MU AWSAMI KEJI'KEWE'K L'NUK MI'KMA'KI:

NEW PERSPECTIVES ON THE TRANSITIONAL ARCHAIC PERIOD

IN SOUTHWESTERN NOVA SCOTIA

By

© John Andrew Campbell

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ABSTRACT

Archaeological investigations at the Boswell site (BfDf-08), in southwestern Nova Scotia, has provided new evidence for Transitional Archaic period (4,100-2,700 BP) occupation along the Annapolis River. Using the Boswell site as a case study, this thesis re-examines the Transitional Archaic presence in Nova Scotia and how this reflects on our understanding of the regional context. Transitional Archaic artifact collections from Maine and New Brunswick were examined, alongside the less complete Nova Scotia collections, for a regional comparative analysis. A landscape ethnoecology approach is used to provide ontological perspectives of place and reveals a regional pattern of ecotopes and portage routes used during this period on the Maritime Peninsula. Selected lithic artifacts discovered from the Transitional Archaic component of the Boswell site were analyzed by a portable x-ray fluorescence spectrometer to assess source to site distances to evaluate possible mobility, trade, and kinship networks during this time. Based on this study, previously held notions of Transitional Archaic migration in the Maritime Peninsula are revisited, and a new northern boundary is suggested.

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DEDICATION

This thesis is dedicated in the memory of two individuals, whom along with many others, were integral in the early years of my archaeological endeavors. They were not just colleagues, but mentors and friends.

Michael J. Hubbard
(1967-2013)

&

Gregg T. Laskoski
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1 INTRODUCTION

"The creation of a thousand forests is in one acorn."
- Ralph Waldo Emerson (2000 [1841]: 113), History

The Transitional Archaic period (4,100-2,700 BP) has been an interesting focal point of archaeological research in the Northeast (Dincauze 1968, 1972; Ritchie 1969b: 54-55; Deal 1986; Petersen 1995: 220; Black 2000) (Figure 1-1). It is characterized by a tool-making tradition consisting of broad-bladed stemmed points, perforators, and various groundstone woodworking tools, including full groove axes, in addition to lugged steatite vessel technology. The projectile point technology is similarly related to the Savanah River Complex (Coe 1964: 45; Bourque 1995: 7) in the southeast, yet artifacts recovered in the Mairtime Provinces resemble those found in Pennsylvania, New York, and New England. Stylizations recovered in the Maritime Provinces have similar forms to named types found elsewhere in the Northeast including: Snook Kill (Ritchie 1965a: 134-145), Atlantic (Dincauze 1968: 81, 1972), Susquehanna (Witthoft 1953), and Orient Fishtail (Ritchie 1959).

Another interesting cultural trait of this time period is the cremation mortuary system. Cremation burials have been recorded all over the Northeast with a single cremation burial found on the Gaspé Peninsula, marking the furthest north this type of burial feature has been recovered (Dumais 1978). The broadpoint lithic technology and creamtion burials of the Transitional Archaic period seem to be either abundant or scarce in different parts of the Northeast, which may speak to the settlement patterns employed

during this period. Some archaeologists have adopted the notion of migration to explain the dispersal of sites and artifacts related to the Transitional Archaic in New England and the Maritime Provinces.

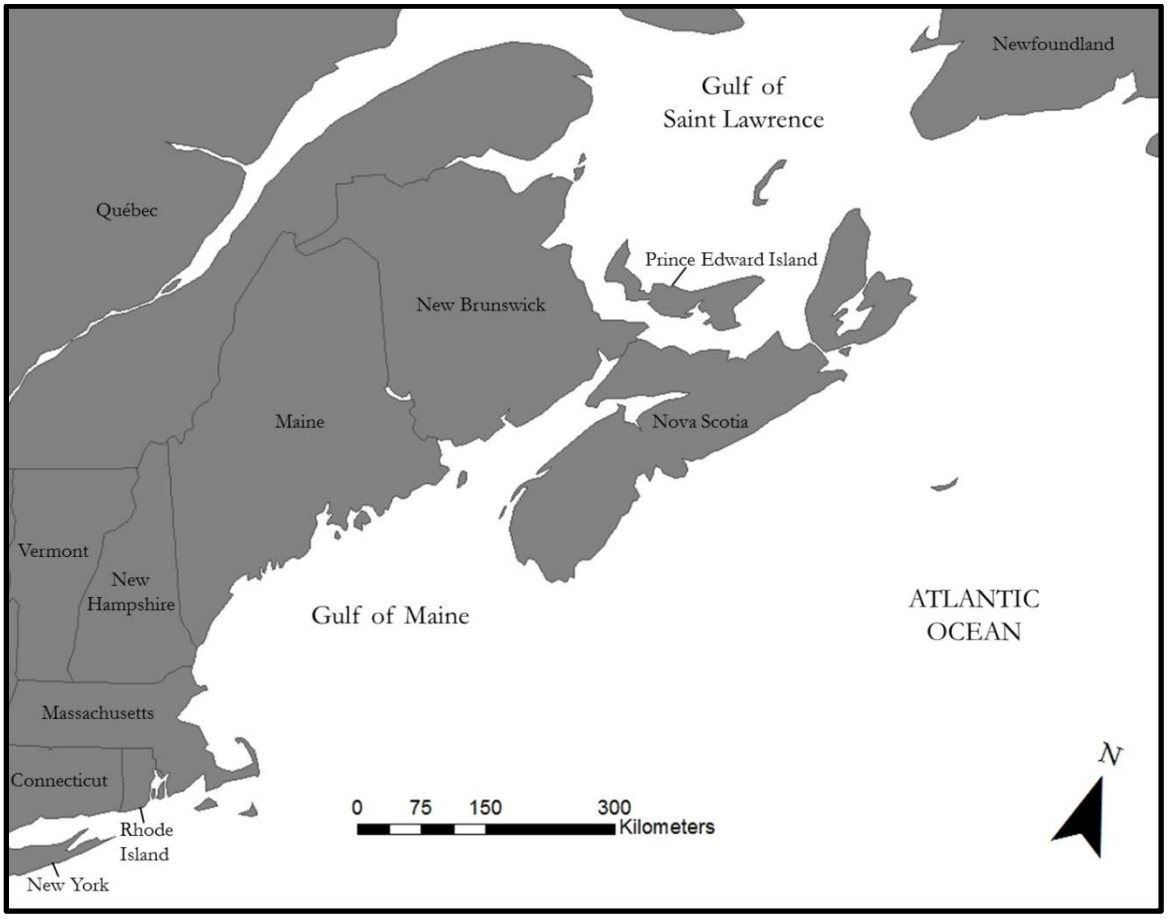

Figure 1-1: Regional map of the Northeast.

David Sanger (1975, 2006), following Irving Rouse's (1958) migration model, not only suggested a Transitional Archaic migration into Maine and the Maritime Provinces, but also recognized that all cultural subsystems could be observed in the region. Turnbaugh (1975) also suggested migration on a much larger scale relating the

migratory movements of people to their subsistence of American Shad (*Alosa sapidissima*). Dincauze (1975:27) agrees with migration suggesting small movements of people rather than mass migration. Bourque (1995; 2013) proposes a short term exploratory migration of large groups of people into Maine following the end of the Moorehead phase. It had been previously thought that the people of the Transitional Archaic period did not move beyond the Saint John Drainage in New Brunswick, or the Schubenacadie River in Nova Scotia, but a recent analysis of collections indicates a possible presence on Prince Edward Island (Deal and Rutherford 2001; Deal et. al. 2006). Based on the current number of archaeological sites and collections in Maine and the Maritimes it is difficult to assess the full magnitude of Transitional Archaic migration into this region.

Sanger (1979b: 12) believes that the slow growth of archaeological investigations in Maine and the Maritime Provinces is tied to the economic conditions of the region, where few sites are known from undeveloped areas, and little funding is available for archaeological surveys. In 2009, a couple fishing on the eroding banks of the Annapolis River in southwestern Nova Scotia found and surface collected two diagnostic Transitional Archaic bifaces. The find site was designated the Boswell site (BfDf-08) and bifaces were given to the Nova Scotia Museum. Michael Deal of Memorial University became the principal investigator of the site in 2011. The Boswell site became the case study for this thesis in 2014 for investigating the Transitional Archaic occupation in Nova Scotia. In adition to the Boswell site case study, a regional analysis of artifacts from

Maine, New Brunswick, and Nova Scotia was conducted in order to compare intra-regional patterns.

Three research objectives were assigned to this study, in order to reexamine regional developments through the perspective of the Boswell site:

1) What is the nature and extent of Transitional Archaic migration in the Maritime Provinces?
2) Do lithic assemblages from the Transitional Archaic represent a common tool kit throughout this region?
3) Do subsistence strategies vary across the Maritime Provinces during this time?

These questions will be addressed through the theoretical lenses of migration theory (Rouse 1958; Anthony 1990) and landscape ethnoecology (Johnson and Hunn 2010) with the overarching goal of defining a new northern boundry for the people of the Transitional Archaic period.

These research objectives will be explored in greater detail throughout the following chapters. Chapter 2 is a historiography of previous investigations of the Transitional Archaic period in the Maritime Peninsula, and the evolution of archaeological thought on this topic. This historical overview is outlined in three temporally defined stages: Naturalist Period (1800-1912), Early Professional Period (1913-1959), and the Recent Professional Period (1960-Present) (Willey and Sabloff 1974; Deal 2015: 2). Chapter 3 provides the rationalization for both theorectial approaches used in this research, in addition to the methodology employed. Methodology like First Nations collaboration, concerning terminology in reference to the Mi'kmaw

cultural sequence, along with knowledge and participation in the archaeological survey at the Boswell site, is discussed. Archaeological survey methods, paleoethnobotany, and portable x-ray fluorescence analysis are explained in greater detail.

Chapter 4 is a detailed account of the institutions visited and artifacts examined for the regional analysis. Chapter 5 begins by providing the geographical, geological, paleoenvironmental, and stratagraphic information about the Boswell site. The chapter further explores previous excavations and gives a detailed examination of lithic artifacts from the Transitional Archaic component, along with results of the paleoethnobotanical and portable x-ray fluorescence analyses, and ending with a concise site discussion. Chapter 6 reprsents a discussion of the sites and artifacts analyzed, including the Boswell site, and their significance within the region. The concluding section includes suggestions for possible future research.

The title of this thesis stems from collaborative work from the Debert research workshop in Debert, Nova Scotia, in 2005. The proceedings of this workshop were published in 2011 with Stephen Davis introducing Roger Lewis' (2006b) "Mi'kmakik Telotipnik L'nuk – How Lnu Lived in Mi'kmakik", which presented a more formalized Mi'kmaw terminology to explain cultural periods for Mi'kma'ki (Davis 2011: 22). These terms, especially those used in this thesis, are not to superimpose Mi'kmaw terminology on other First Nations in the Northeast, but to allow Mi'kmaw perspectives to be applied to their past. Since the Boswell site is located within Mi'kma'ki the archaeological findings recovered will be presented as extensions of ancestral Mi'kmaq and will be projected in comparison to other First Nation histories from a geographic perspective. In

the following chapters Mi'kmaw terminology will be addressed in conjunction with present archaeological terminology.

