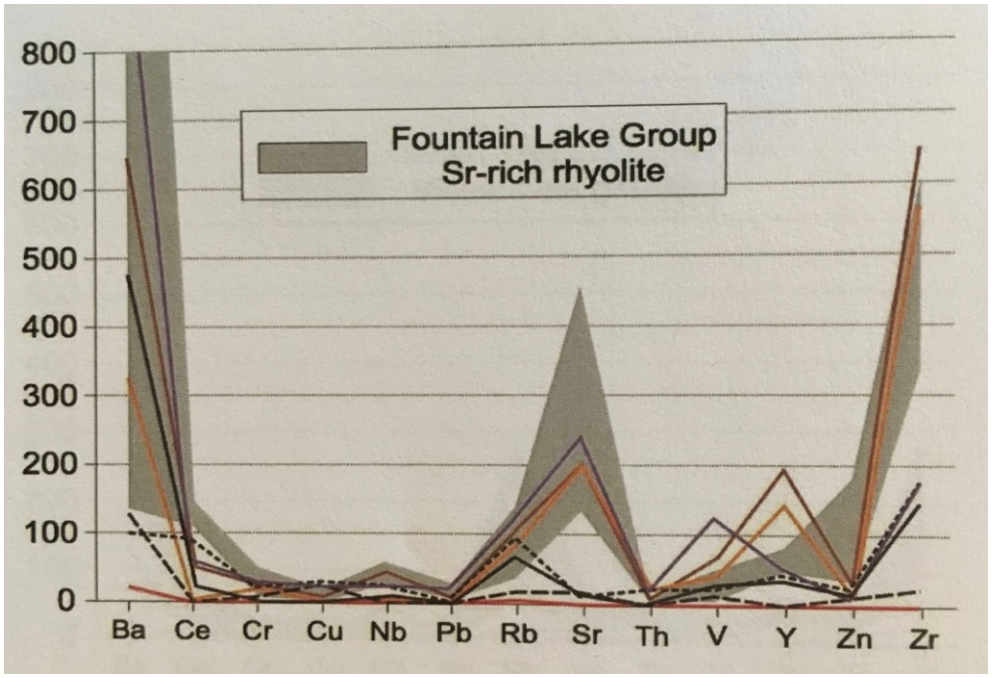

Figure 4. 40: Comparison of samples (see legend in figure 4.40) with Fountain Lake Group Sr-rich rhyolite. (White, 2017).

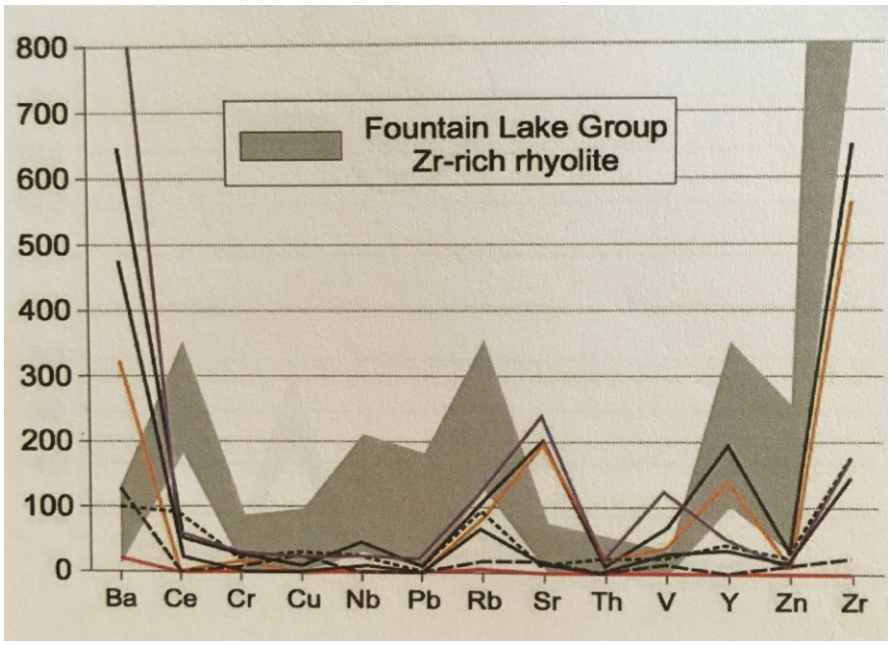

Figure 4. 41: Comparison of samples (see legend in figure 4.40) with Fountain Lake Group. Zr-rich rhyolite. (White, 2017).