This thesis acknowledges the appropriate usage of the words "Mi'kmaq" and "Mi'kmaw". The Mi'kmaw Resource Guide (Bernard et. al. 2007: 2) states that the word "Mi'kmaq" refers to *the People* or *the Family* collectively, whereas "Mi'kmaw" is either the singular form, or is used as an adjective (e.g., Mi'kmaw person, Mi'kmaw perspective). The author accepts full responsibility of any terminological misuse in attempting to follow the aforementioned guidelines.

2 HISTORICAL BACKGROUND

"History is a cyclic poem written by time upon the memories of man."
– Percy Bysshe Shelley (1874 [1821]: 8), A Defence of Poetry

"If you will read again what is written, you will see how it was."
– Black Elk (1985: 126) The Sixth Grandfather

This chapter attempts to provide a concise historiography of previous research conducted in Northeastern North America in relation to the Transitional Archaic period (Mu Awsami Keji'kewe'k L'nuk in Mi'kmaq). The researchers discussed in the following section are an extensive, but not exhaustive, list of those who have contributed to this endeavor. The concluding section presents a synthesis of previous research in order to produce a collective narrative concerning artifact assemblages, cultural traits, and temporal phases of the Transitional Archaic, especially in relation to the province of Nova Scotia.

2.1 Historiography of Previous Research

A history recognizing past archaeological research and those who conducted it is vital in understanding contemporary ideological stances concerning interpretation (Trigger 1989: 19). In Michael Deal's (2015: 2-22) *The Collection of the Ages*, an outline of historical stages of research in the Maritime Provinces are proposed, which consists of: the Naturalist Period (1800-1912), the Early Professional Period (1913-1960), and the Recent Professional Period (1960-Present). These stages are complimentary to the developmental sequence suggested by Gordon Willey and Jeremy Sabloff (1974). The

following section will focus on relevant research contributions, separated into the above stages, having directly and indirectly affected our interpretation of the Transitional Archaic period (4,100-2,700 BP) in Northeastern North America.

2.1.1 The Naturalist Period (1800-1912)

The Naturalist Period (1800-1912) is characterized by financially secure men, referred to as "pioneer naturalists" (Piers 1915a), who devoted time toward academic interests including: geology, zoology, botany, ethnology, and archaeology (Deal 2015). It was during this period that archaeology first established a solid foundation in the region, and also involved other academic disciplines in the research. Two important pioneering naturalists, in terms of Transitional Archaic archaeological investigations of the Maritime Provinces, are Abraham Gesner (1836, 1839, 1841, 1847) and William Ganong (1899, 1901, 1913a, 1913b, 1914).

Abraham Gesner (1797-1864) was born in Nova Scotia and became a trained physician in Britain. While studying at university he showed great interest in chemistry and geology (Black 2008: 1). He attended lectures given by Charles Lyell and was later Lyell's guide to geological locations in Nova Scotia in 1842. Prior to Lyell's visit, Gesner was the New Brunswick Provincial Geologist from 1838 to 1842 and later became the Indian Commissioner for the Nova Scotia government from 1848 to 1849. While living in New Brunswick he established the Museum of Natural History in Saint John in 1842, which is known as the oldest continuing museum in Canada. Gesner is most famous for his discovery of processing kerosene which contributed to lighting and modern petroleum production (Black 2008: 2).

An early 19th century “Renaissance Man”, Gesner also was in close contact and collaboration with Mi’kmaq and Wolastoqiyik peoples by introducing the smallpox vaccine to the First Nations populations and hiring guides for geological surveys (Black 2008: 1). He even hired First Nations people as taxidermists for the display of animals at the Museum of Natural History. Focusing on his archaeological contributions in the Maritime Provinces, Gesner may have been the first naturalist to recognize that desirable rocks for lithic tool making could come from further distances than sources located near the site (Gesner 1841: 59-60; Black 2008: 3).

In Gesner’s 1847 *Report on the Geological Survey of Prince Edward Island,* he describes the artifacts he encounters stating: “These relics consist of axes, spears and arrow points, and rude pots made of stone…Some of the arrow heads are made of Labrador feldspar, agates, hornstone and jaspar.” (Gesner 1847: 7). Gesner’s observation of the “Labrador feldspar”, known today as Ramah chert (Derek Wilton 2016, pers. comm.) from northern Labrador, recovered on Prince Edward Island is a perfect case study when examining long distance lithic transportation. His description of “rude pots made of stone” refers to steatite or chlorite vessel technology utilized during the Transitional Archaic period. Gesner’s identification of green chlorite in his report on Grand Manan Island (Gesner 1839: 13-23), reveals his knowledge of lithic sources for vessel and pipe making prior to his geological survey on Prince Edward Island. Abraham Gesner’s work suggests the possible transportation of talc-based lithics to Prince Edward Island from places like Grand Manan Island.

In the latter half of the 19th and early 20th centuries, William Francis Ganong (1864-1941) conducted ethnographic research on place names, sites and portage routes of the ancestral First Nations (1899, 1913a, 1914). Ganong was born in New Brunswick and was educated at the University of New Brunswick, Harvard University, and the University of Munich in the field of botany. His academic pursuits led him to a professorship at Smith College in Northampton, Massachusetts, where he established the college's botanical gardens in 1894. Ganong's (1899) publication entitled *A Monograph of Historic Sites in the Province of New Brunswick* contains his iconic map of portage routes throughout New Brunswick (Figure 2-1).

In his 1899 publication, Ganong "included the first detailed inventory of prehistoric sites in the province, along with observations on why specific sites were chosen" (Deal 2015: 6). Ganong established a set of four criteria to identify precontact sites which includes: 1) historical references in documents and on maps, 2) traditional usage of place, especially "if backed by relics found upon the sites", 3) evidence of "shell-heaps" on the coast, and 4) testimony of place names, or "persistent memorials of past events and conditions" (Ganong 1899; Hamilton and Spray 1977: 3). Ganong also notes that through identifying place names such as: "Indiantown", "Indian Island", and "Indian Point", that there are influences in determining the situation of habitation or camping sites. These ecotopes (Tansley 1939; Troll 1971) include nearness to a river and abundance of game and is specifically categorized as: 1) near the clam beds along the Bay of Fundy, 2) waterfalls where fishing is abundant, 3) centres for killing porpoise, 4)

deep muddy pools in sluggish rivers, suitable for eels, and 5) the ends of portages were all considered mportant places (Ganong 1899; Hamilton and Spray 1977: 3-4).

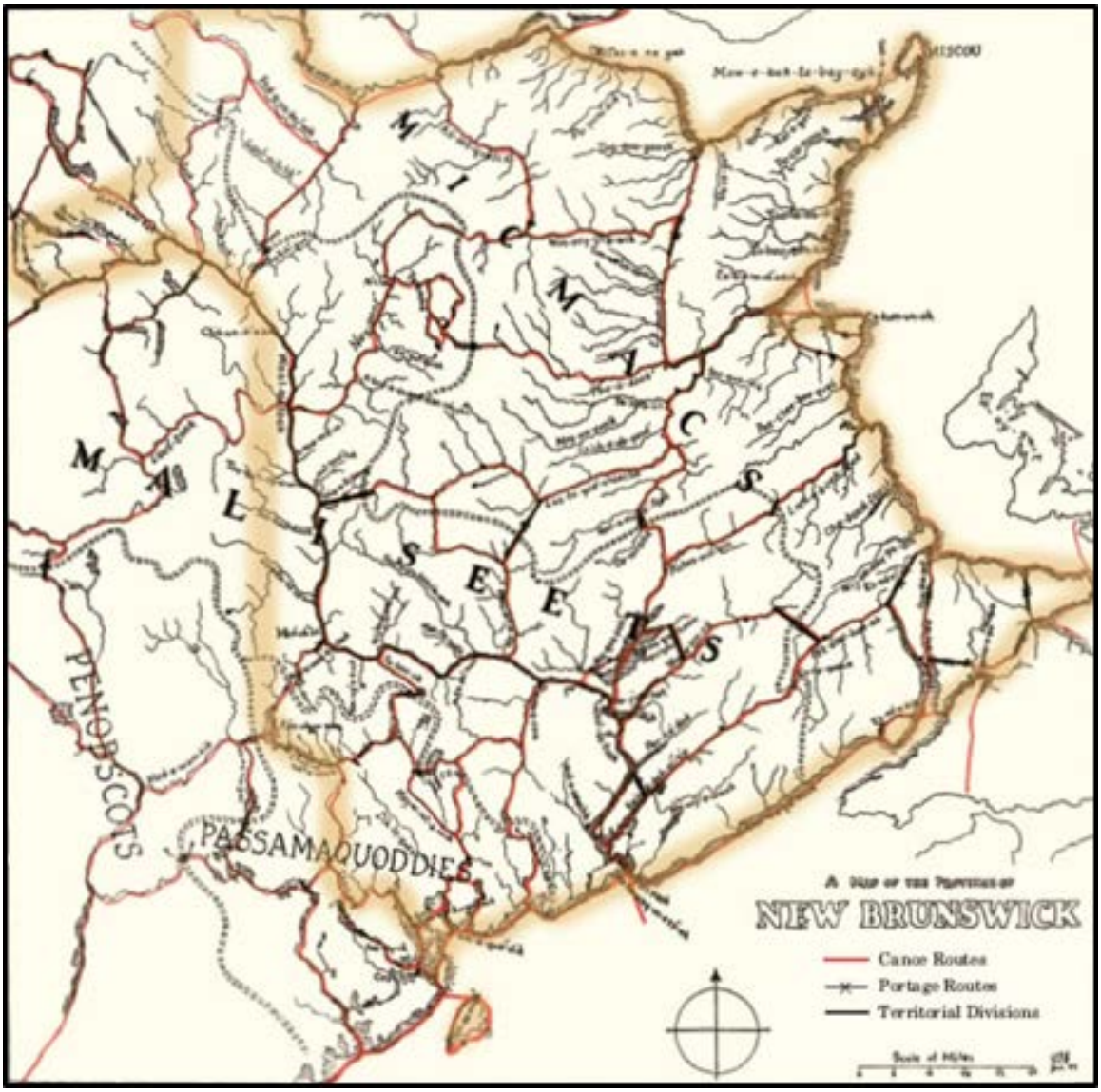

Figure 2-1: William F. Ganong's 1899 illustration of portage routes operated during the 19th century. Using a direct historical approach we can conceivably project these routes back to earlier precontact periods (Ganong 1899).

Focusing on Ganong's observations of the ends of portages as habitation places, he notes that the reason for camping at these places is concentrated more on rest from travel than subsistence strategies (Ganong 1899; Hamilton and Spray 1977: 4). He then notes that minor influences such as: "a level place", "near the water, for their wigwams", "a good gravel beach for their canoes", "a spring", and a "commanding view of the waterways" are factored for a favorable outcome; "a large village" (Ganong 1899, Hamilton and Spray 1977: 4-5). Similar observations were noted by Frank Gouldsmith Speck (1922: 11-19) at Red Indian Point along Red Indian Lake in Millertown, Newfoundland, where a "look out tree" was utilized not only for a view of the waterways, but potentially as a look out point for caribou seasonal mobility (Speck 1922: Plate 2) (Figure 2-2).

Figure 2-2: Frank Gouldsmith Speck's photograph of the lookout tree at Red Indian Point along Red Indian Lake in Millertown, Newfoundland (Speck 1922).

2.1.2 The Early Professional Period (1913-1960)

The Early Professional Period (1913-1960) is defined as the gradual emergence of professional archaeologists in North America, including the Maritime Provinces, in conjunction with the political and economic effects of two world wars and a great depression (Bintliff 1986). Until the emergence of the "New Archaeology" in the 1960's, archaeology was in the hands of a few professional archaeologists who were assisted by dedicated amateur enthusiasts (Deal 2015: 10; Wright 1985: 425). Professional and amateur archaeologists of this period who laid the foundation for archaeological endeavors in the Northeast include: Charles C. Willoughby (1892, 1901, 1935), Warren K. Moorehead (1922), John Witthoft (1949, 1953), J. Russell Harper (1956), and John S. Erskine (1959; Deal 1990).

Charles C. Willoughby (1857-1943) was born in Winchendon, Massachusetts, and later moved to Augusta, Maine, where he opened an artist supplies store (Spiess 1980: ii). Although Willoughby never attended university, his artistic talents and interest in antiquities led him to establishing a long lasting relationship with Frederic W. Putnam, Director of Harvard's Peabody Museum, who was investigating shell heaps in Maine during the 1880's. Their friendship resulted in Willoughby's excavations in Orland and Bucksport, Maine, where his observations and skills in recording set the standard for recording practices until the emergence of Processual Archaeology in the 1960's (Spiess 1980: iii-iv). Due to the significance of his work Willoughby was asked by Putnam to be his assistant at the World's Columbian Exposition of 1892-93, and later became Assistant Curator of the Peabody Museum in 1894. While on a teaching fellowship at Harvard, he

conducted an investigation into precontact quarrying at Mount Kineo on Moosehead Lake in Maine (Willoughby 1901; Spiess 1980: iv) (Figure 2-3). Afterwards he was made Director of the Peabody Museum after Putnam's retirement, and held the position until his own retirement in 1928. In 1935 he wrote his capstone publication on artifacts recovered in New England entitled; *Antiquities of New England Indians*.

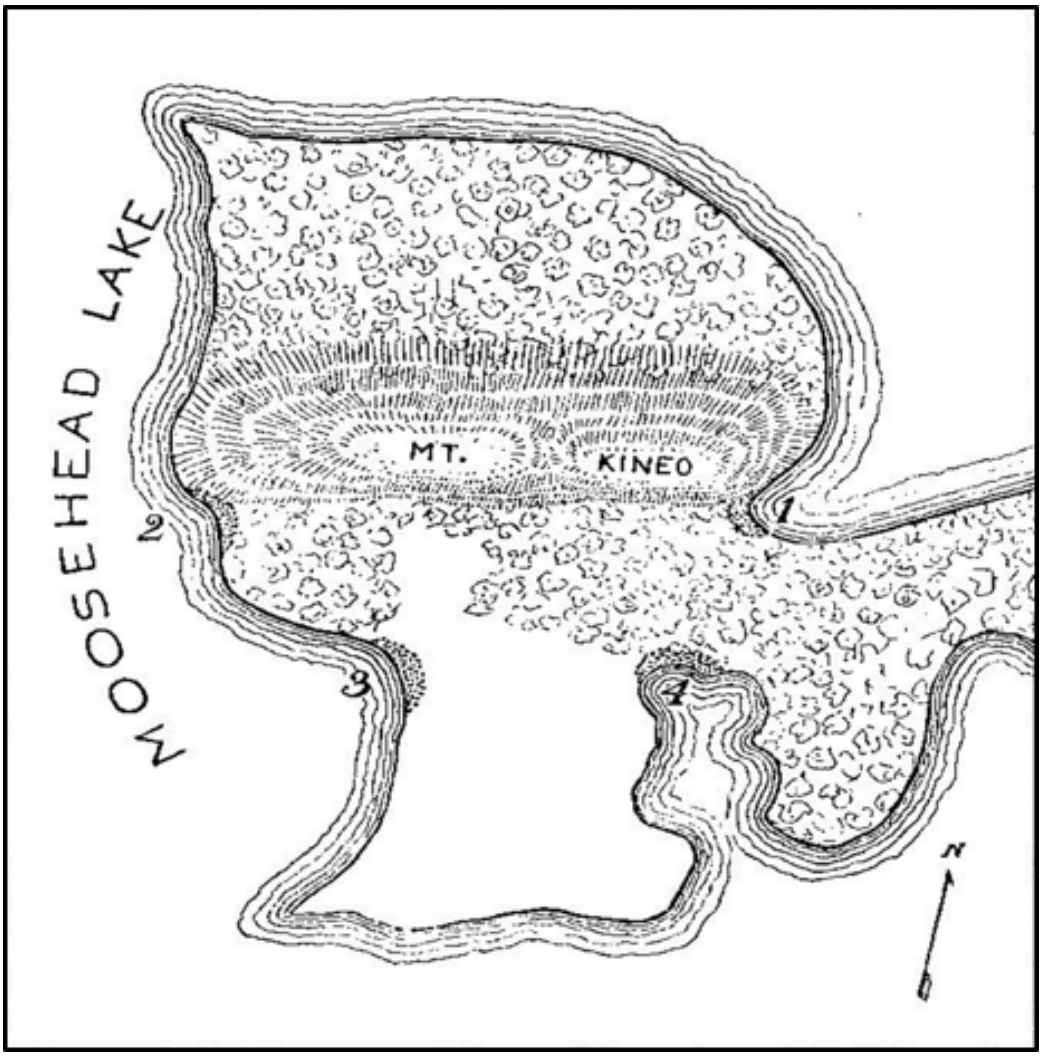

Figure 2-3: Charles C. Willoughby's 1901 sketch of the lithic quarry at Mount Kineo on Moosehead Lake.

In Willoughby's *Indian Antiquities of the Kennebec Valley* (1892) he examines historical narratives to provide early contact imagery and material culture that has been excavated, while painting all of the illustrations with aesthetic vigor. The second chapter (Willoughby 1892: 28-30) begins by elaborating on the abundance of Mount Kineo porphyry, including how manufacture wasn't only for their own implements, but they made implements "for the purpose of trade with neighboring tribes" (Willoughby 1892: 29). Willoughby mentions a few other possible quarries, yet nothing to the extent of Mount Kineo porphyry. In his 1892 publication he displays artifacts associated to the Transitional Archaic period including: projectile points (Willoughby 1892: Plate 2), pecked grooved axes (Willoughby 1892: Plate 12, Plate 14), and lipped grooved axes (Willoughby 1892: Plate 13).

His work on Mount Kineo porphyry continued into the 20th century with his publication *Prehistoric Workshops at Mt. Kineo, Maine* (Willoughby 1901). Willoughby states that Mount Kineo porphyry is one of the "chief minerals" used by First Nations groups based on the frequency of knives found interred in graves excavated in Hancock County Maine (Willoughby 1901: 213). In his survey of the quarry he discovers that most of the products of manufacture were meant to be for transport only to be finished at another distant place, stating that "nearly all village sites in the valleys of the Kennebec and Penobscot rivers and their tributaries" contained artifacts manufactured from Mount Kineo porphyry (Willoughby 1901: 216).

Willoughby's magnum opus *Antiquities of the New England Indians* (1935) laid the foundation on which successive generations of archaeologists in the Northeast based

their own research. His work differentiates, linguistically and geographically, between "Pre-Algonquian Culture" and "Old Algonquian Culture" (Willoughby 1935: 1-5). Some of the more notable archaeological investigations conducted by Willoughby include: the Boylston Street fish weir (Willoughby 1935: 6-11), the cemetery investigations in Maine at Bucksport (Willoughby 1935: 16-20), Orland (Willoughby 1935: 20-22), and Ellsworth (Willoughby 1935: 22-31), and his regional analysis predominantly focused on lithic technology and ornamentation within the "Pre-Algonquian" and "Old Algonquian" cultures.

Willoughby interestingly creates a line among the two groups between what is now considered the Late Archaic and the Transitional Archaic periods. By focusing on the Transitional Archaic period within Willoughby's concept of the "Old Algonquian Culture" notable aspects include: projectile points from Watertown, Massachusetts (Willoughby 1935: 121), preforms from Bremen, Maine (Willoughby 1935: 128), fully grooved axes from around New England, including a specimen from Henry David Thoreau's collection (Willoughby 1935: 136-141), adze blades (Willoughby 1935: 144), and steatite vessels and quarries (Willoughby 1935: 156-161). Although innovative in his regional analysis of cultural material, Willoughby's subdivision and scheme of "Pre-Algonquian Culture" and "Old Algonquian Culture" was not accepted by archaeologists in New England (Rouse 1936; Bullen 1940; Dincauze 1968).

Warren K. Moorehead (1866-1939) was born in Siena, Italy to missionary parents and was raised in Ohio where he attended Denison University (Byers 1939: 286). Although having never earned a bachelor's degree, he was awarded with honorary

degrees from Dartmouth College in 1901 and Oglethorpe University in 1927. His interest in archaeology and First Nations people started at an early age, which provided the platform for his eventual involvement with various archaeological or ethnographical investigations such as: Fort Ancient in Ohio, Chaco Canyon in New Mexico, Mesa Verde in Colorado, Cahokia in Illinois, Etowah in Georgia, the "Red Paint" burials in Maine and being a field reporter for *Illustrated American* about the Ghost Dance during the Massacre at Wounded Knee in 1890 (Byers 1939: 286-289). These accomplishments not only made him a household name, but also granted him opportunities, such as: Curator and Professor of Archaeology at the Ohio State University (1894-1897), Director and Curator of the Robert S. Peabody Museum of Archaeology at Phillip's Academy (1902-1920), a member of the board of commissioners for the Bureau of Indian Affairs (1909-1933), and the first Vice President of the American Anthropological Association (1932), along with other lesser titles. The focus of his research in this section revolves around his investigations in Maine, which Moorehead felt had been "singularly neglected in comparison with that of other parts of the country" (Moorehead 1922: 12).

Moorehead's endeavors in Maine between 1912 and 1920 were chronicled in his publication entitled *A Report on the Archaeology of Maine* (1922). The scope of his research was to locate "Red Paint" burials in Maine and southwestern New Brunswick with the help of a crew known as "The Force" (Sanger 1979a: 12; Deal 2015: 11). Among the "Red Paint" burials recorded by Moorehead, a "village site" near Bangor, Maine, now known as the Eddington Bend site was excavated by Walter B. Smith from 1915 to 1917 (Figure 2-4) (Moorehead 1922: 135; Smith 1926). Within six square meters

of excavation, Smith had uncovered eight cremation pits intrusively placed atop "Red Paint" burials, which not only contained human calcined bone, but also: forty or more flaked perforators, forty-five complete projectile points, sixteen celts, two scrapers and incomplete fragments of knives and gouges (Moorehead 1922: 136-139).