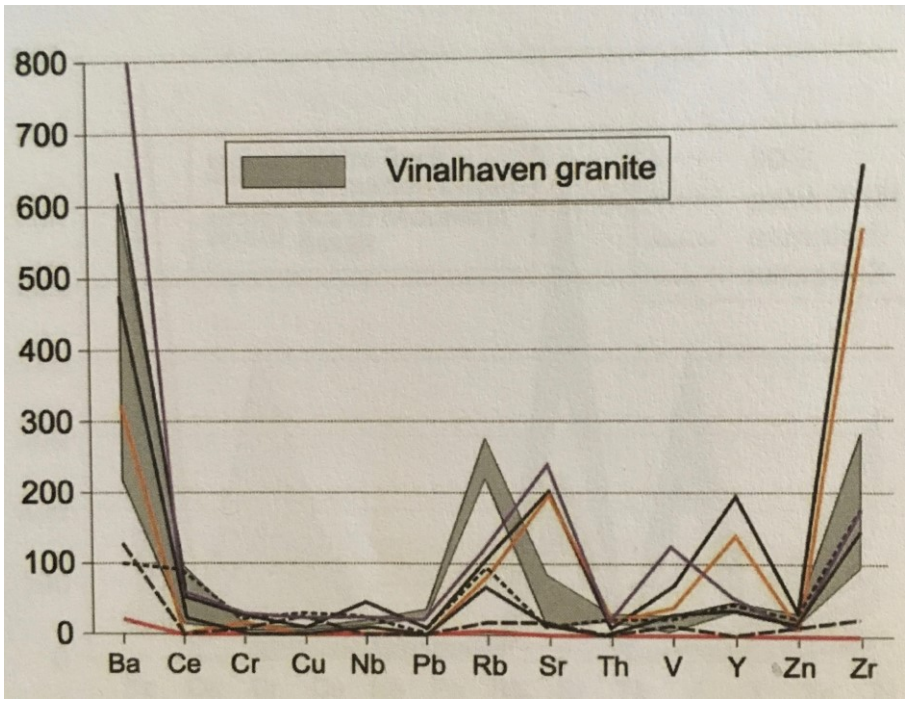

Figure 4. 42: Comparison of samples (see legend in figure 4.40) with Vinalhaven granite. (White, 2017).

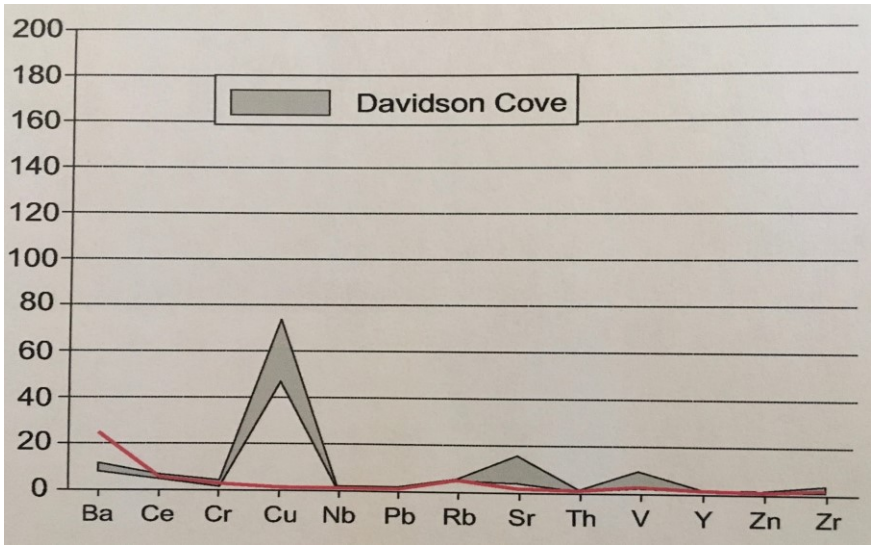

Figure 4. 43: Comparison with rock samples from Davidson Cove. (White, 2017).