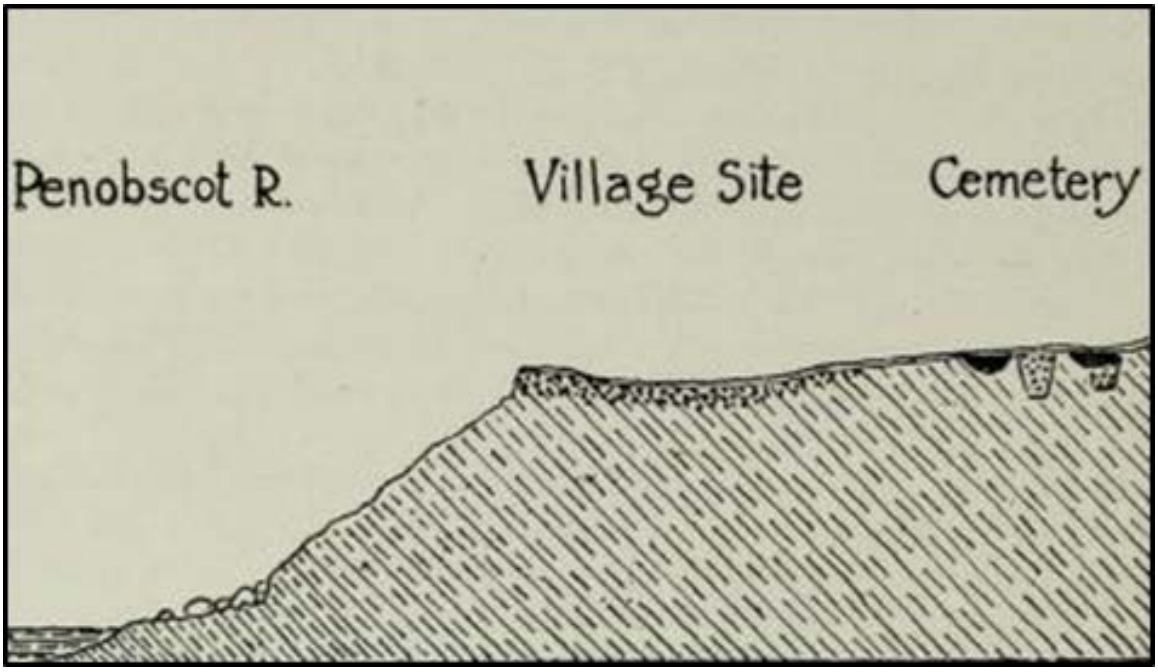

Figure 2-4: Warren K. Moorehead's 1922 cross section sketch of the Eddington Bend site "village" and cemetery components.

One of the graves provides an interesting context as Moorehead explains that "four spears with wooden shafts had been placed across the grave pointing north, the grave had been covered with soil and the spaces between the spear shafts created a draught conducting smoke from the smoldering fire beneath." (Moorehead 1922: 139). Along with three of the four projectile points disintegrating upon retrieval due to being fire-cracked, it becomes apparent that the projectile points were hafted to long shafts

(Moorehead 1922: 139). This momentary snapshot of mortuary practice provides useful data concerning the utilization of projectile point technology.

In the early decades of the 20th century universities in North America, especially the Ivy League universities, began to provide curriculum and degrees in anthropology and archaeology (Moore 2012: 33-45). Alfred L. Kroeber, a student of Columbia University professor Franz Boas, published *Cultural and Natural Areas of Native North America* (Kroeber 1939), and its impact created a new discourse of trying to comprehend cultural sequences over time in North America rather than excavating individual sites and super-imposing a singular perspective upon an entire culture or people. This development created a holistic method-based approach to archaeology, rather than the cherry-picked culturally diverse research from the 19th century perspectives.

John Witthoft (1921-1993) started his career with a Bachelors in Biology and English and two years later received a Master of Arts degree in Anthropology as Frank Gouldsmith Speck's last student at the University of Pennsylvania. From 1948 to 1966 Witthoft served as Curator of Archaeology at the Pennsylvania State Museum in Harrisburg, and held the title of both State Archaeologist and State Anthropologist. He later went on to join the faculty at the University of Pennsylvania from 1966 to 1986, leaving due to health concerns. His crowning contribution to the archaeological community of northeastern North America is his recognition and definition of the Transitional Archaic period (Witthoft 1949: 171-172; 1953; 1954: 43-44).

Witthoft defined the Transitional Archaic period as succeeding the Late Archaic period and preceding the Early Woodland period, temporally placing it between 1,300

and 1,000 B.C. (Ritchie 1965b: 150). When examining these people, Witthoft purposes that the culture had “an apparent hearth in southeastern Pennsylvania” and “its principal industries” were signaled by “soapstone (steatite) and rhyolite” (Witthoft 1953: 8-9; Ritchie 1965a: 150). Witthoft states that the Susquehanna Broad spear point is the oldest and basic complex of the Transitional Archaic period (Witthoft 1953: 7-16). Witthoft describes the “Susquehanna Soapstone Culture” as having “a riverine orientation, their small but numerous sites being scattered along the banks of major streams within the territory of their range…they occupy many islands…and are found on the high parts of the flood plain along the stream edge” (Ritchie 1965a: 152).

Witthoft’s observation of place is continued by inclusively describing the people as “canoe wanderers, who visited the back country only to replenish their supplies of steatite and rhyolite”, and were “hunters of large and small game”, along with participating in fishing, while not acquiring river shellfish nor having storage pits containing food (Ritchie 1965a: 152). It is observed by Witthoft that the “Susquehanna Soapstone Culture” illustrates a distinct change in every aspect of material culture, behaviour, and practice from previous cultures in the Susquehanna Valley (Witthoft 1953: 14). This distinct change from previous cultures has, as Witthoft describes, a succeeding temporal trajectory of two point variations: the “serpent-head”, or Perkiomen and Lehigh styles, and the narrow “fishtail” stylization, both of which have been recovered with Vinette 1 pottery, which is considered the earliest ceramic manifestation in the northeast (Witthoft 1953: 22-23).

After his service with the Royal Canadian Airforce during World War II, J. Russell Harper (1914-1983) attended the University of Toronto and received his Bachelors of Arts and Master of Arts in Art and Archaeology. He held positions at various institutions throughout his career including an appointment at the New Brunswick Museum from 1952 to 1956. It was during this time that he conducted excavations at Portland Point in Saint John in 1955 and later wrote about the endeavor in his publication *Portland Point: Crossroads of New Brunswick History* (Harper 1956). Although his initial intension was to recover the remains of Madame La Tour's fort built in 1645 at the mouth of the Saint John River he also uncovered precontact components dating back to the presence of the "Red Paint people" (Harper 1956: 1-3).

In Harper's publication he reveals his findings on precontact materials separating the "Red Paint" burials and the "Indian Camp" components of the site. Harper illustrates that the "Indian Camp" is represented by a layer of black ash over a 40 by 75 foot area and (12 x 23 m) six inches (15 cm) in maximum depth, which he believed to postdate the "Red Paint" burials due to its stratigraphic positioning above the burial stratum (Harper 1956: 13-15). In this stratigraphic layer Harper recovered a small collection which included two diagnostic bifaces from the Transitional Archaic period: a corner removed base made of "ochre coloured quartz", which could possibly be White Rock quartzite from southwestern Nova Scotia, and a possible knife made of felsite. Besides Portland Point (Jeandron 1996), evidence of precontact habitation along the Saint John River has also been revealed by excavations at the nearby Bentley Street site (Burley 1976) and more recent excavations at the site of the New Brunswick Museum (CBC 2016).

As one of the pioneers of Nova Scotia archaeology, John Erskine (1900-1981), worked through an affiliation with the Nova Scotia Museum, from 1957 to 1965, and later with the national Museum of Man, from 1966 to 1967 (Deal 1990: vii). A world traveller in his early years he finally found a home in Wolfville, Nova Scotia, where he received a Bachelor of Arts in Romance Languages from Acadia University and later went to McGill University in Montreal, Québec, obtaining a Master of Arts in French. He taught in various schools in Kings County, Nova Scotia, which enabled him to pursue a secondary career creating botanical collections for the Nova Scotia Museum, followed by excavations of precontact sites in the province.

Erskine's exploration of precontact sites in Nova Scotia is undeniably impressive when looking at the list of sites and materials recovered during a decade of research in the province. Sites with materials related to the Transitional Archaic period include: the Bear River site, located a short distance by canoe to the headwaters of the Mersey and Tusket rivers, and the Indian Gardens site, located at the foot of Lake Rossignol on the Mersey River (Erskine 1959: 340-344, 348-349). Erskine unknowingly describes projectile points of the Transitional Archaic period at Bear River, stating that "true UBR [Upper Bear River] points are of siliceous slate and are largish and thin and commonly corner-removed" and later states that the presence of these points may have been "confined to the southwest of Nova Scotia and to about one century" (Erskine 1959: 358). Although Erskine's "reconstruction of prehistory is now outdated" (Deal 1990: vii), it was still ground breaking research that has established a foundation of precontact archeology in Nova Scotia.

2.1.3 The Recent Professional Period (1960-Present)

The Recent Professional Period (1960-Present) is defined not only by the emergence of processual archaeology, which developed from "New Archaeology" (Willey and Phillips 1958), but that archaeology has expanded into four sectors, namely: government, museum, university, and the private sector (Turnbull 1977; Deal 2015: 16). Concerning government, laws were passed on federal, provincial, or state levels in an attempt to ensure the protection of sites and how one could conduct archaeological investigations, along with creating positions within government to regulate and overlook preservation activities within their jurisdiction (Turnbull 1977: 3). Funding greatly escalated in the 1960's causing an increase of budgets in federal and provincial agencies, as well as with universities, which created archaeology departments and programs in Atlantic Canada (Wright 1985: 429; Deal 2015: 17).

Students educated through the university systems were able to find employment in federal and provincial agencies, museums, and recently more jobs are created in the private sector, especially in cultural resource management firms (Davis 1998: 160). Selected professional archaeologists who contributed to these advancements in archaeology as a discipline, and others who have committed to understanding the sequence of the archaeological record include: William A. Ritchie (1965a, 1969b, 1973), Dena F. Dincauze (1968, 1972, 1975), Bruce J. Bourque (1975, 1994, 1995, 2006), David Sanger (1971c, 1973a, 1975, 1979b, 2006, 2008, 2009b, 2009c), Christopher Borstel (1982), Michael Deal (1984a, 1986, 2006, 2015), Stephen Davis (1978, 1991a, 1991b), Alan Leveillee (1998, 1999), and David Black (2000).

William A. Ritchie (1903-1995) received his B.A. and M.A. from the University of Rochester and received his Ph.D. from Columbia University in 1944. His extensive work included supervision of over 100 precontact sites along with authoring over 150 publications and monographs. His more influential publications include: *The Archaeology of New York State* (1965a), *The Archaeology of Martha's Vineyard* (1969b), and his co-authored work with Robert Funk entitled *Aboriginal Settlement Patterns in the Northeast* (1973). Ritchie is credited with being the first archaeologist to utilize the term "Archaic" (Ritchie 1932, 1944), which was contested by fellow archaeologists of the time (Sears 1948: 122).

His contributions towards characterizing the Transitional Archaic period begins with his discovery of a cultural complex defined as the Snook Kill phase (Ritchie 1958:91-98; 1965a: 134-142; 1969b: 54-55). Ritchie states the familiarity of the Snook Kill points to its "likely ancestor the Lehigh Broad point" of the upper Delaware rivers in eastern Pennsylvania, but he continuously asserts that antecedents of the Snook Kill points are further south and part of the well-known Savanah River point stylization (Ritchie 1965a: 142). The Snook Kill broad-point according to Ritchie, is the earliest form of the Susquehanna tradition in the Northeast and includes a similar set of traits and artifact assemblage that can be seen as "utilitarian or tradition bound" (Ritchie 1965a: 138; 1969b: 54-55). This artifact assemblage comprises of: a broadpoint technology that can be reutilized for other purposes (e.g., scraper, fire-kit-starter), the genesis of steatite vessel technology, wood-working artifacts, and bone flutes for either recreation or ceremonialism. Cultural traits affiliated through the artifact assemblage embodies:

cremation burials, orientation toward riverine and lacustrine environments and aquatic mobility via dugout canoes, small sized communities (nuclear family or extended family household) along with possible loose bonds with fewer than a hundred people, and evidence of little or no trade or contact with others based on materials (Beardsley et. al. 1956: 136-138; Ritchie 1965a; Ritchie and Funk 1973: 71-73). Ritchie specifies that "the Snook Kill belongs to the family of broadpoints which largely characterizes the transitional stage" (Ritchie 1965a: 142).

Ritchie defines the "Transitional Stage" temporally consisting of only three centuries, between 1,300 to 1,000 B.C., and being regarded as a preceramic period between the Late Archaic and the Early Woodland (Ritchie 1965a: 150). Establishing the "Susquehanna Tradition" to define the projectile point continuum during this period, Ritchie suggests that Witthoft's assumption that the oldest complex of the Transitional Stage is the "Susquehanna Broad spear points", which overlaps temporally and spatially with other projectile forms such as: the "serpent-head" style or Perkiomen and Lehigh, and the "fishtail" stylization. Later in the discussion, Ritchie provides evidence from the Long Site in Lebanon County, Pennsylvania as evidence that the Lehigh stylization is contemporaneous with the Snook Kill point of eastern New York; both showing strong affiliations to the Savanah River point stylization in the southeastern United States (Figure 2-5) (Witthoft 1959: 82; Ritchie 1965a: 153). Ritchie uses the variation of point stylization, which he states can be temporally separated, to define two phases based on evidence from archaeological excavations he conducted. The phases are defined as the

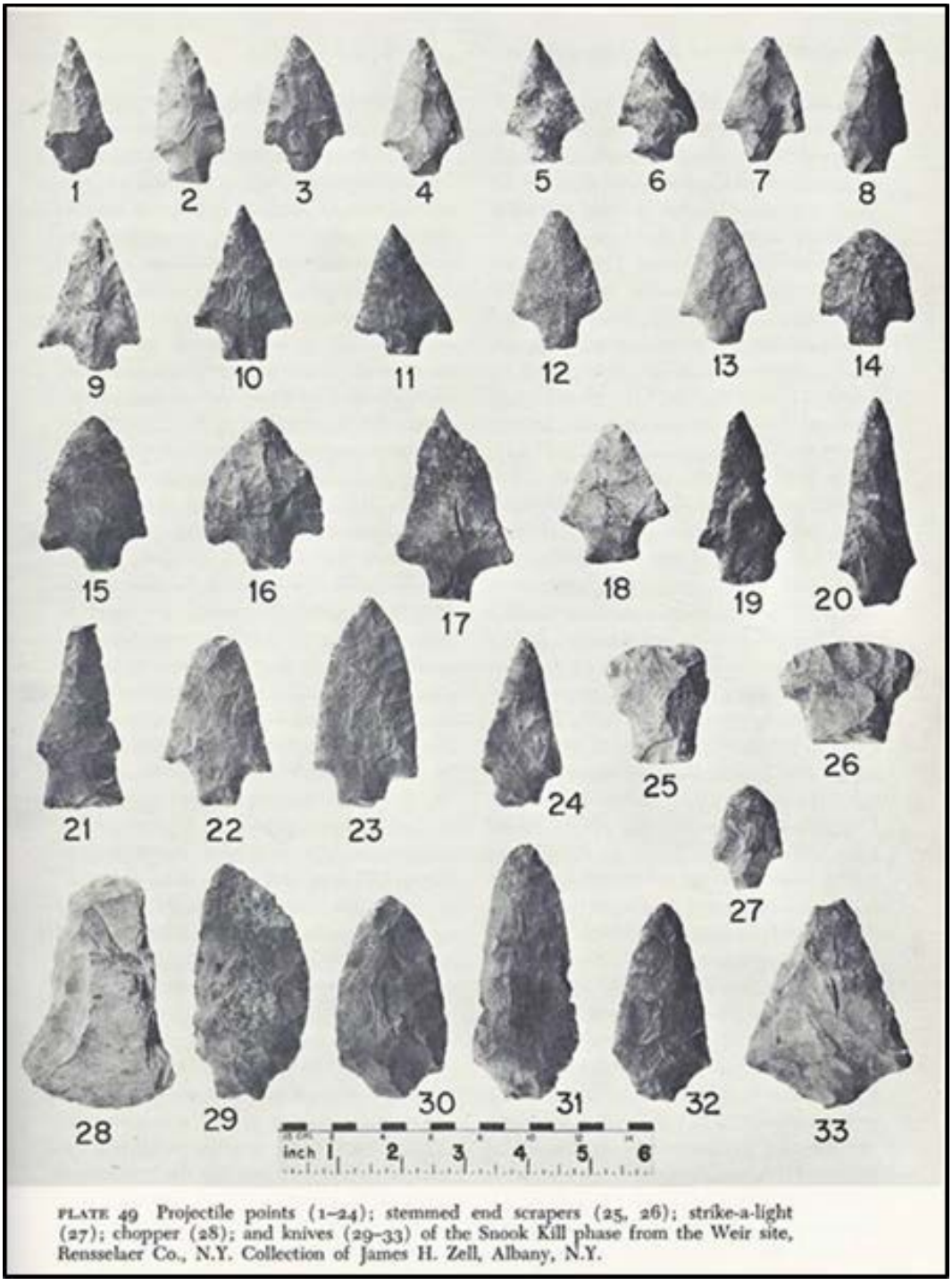

PLATE 49 Projectile points (1–24); stemmed end scrapers (25, 26); strike-a-light (27); chopper (28); and knives (29–33) of the Snook Kill phase from the Weir site, Rensselaer Co., N.Y. Collection of James H. Zell, Albany, N.Y.

Figure 2-5: William Ritchie's 1965a photograph of Snook Kill phase projectile points recovered at the Weir site, Rensselaer County, New York.

older “Frost Island Phase” (Ritchie 1965a: 156-164) and the younger “Orient Phase” (Ritchie 1965a: 164-178).

The Frost Island Phase artifact assemblage includes: broadpoint technology with repurposed and reutilized points, rounded and lugged steatite vessel technology including repurposing steatite fragments into “doughnut-shaped beads”, utensils, and rectangular gorgets with two to six perforations, wood-working tools, netsinkers, and “Marcey Creek” steatite-tempered pottery resembling the steatite vessel technology design (Ritchie 1965a: 156-164). Cultural traits affiliated with the Frost Island Phase are vastly similar with the cultural traits of the Snook Kill phase with the exception of: early ceramic production, “killed” blades associated with cremation burials (Ritchie 1965a: 163), and cooking activities with not only steatite vessels, but also shallow pits of heated stones (Ritchie 1965a: 159). A “killed” artifact is one that was used regularly or made specifically and purposefully broken in a ritualistic or cosmological fashion.

Archaeological evidence for Ritchie’s “Orient Phase” is collected from sites in eastern Pennsylvania, Long Island, New York, and southern New England including the Hawes site in eastern Massachusetts. The Orient Phase artifact assemblage includes: narrow “fishtail” point technology derived from a broadpoint technology, smoothed steatite vessel technology and repurpose, wood-felling and wood-working tools, and paint stones like hematite and graphite in burials (Ritchie 1965a: 164-178). Cultural traits affiliated with the Orient Phase and that differ from the Frost Island Phase are: subsistence on shellfish and associated middens, “killed” steatite vessels with perforation at the base of the vessel and usually associated with cremation burials, possible

symbolism with cremation burials major axis aligned in an east-west direction, and the reoccurrence of cremation burials on hills while habitation sites occur in "prosaic" places (Ritchie 1965a: 165-167, 175-178). The Orient phase is the temporal end of the Transitional stage, yet Ritchie illustrates this phase "had some of its roots in eastern Pennsylvania…with stimuli in southern New England and Long Island" (Ritchie 1965a: 156).

Dena F. Dincauze earned her Ph.D. in archaeology from Harvard University in 1967 with her dissertation focusing on cremation burials in eastern Massachusetts. Her doctoral research was published through The Peabody Museum at Harvard and entitled *Cremation Cemeteries of Eastern Massachusetts* (1968). Upon completing her doctoral degree, Dincauze joined the faculty at The University of Massachusetts, Amherst and held the title of Professor Emerita. Aside from her work in northeastern North America she has also conducted research in Russia and Brazil, and has received a medley of awards including the Distinguished Service Award from the Society of American Archaeology in 1997. Additional articles written by Dincauze relating to the Transitional Archaic period include: *The Atlantic Phase: A Late Archaic Culture in Massachusetts* (1972), and *The Late Archaic Period in Southern New England* (1975).