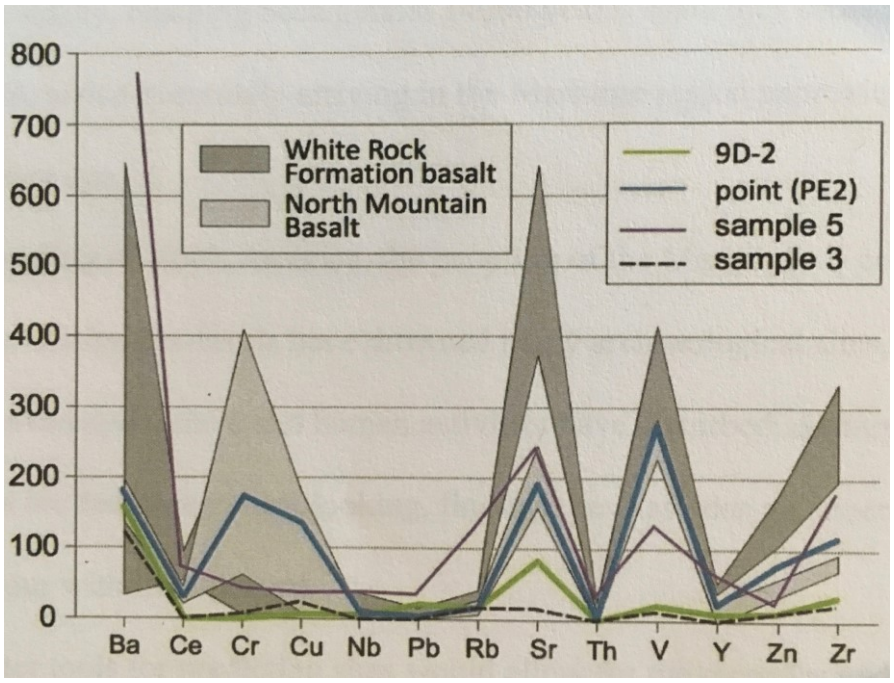

Figure 4. 44: Comparison with White Rock Formation basalt and North Mountain basalt. (White. 2017).

4.7 Conclusion

This chapter examined past and original archaeological research in southwestern Nova Scotia. This current research was conducted along the Annapolis River and consisted of field walking, shovel testing, formal test units and door to door canvassing. As a result, four sites have been located.

Inventory from the site furthest downstream, the J. Price site, consisted of points and preforms and can be dated, based on style, to both the Terminal Archaic and Ceramic periods. Trace element analysis on these specimens identified the material types and the quarry location for one of the preforms.

The Paradise East site inventory consisted of both flakes recovered as surface finds collected from a ploughed field and lithics recovered from a deeply stratified test pit. Because of the disturbed context of the surface recovered flakes, very little can be concluded, except that there was a precontact presence in the area. The small flakes excavated from a depth of almost 1 metre, provide evidence that there was likely an early precontact presence on this land. Trace element analysis of these flakes determined that they were not from a local quarry site but instead possibly from the Cobequid Mountains. Based on the type of material these flakes were probably created during the Terminal Archaic period.

The fourth site is located on a terraced area upstream from the Paradise East site and is referred to as the *Indian Lot.* It was discovered through shovel testing and formal test excavations. Several quartzite flakes were recovered in a test pit. During excavations of this site, a stem point fragment was recovered in a charcoal feature. A charcoal sample was collected and analyzed and the date range puts this site in the Ceramic Period and provides evidence that this site may have been occupied continuously from this period until the 1930s. This would make the *Indian Lot* site one of the few deeply stratified sites in the Maritime region. Approximately 60 meters upstream from this site, a rectangular feature was discovered and appears to be the remnants of a previous structure. The landowner does not recall any house being on this site in his lifetime nor was it mentioned by his father or grandfather. As of this writing, two days of subsurface testing have been conducted on this site and there is insufficient information from which to make any conclusions.