The majority of Dincauze's observations of the Transitional Archaic period stem from her Ph.D. dissertation where she establishes an eastern stylization of broadpoint equivocal to the Susquehanna Broad (Witthoft 1953; Ritchie 1965a), which she calls the Watertown Variety of the Wayland Notched type (Dincauze 1968: 16-26) (Figure 2-6). She establishes that the unnamed "intermediate" forms deriving from the Susquehanna

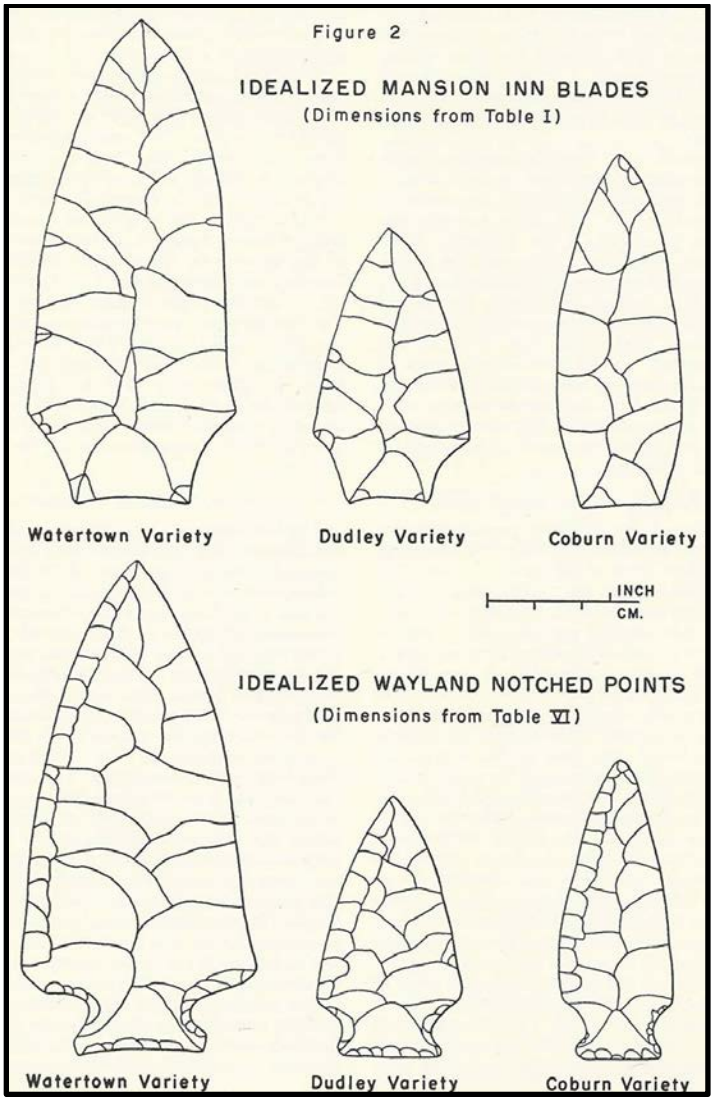

Figure 2-6: Dena F. Dincauze's 1968 illustration of idealized Mansion Inn Blades variants and their subsequent Wayland Notched Point stylizations.

Broad/Wayland Notched types toward Ritchie's defined "Orient Phase" stylization as "closely resembl[ing] the Dudley and Coburn varieties of the Wayland Notched type in Massachusetts" (Dincauze 1968: 26). All variants of the Wayland Notched type prior to the corner and secondary knapping reduction is a bifacial blank, which Dincauze

calls Mansion Inn Blades based off their discovery at the Mansion Inn site along the Sudbury River in Wayland, Massachusetts. Artifact assemblages associated with all variants of Wayland Notched type are: flaked drills or awls, fire-making-kits, bifacial end scrapers, bipointed bifaces or "Boats blades", steatite vessel technology, grooved axes, wood-working and wood-felling tools, plummets, whetstones, grooved hones, paint stones, antler points and a copper adze. This adze was found to be similar to the Glacial Kame culture of the Midwest, but she attributed the recovery from a cremation burial to be Early Woodland (Dincauze 1968: 26, 28-40).

The cultural traits and functionality within the Wayland Notched typology as interpreted by Dincauze establishes strong similarities with Ritchie's conclusions of the Susquehanna Tradition, while also elaborating on past practices. The intricacy of these practiced cultural traits includes secondary interred cremation burials of "green-burned" bone, which is indicative of recent post-mortem, fleshed cremation practices, while all dry-burned bone was analyzed and were conclusively not human (Dincauze 1968: 40-41). Additionally, a canine maxilla was recovered from one burial, while dry-burned faunal remains including bird, mammal, and antler were recovered from other interments. Dincauze applies Nils-Gustaf Gejvall's (1963) examination of prehistoric cremation practices from Sweden to the Transitional Archaic period illustrating that cremations would have had a high level of efficiency, taking place on an exposed pyre with no temporal restriction in completing the process (Gejvall 1963: 380-381). Dincauze's examination of the cremation burials yields new insight into the practice of secondary interment stating that "from the pyre residue…only small fragments of bone were

selected for redeposition in the elaborate pits" and that "the deliberate reduction of larger pieces cannot be demonstrated" (Dincauze 1968: 41).

In the examination of cremation burials, Dincauze acknowledges an interesting archaeological group, which she defines as the "Hawes Group" (Dincauze 1968: 87-88). This group is loosely characterized by broad-based, shallowly side-notched bifaces, steatite utilization, and cremation burials as evident at sites in southeastern Massachusetts and Rhode Island (Fowler and Welt 1955; Fowler 1966b; Lord 1962; Robbins 1959b, 1967; Simmons 1970). An overlapping cultural group associated with the "Hawes Group" (Dincauze 1968: 81), once known as the "Call Group", now is known as the "Atlantic phase" (Dincauze 1972). Dincauze elucidates that the Atlantic phase is an eastern variant of Ritchie's Snook Kill phase, which "grows in importance and elaboration through the fourth millennia B.P.", along with "good indirect evidence exist[ing] for ages in excess of 3600 years" (Dincauze 1972: 57, 1975: 29; Boudreau 2008: 28). Dincauze's sequence of a broadpoint tradition in the Late and Transitional Archaic periods is established as: Atlantic phase, the Wayland Notched type, inclusive of all variants, and the Orient phase (with Coburn variety overlap and similarities), which then leads into the Woodland period.

Bruce J. Bourque received a Bachelor of Arts from The University of Massachusetts, a Master of Arts degree from The University of Colorado, and a Ph.D. from Harvard University. His dissertation research focused on precontact peoples during the Archaic period in Penobscot Bay, Maine, specifically on the islands of North Haven and Vinalhaven (Bourque 1975). During the archaeological excavations in Penobscot

Bay, Maine, Bourque defined the “Moorhead I phase” people as a variant of the Maritime Archaic tradition during the Late Archaic period in the Gulf of Maine, which is related to previously known “Red Paint” burials (Bourque 1975, 1995, 2012). During his doctoral research at the Turner Farm Site on North Haven Island, Maine, he uncovered the largest occupation relating to the “Susquehanna tradition” in the Gulf of Maine to date (Bourque 1975, 1995; Bourque et. al. 2006). As the Chief Archaeologist and Curator of Ethnology at the Maine State Museum, along with being a Senior Lecturer of Anthropology at Bates College, he has continued to conduct projects on the Fox Islands and in Merrymeeting Bay, Maine.

The analysis from the Turner Farm site has been separated into four occupations with Occupation 1 affiliated with the Late Archaic period and Occupation 2 possessing “Susquehanna tradition” artifacts due to overlap of occupations, while the fourth occupation is related to the “Ceramic period” (Bourque 1995: 38, 45**).** Occupation 3 (Bourque 1995: 97-167) dates from 4,020 ± 80 BP to 3,105 ± 75 BP and possesses similar assemblages to those reported by Ritchie and Dincauze including: Boats blades, contracting and straight stemmed, along with taper stemmed broadpoints, stemmed and non-stemmed scrapers, flaked drills, fire-kit-starters, gravers, wood-working and wood-felling groundstone tools, whetstones, bone barbed harpoons, beaver incisor tools, decorated and undecorated bone objects, bone gouges, rattle parts (including box and painted turtle scutes), and copper beads. The predominate materials utilized in the manufacturing of bifacial implements are sourced as Kineo-Traveller porphyry, 185 km north of the site on Moosehead Lake, and Vinalhaven banded spherulitic rhyolite, located

5 km west of the site. Cultural traits of Occupation 3 encompassed by cremation burials yielding evidence for “manipulation of the dead” (Bourque 1995: 162-163) along with “killed” implements and the maxillae of a wolf, red fox, and wild cat (Bourque 1995: 164), the interment of faunal remains as food offerings to the dead, and the possible practice of occipital flattening on the cranial remains recovered from the “southern cluster” of flex and bundle burials (Bourque 1995: 147-153).

Aside from the significant artifact assemblages from Occupation 3 of the Turner Farm site, an illustrative understanding of subsistence can be quantified from faunal remains interred in burials and recovered in stratigraphic relation, along with isotopic evidence from skeletal remains (Bourque and Krueger 1994; Spiess and Lewis 2001). Faunal remains suggest a year-round occupation on the island as evidenced by: a 48% ratio of grey seal (January-March) and harbour seal (May-June) during pupping or mating seasons, to white-tail deer (February-June), ducks (October-April), alcids including the extinct great auk, loons, and geese, tomcod (early autumn), winter flounder (late summer), American eel, and minimal evidence of moose, bear, mink, beaver, small furbearers including canines, fox, porcupine, muskrat, and otter, along with secondarily collecting soft shelled clams (late winter and spring based on clam chordophone thin section examinations) (Spiess and Lewis 2001). Three bone samples were taken from Feature 39-1974 (3,610 ± 90 B.P.), which contained five individuals in three separate bundle burials, one from each bundle. A sample from each bundle was taken for isotopic analysis and concluded that these individuals were on the “lowest relative consumption of marine protein” within the cemetery population (Bourque and Krueger 1994). The data

was interpreted to establish the presence of three separate individuals and that one individual was not scattered in different bundles (Bourque 1995: 153).

Bourque's other regional area of study has been Merrymeeting Bay, Maine, where phases of the Transitional Archaic is evident (Bourque et. al. 2006: 315-323). One of the sites, the Cary Garden's Complex (15.57) is defined as being the "staging area for Susquehanna immigrants entering the region for the first time", although it may be contemporaneous with Occupation 3 at the Turner Farm site (Bourque et. al. 2006: 315). The Indian Springs site (15.272) is a landlocked location that revealed a unique bipointed biface (Figure 2-7) placed on top of a cache feature of broadpoint preforms, which has been deemed ceremonial (Bruce Bourque 2014, pers. comm.; Boulanger and Eren 2015). The Mugsford site represents the completion of the "Terminal Archaic" with an assemblage consisting of a small stemmed point technology resembling artifacts recovered in Martha's Vineyard (Ritchie 1969b: 219), along with Rum Beach and the Weir site (Black 2000). These assemblages have been postulated as a continuation of a small stemmed point culture coexisting with the Susquehanna, but that may not be the case in Maine (Bourque et. al. 2006: 323).

David Sanger received his Ph.D. in archaeology from the University of Washington in 1967 and obtained a professorship at the University of Maine, Orono in 1971, where he is now Professor Emeritus. Sanger's northeastern research focusing on the Transitional Archaic period is highly influential and features: *Culture Change as an Adaptive Process in the Maine-Maritimes Region* (1975), *Discovering Maine's Archaeological Heritage* (1979), *An Introduction to the Archaic of the Maritime*

Figure 2-7: The Transitional Archaic period broadpoint preforms with the associated bipointed biface from the Indian Spring site.

Peninsula: The View from Central Maine (2006), and *Discerning Regional Variation: The Terminal Archaic Period in the Quoddy Bay Region of the Maritime Peninsula* (2008). His excavations at the Hirundo sitealong the Pushaw Stream, which is a drainage from Pushaw Lake into the Penobscot River, gives tremendous insight into interior site locale during the Transitional Archaic period (Sanger 1975; Sanger and MacKay 1979).

The Hirundo site is located on a 200-meter area of bedrock located next to the only set of rapids located on the stream, where anadromous fish like American shad, alewife, and salmon could easily be exploited (Sanger and MacKay 1979: 36-37). Paleoenvironmental analysis of pollen samples taken from Holland Pond, over four miles north-northeast of the site, were dated to 4,110 ± 90 B.P. and revealed a similar

environment to the present day with exception of an influx of hardwood species (Sanger and MacKay 1979: 40). Having recovered a number of projectile points, including a bipointed biface associated with the Transitional Archaic (Sanger 1975: 64) and observing different behavioural patterns from preceding Late Archaic cultures, Sanger states that a "population replacement" where human migration spread into "Maine and other parts of New Brunswick" (Sanger 1975: 69). This arrangement of both artifact assemblages, along with cultural and behavioural traits differing completely with previous populations, Sanger established a sixth objective in identifying migrations, which states: to "establish the presence of all cultural subsystems and not an isolated one such as the mortuary subsystem" (Sanger 1975: 73).

Since the investigations at the Hirundo site, Sanger has addressed the presence of the Susquehanna Tradition as a limited mass movement of people in Maine, but when looking toward the Maritime Provinces he states that the small size of the sites suggests cultural diffusion, or occasional forays (Sanger 2006: 243; Sanger 2008: 32). Sanger does note that there is a connection between the Susquehanna tradition in Maine and Nova Scotia as evidenced by the lithic materials recovered at Tusket Falls sites in Yarmouth, Nova Scotia, as being rhyolite from coastal Maine (Sanger and Davis 1991). This is unsurprising to Sanger as he has postulated canoe trips over 16 kilometers from the central Maine coast to southern Nova Scotia, which builds off of Frank Gouldsmith Speck's ethnographic accounts of canoe travel between Yarmouth, Nova Scotia and Grand Manan Island, New Brunswick, as well as from Digby, Nova Scotia to Saint John, New Brunswick (Speck 1922: 154; Sanger 1991b). Sanger (2009c) has reopened a

dialogue on whether the people of the Transitional Archaic period utilized dugout or birchbark canoes, which he states is indeterminate based solely on lithic wood-working artifacts.

Stephen Davis obtained his Bachelor's degree from the University of New Brunswick, his Master of Arts from Memorial University of Newfoundland, and his Ph.D. from Wolfson College, Oxford University. His contributions towards understanding the Transitional Archaic in the Maritime Provinces began with his Master's research at the Teachers Cove site (BgDr-11) in the Passamaquoddy Bay Region of New Brunswick (Davis 1978). Davis (1982) recovered a cache of fully grooved axes and celts affiliated with the Transitional Archaic from a site on Rouen Island in Passamaquoddy Bay, New Brunswick (Deal 2015: 74). As the co-author of a chapter in *Prehistoric Archaeology in the Maritime Provinces: Past and Present Research* (1991), along with David Sanger, Davis examined and recorded the largest private collection of Transitional Archaic period artifacts from Yarmouth, Nova Scotia, including: eight projectile points, a drill, a fully grooved axe and a shallow-grooved gouge (Davis 1991b; Sanger and Davis 1991: 70; Deal 2015: 76). He currently is the Co-Director of Davis MacIntyre & Associates based in Halifax, and professor emeritus with Saint Mary's University.

Christopher Borstel received his Master of Arts from the University of Maine, Orono, under the academic supervision of David Sanger. Borstel's (1982) contribution to the understanding of interior sites during the Transitional Archaic period stems from his graduate work at the Young site in Alton, Maine, across the Pushaw Stream from the

neighboring Hirundo site. The approach to this research placed importance on examining attributes of lithic assemblages through shape, technology, and material, and correlating these artifacts to previous culturally, temporally, and taxonomically defined affiliation (Borstel 1982: 3). Currently, Christopher Borstel is a Senior Cultural Resource Specialist with Tetra Tech consulting firm in New Jersey.

Borstel established that Component 2 of the Young site correlated to the Susquehanna tradition, which he rephrased as the "Broadspear" tradition, "because it carries less specific implications to the sequence" (Borstel 1982: 79). Based on his methodology of categorizing lithic bifaces in groups of similar attributes, Borstel established that the "broad contracting stem" and the "stemmed biface" (Figure 2-8) were the artifactually defining factor of associating Component 2 of the Young site to the Broadspear tradition seen elsewhere in Maine (Borstel 1982: 26-27, 79).

Borstel associated the artifacts, predominantly composed of Kineo-Traveller porphyry, of Component 2 with Snook Kill, Atlantic, and Lehigh/Koens Crispin stylizations from southern New England and the Mid-Atlantic regions. All eight radiocarbon dates accompanying Component 2 date from 3,751 ± 60 B.P. to 3,105 ± 50 B.P., and are from a possible cremation burial or nonfunerary ceremonial feature (Borstel 1982: 61). The feature did not yield any skeletal nor floral remains, but was full of "killed" bifaces which Borstel states is indicative of a single set of related strata "created by a single set of events over a short period of time" (Borstel 1982: 61). Borstel agrees with Sanger's assessment of the neighboring Hirundo site and applies the settlement and

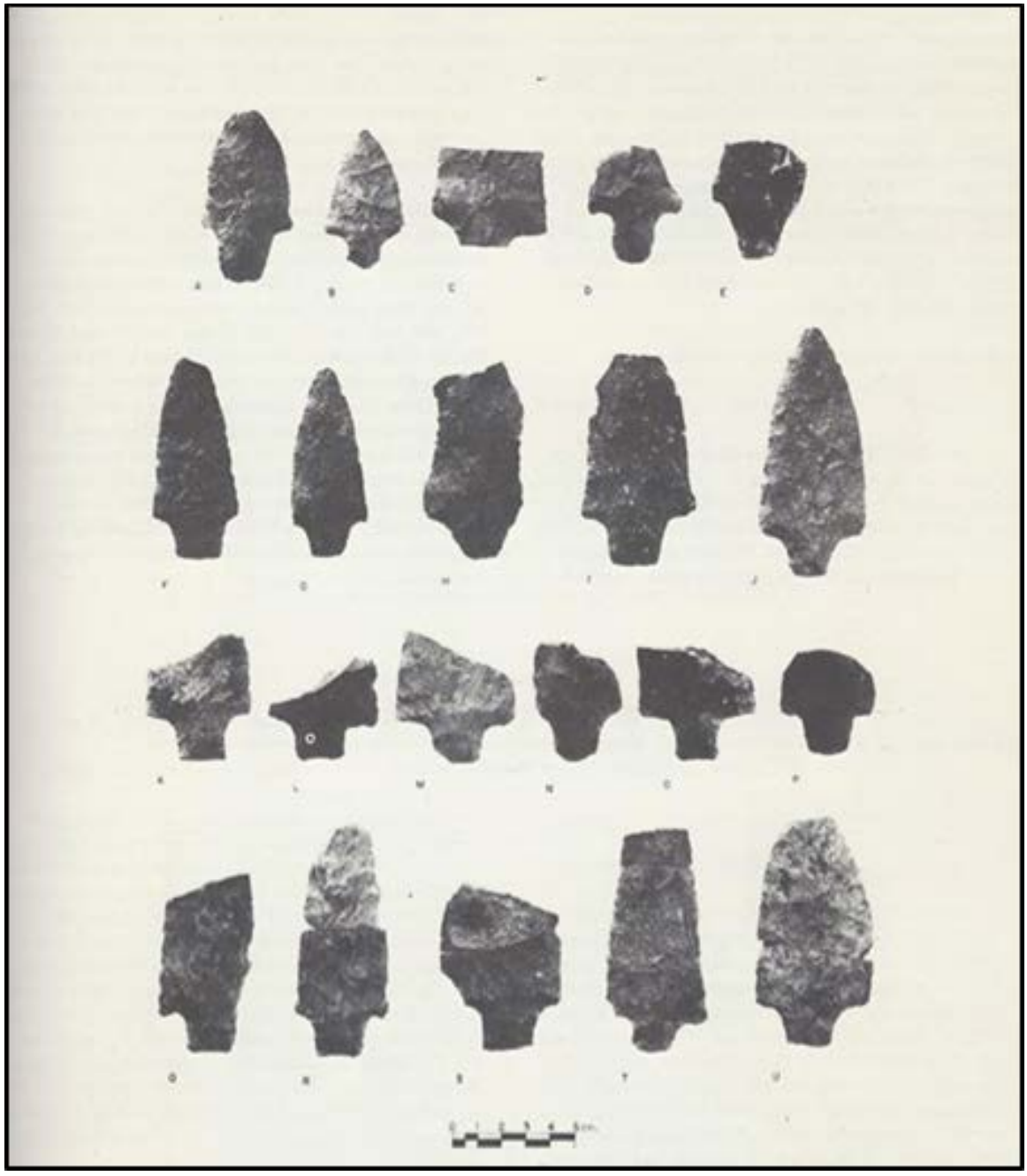

Figure 2-8: Christopher Borstel's 1982 photograph of Group 5 stemmed bifaces recovered from the Young Site in Alton, Maine.

subsistence strategies of exploiting anadromous fish during spring to fall occupations to the Young site (Borstel 1982: 81).

After obtaining his Ph.D. under the supervision of Brian Hayden at Simon Fraser University, Michael Deal was briefly employed with Archaeological Services, New Brunswick. From 1983 to 1985 he conducted archaeological investigations at Spednic Lake, the headwater of the St. Croix River which marks the geopolitical boundary between New Brunswick and Maine. It was at this time that he investigated a site known as Mud Lake Stream (BkDw-05), which yielded an assemblage of Transitional Archaic period artifacts relating to the Snook Kill, or Atlantic, stylizations (Deal 1986: 72). The Mud Lake Stream site contained a Susquehanna tradition component that included five complete stemmed bifaces, five above the shoulder transverse fractured fragments, and four additional bifacial fragments, along with a flaked drill base, two flaked drill tips, and a complete fully grooved axe (Figure 2-9) (Deal 1986: 72-73). In addition, a stemmed graver recovered at the Diggity site (BjDu-17) on Palfrey Lake, is believed to be a reworked Transitional Archaic point (Deal 1984b).

Along with the lithic artifact assemblage at Mud Lake Stream there were 31 calcined American shad (*Alosa spidissima*) bones recovered from the Susquehanna component, which have been attributed to a spring subsistence strategy (Deal 1986: 76, 89; Deal et. al. 2006). Deal suggests that the anadromous fish were caught at Milltown Falls during their spawning migration and could have been "smoked for preservation before being transported to the interior", where anadromous fish are deemed an important staple due to a high ranking in food value (Rostlund 1952: 14; Turnbaugh 1975; Deal

Figure 2-9. Michael Deal's 1986 photograph of the projectile points recovered at the Mud Lake Stream site

1986: 76). A charcoal sample from Feature 21 recovered 20 centimeters, (horizontally), from a from a complete stemmed biface produced a radiocarbon date of 4,010 ± 180 B.P. (Beta-7639), which fits within the perimeters of the Atlantic phase (4,100-3,600 B.P.) (Dincauze 1972: 56-57; Deal 1986: 78). A charcoal sample from Transitional Archaic Feature 1 yielded a similar date of 4,000 ± 180 BP (Beta-11206).