This archaeological work provides clear evidence of the importance of the Annapolis River to precontact groups. Although much more research needs to take place on this river, the work to date provides evidence that the ability to measure the movement of head of-tide over time can aid in both the location of precontact sites, the determination of their relative age and the activity that was occurring there.

With the recovery of precontact material culture, greater knowledge of these groups can be gleaned. Using an XRF machine can help researchers positively identify quarry sites. But, of course, this can only be done if more lithic artifacts are found.

CHAPTER 5 CONCLUSION

The three pillars of Canadian society are French, English and First Nations and together they make up the fabric of our nation. This third pillar is too often overlooked and the contributions to our culture and society by our Indigenous peoples have been underappreciated to the detriment of our nation. Instead the First Nations of Canada have been marginalized and now live on the periphery of our society. This marginalizing has occurred in many ways. One way has been to largely ignore the long precontact period, reaching back almost 14 000 years, when early migrants crossed from Siberia into North America eventually arriving in the Maritime region approximately thirteen thousand years ago.

Like the peopling of North America, the understanding of the peopling of the Maritimes is complex and has many gaps. Rising sea-levels have drowned many archaeological sites, development has paved over others and human activities have disturbed, destroyed, or continued to threaten still others. For the few researchers looking, finding sites has been an expensive, time-consuming endeavor with little reward. Having better tools for predicting sites would allow for the recovery and study of First Nations' material culture. Since precontact societies left no written accounts of their lifeways, researchers must turn to the materials they left behind, as well as oral tradition, which passed essential cultural knowledge down from generation to generation.

This thesis has addressed some of these issues through an interdisciplinary approach. The three disciplines of history, earth sciences and archaeology formed the methodological approach. Surveying early historical documents, synthesizing paleocoastline and sea-level change research and conducting original archaeological investigations were the methods used.

Chapter 2 examines popular early historical documents, including primary texts, illustrations, and maps. This was done because much of the present narrative on precontact groups' lifeways is based on these early materials produced by European men. Clergy and explorers depicted these groups as small bands of hunters and gatherers, many surviving only because of the generosity of the Europeans and awaiting to be saved through their conversion to Christianity. They failed to appreciate the rich and dynamic cultures they were documenting. Their depictions were recorded with clear objectives - exploration, colonization, and evangelical pursuits. The result of this approach was exploitation and marginalization of the Indigenous population. Present-day historians are aware of these early biases and their work has been used to aid in the analyses of the early texts, images, and maps.

Archaeological evidence demonstrates that these early depictions were inaccurate representations of their lifeways. One important discrepancy is the popular belief of the seasonal round, which is still accepted by many historians today. Instead, the archaeological record supports the idea that large groups remained on the coast

throughout the year. This idea of the seasonal round contradicts the idea that Indigenous groups had only an ephemeral hold on the land as opposed to a level of permanency.

Popular illustrations of the day portray First Nations groups as either "Noble Savages" or as versions deemed palatable to European citizenry, happily lying about and enjoying the idyllic landscape, posing little or no threat to those Europeans with an interest in colonization. Early cartographers, conversely, often marginalized Indigenous groups by omission. Very few early maps depict any sort of Indigenous presence on the landscape. Most names of rivers and other bodies of water have been changed to French and English to depict the landscape as "tamed" and "civilized" in the hopes of luring European settlers.

It is not the purpose of this thesis to discredit all these early documents as worthless, but instead to caution those using these documents to make inferences regarding First Nations precontact history. While providing some pertinent information as to how certain groups lived on the landscape after European contact, they provide little useful information for prior lifeways. In fact, many were purposely created to erase the footprints of the precontact groups. While historians today recognize the limitations of these documents, many continue to fail to address that the societies being described were cultures in transition as a result of European contact.

Conversely, Mi'kmaw place names reflect what the Mi’kmaq have traditionally valued. Because of this, they hold great potential for the location and interpretation of precontact sites. Chapter 2 includes a short case study where documented Mi’kmaw named places were cross referenced with archaeological sites found in the Maritime Archaeological Resource Inventory (MARI) I for two rivers in southwestern Nova Scotia.

Chapter 3 examines the period of glacial retreat and sea-level change for the Maritime regions prior to and including the arrival of the first peoples. Using the data collected a map of the paleocoastline for the Bay of Fundy and Minas Basin was created which offers a visual depiction of the changing landscape. We can see the coastline at 7 000 yrs BP and gain a better understanding of how much of the coastline has been lost. Data was synthesized to create a sea-level curve for the Fundy Basin. This is important for understanding the paleocoastline and drowned landscapes the Paleoindians occupied. Understanding sea-level changes and local rates of sea-level rise allows us to measure the movement of head-of-tide (the area precontact groups used to harvest spawning fish) through time. The Annapolis River was used as a case study and the location of the head-of-tide zone was calculated as it moved through time. Older sites are nearer the coast, while newer ones are upstream. Finally, in this chapter, it was discussed from where these early migrants may have come, how they reached the Maritimes and how the changing climate and environment may have affected their adaptations to surviving on this landscape.

Chapter 4 combined this information and a corridor along the Annapolis River was chosen containing three potential sites to conduct archaeological research. The first site was determined to be a resource procurement site, located at Paradise. The second is called the "Indian Lot" which was likely used by Mi'kmaw groups for several millennia up until the 1930s. Further downstream, is the third site. It was discovered in the 1950s by a farmer and shows both an archaic and ceramic period occupation providing more evidence that the Annapolis River was well used for many thousands of years.

Archaeological research was conducted using sea-level change rates and their effect on the movement of head-of-tide upstream to roughly predict its location over time along a six-kilometre corridor of the Annapolis River. Pre and proto-historic contact fishing sites should be found all along this stretch of the river. Excavating, field walking, canvassing property owners, artifact analysis were the methods used to conduct the archaeological component of this thesis.

The archaeological findings were encouraging. The fields closest to the head-of-tide at Paradise (pre-Annapolis Basin dam installation) yielded numerous flakes and one basalt point. Most of the lithics recovered, including the point, were surface finds. The lack of context limits the interpretations. It does suggest that this was a lightly used area, with some degree of manufacturing taking place. One area along the river did contain a deeply stratified site. Small dacite flakes were recovered to a depth of 96 cm. These flakes were tested with an XRF machine which analyses the chemical makeup of stone. The chemical

signature for four of these flakes is not found in local rocks. Their chemical signature, however, is similar to rocks from the Cobequid Mountains near Debert. Matching the lithics with quarry sites will help remove much of the speculation that exists in precontact lithic acquisition in the northeast.

The second site is located upriver from the head-of-tide site and is referred to by historians and locals as the "*Indian Lot*". It was selected for archaeological investigation due to its proximity to the downstream site and because it is a known early 20th century Mi'kmaw summering site. Although the site's investigation is in the initial stages, results have been positive. Thirteen quartzite flakes and one point stem have been recovered. The point stem was excavated from a charcoal feature which has allowed for radiometric dating.

Further downstream a farmer collected several points and preforms from a field along the Annapolis River in the 1950s. The examination included an XRF analysis. Two of the points, based on material and style were probably from the Terminal Archaic period. One point and one preform are likely from the Ceramic period. Unfortunately, because these lithics were collected from a ploughed field and not from an undisturbed stratified unit, radiometric dating is not possible. Using an XRF machine, the Ceramic period preform was compared with rock samples from Davidson Cove in Scott's Bay. The preform and the rock sample were almost an identical match chemically, providing proof that this lithic came from Davidson Cove. The location of precontact quarries sites offers cultural

information about the Indigenous groups in the region such as trading and resource procurement patterns.

It is hoped that this thesis provides another tool to better predict where precontact sites may be located or offer explanations as to why they have not been found. Only by a greater acceptance and appreciation of oral traditions and the recovery and interpretation of material culture, in sites that have been discovered through the kind of research proposed in this thesis, can Canada's First Nations long history on the landscape be more fully recognized.

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