After leaving Archaeological Services, Deal was hired as a one-year sabbatical replacement for Stephen Davis at Saint Mary's University, Halifax, and moved from

there to his current position at Memorial University (Deal 2015: 17). Recently, along with three of his former graduate students wrote a reassessment of the Archaic period in the Maritime Provinces, including a critical examination of the Transitional Archaic period (Deal et. al. 2006: 265-269). Originally, Deal had thought that the presence of Transitional Archaic peoples did not extend beyond the Saint John drainage in New Brunswick and the Schubenacadie River in Nova Scotia, but lithic artifacts recovered on Prince Edward Island "indicates a significant Susquehanna presence" (Deal and Rutherford 2001; Deal et. al. 2006: 266; Deal 2015: 79-80). Deal states that Transitional Archaic populations may have been more widely distributed, persisted longer, and "had a significant influence on the Early Woodland technology" than previously thought (Deal et. al. 2006: 271).

Alan D. Leveillee received his Bachelors of Arts and Master of Arts in Archaeology and Curriculum Planning from Rhode Island College. He began his cultural resource management career in 1978 later joining the Public Archaeology Laboratory (PAL) in 1982 where he is currently a Principal Investigator and Director of educational programs, as well as being an adjunct faculty member at Roger Williams University in Bristol, Rhode Island. During the field seasons from 1990 to 1992 Leveillee was the principal investigator for a site located along the Blackstone River in Millbury, Massachusetts, which is known as Millbury III (Leveillee 1998; 1999). The examination of the site revealed a cluster of Susquehanna tradition secondary burial features, which was first used around 3,500 B.P. and utilized over a 950 year time span.

The site was spatially demarcated by fifteen contiguous 2x2 meter units, which were then subdivided into 240, (50x50) centimeter units, excavated at five centimeter arbitrary levels. The excavation uncovered a total of 28 features, with the majority of these producing radiocarbon dates associated with the Susquehanna tradition (Leveillee 1999: 170-173). Three of these features; Feature 1A, Feature 4, and Feature 25 reveal interesting insights into the Susquehanna tradition including: Feature 1A dating to 3,510 ± 60 B.P. contained over 7,900 calcined bone fragments and 315 lithic artifacts and fragments from Atlantic and all Wayland Notched point phases, Feature 4 contained evidence of two ply "s twist" fiber textile that suggests bundle offering as an element of the deposited event, and Feature 25 contained a copper blade at 37 centimeters below the surface while charcoal collected between 35-40 centimeters below surface provided a radiocarbon date of 2,870 ± 150 B.P.(Figure 2-10) (Largy 1998; Leveillee 1999: 160-169).

Faunal remains from the cremation burials constitutes 46.5% of all skeletal remains recovered and were generally identified as white tailed deer, box and painted turtles, and birds (Bellantoni 1998; Leveillee 1999: 173). It was also observed that there were both "green-burned" bone and "dry-burned" bone, which was stated to possibly indicate time of death prior to the cremation; those who died closer to the time of cremation had "green-burned" bone while others who died a while before the cremation are represented by the "dry-burned" bones. A number of flora specimens were recovered from the cremation burials including: huckleberry, blackberry, hazelnut, butter nut and shagbark hickory, acorns, along with charcoal from hardwoods (Largy 1998; Leveillee

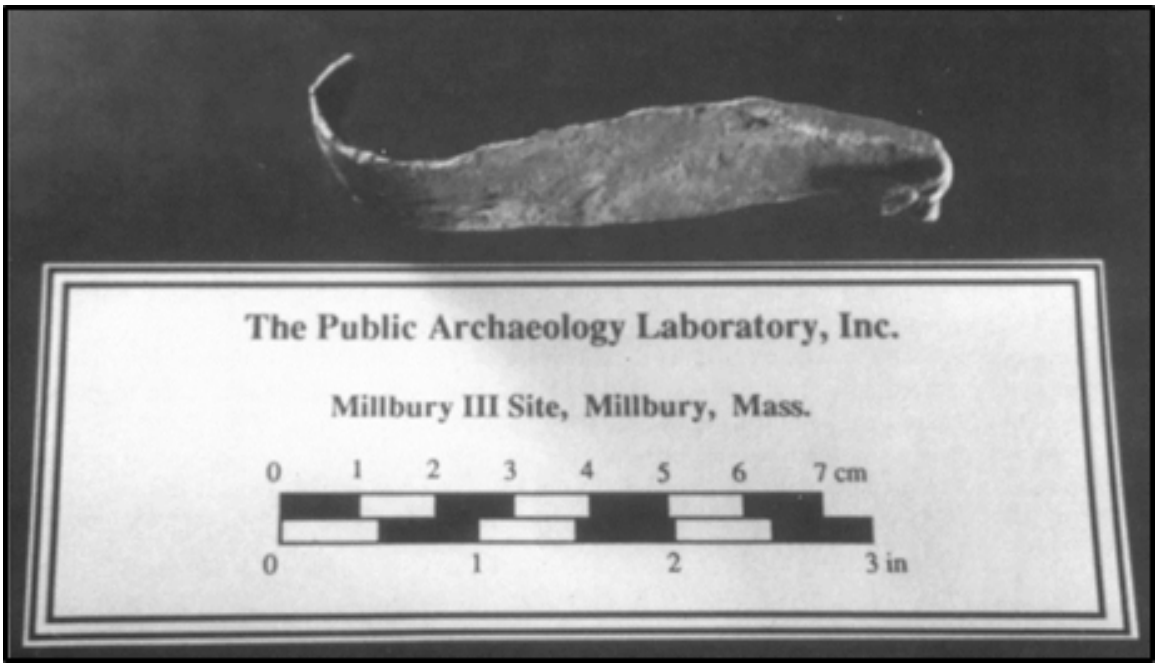

Figure 2-10: A photograph of the copper blade recovered from Feature 25 at the Millbury III site dated to 2,870 ± 150 B.P. (Leveillee 1999).

1999: 175). Based on the harvesting period of flora specimens Largy concluded that the harvesting period represented is both late summer and autumn.

Cross (1998) conducted the lithic artifact analysis for Millbury III and made some interesting observations including: that artifacts that entered the archaeological record via the cremation burial deposits were at different stages of their use-life and are sometimes retouched before interment, the lithic artifacts that were cracked and not "killed" are the result of being introduced to the cremation fire at an uncertain stage without the fire being properly quenched, and that some of the artifacts exhibited a matte finish possibly resulting from being carried over long distances in a (hide) bag (Leveillee 1999: 175-178). Leveillee suggests that ceremonialism on a social system level was important to the

Susquehanna in maintaining ideology and cultural continuity over 950 years stating that: "within a Susquehanna world view, people, animals, and inanimate objects such as tools contained metaphysical entities, spirits which empowered their vehicles and that, when released from their physical vehicles, maintained their particular identities and powers" (Leveillee 1999: 181).

David W. Black obtained his Ph.D. from McMaster University in anthropology and began teaching at the University of New Brunswick in 1991. He has been the director of various research projects including: the Deer Island Archaeology Project, the Washademoak Lake Chert Source Project, the Bliss Islands Archaeology Project, and the Insular Quoddy Region Archaeology Project. While carrying out research in the Quoddy Region in 1992, through the Bliss Islands Archaeology Project, the Rum Beach Site (BgDq-24) was reinvestigated after avocational archaeologists discovered the site in the 1980's and since then has been repeatedly visited for surface collection (Black 1992, 1997, 2000). Initially, Black proposed that the artifacts found at the site were of the early Susquehanna tradition, but later conceded that it may actually be part of the late Susquehanna tradition (Black 2000: 90).

The Rum Beach site is located at the north end of a salt marsh that bisects Northeastern Bliss Island and paleoenvironmental analysis establishes that the marsh was previously a meadow prior to 3,000 B.P. The lithic assemblage of the site consists of 73 pieces of debitage, and 16 cores and core fragments, and 9 formal tools including: a stemmed biface related to the Atlantic style made of a green volcanic material, an Orient fishtail style point made of Kineo-Traveller porphyry, a resharpened broad point with

rectangular base, a short bit drill made of quartz, a long drill medial base fragment made of banded rhyolite, a preform made of Kineo-Traveller porphyry, and three other bifacially worked tools (Black 2000: 94-97). Black states that due to its positioning in a sheltered area along with prior marsh dating from 3,400 to 3,000 B.P. Rum Beach is related to the Weir site (BgDq-06) and other Orient phase components in southern New England (Black 2000: 98; Deal 2015: 79). Understanding the importance of the Rum Beach site, not only to just the late Terminal Archaic occupations in Maine and the Maritime Provinces, Black states that marshes, bogs, and peat deposits are usually overlooked during environmental impact assessments as "low priority areas", and these environs should be taken more seriously (Black 2000: 101).

2.1.4 Synthesis of Previous Research on the Transitional Archaic

The preceding historiography was meant to identify those individuals who have set the benchmarks for attempting to establish and understand the Transitional Archaic period in the northeast, and particularly in relation to the Gulf of Maine and the Maritime Provinces. Several other individuals have contributed to our understanding of the Transitional Archaic period, and their research will be referred to in later chapters of this thesis.

Previous research suggests three essential themes that will be examined below, including: artifact assemblage, cultural traits, and comparative temporal parameters. Discussions of artifact assemblages in the northeast during the Transitional Archaic period focus on the common observation of a broadpointed biface technology, along with reutilization of lithic biface technology through the concept of "use-life" (Ritchie 1965a,

1969b; Dincauze 1968, 1972, 1975; Bourque 1995; Cross 1998; Leveillee 1999), and the utilization and manufacture of steatite vessels, which preceded early steatite-tempered ceramic production and the establishment of ceramic fabrication (Witthoft 1953, 1959; Ritchie 1965a; 1969b; Dincauze 1968, 1975; Sanger 1975, 1979; Tuck 1978b; Bourque 1995; Petersen 1995; Jeandron 1996; Suttie 2005). Archaeologists have stressed the importance placed of wood-working tools during this period, and especially the diagnostic full grooved axes and shallow gouges (Witthoft 1953, 1959; Ritchie 1965a; Dincauze 1968, 1975; Sanger 1975, 2008, 2009; Davis 1983; Deal 1986; Bourque 1995). The emergence of copper utilization in the Gulf of Maine region can also be attributed to this period based on the ever-growing presence of native non-ferrous metal objects at archaeological sites (Dincauze 1968; Sanger 1975; Bourque 1992c, 1995; Leveillee 1999; Deal et. al. 2016).

Cultural traits attributed to the Transitional Archaic period can be catalogued beginning with the most abundant and apparent; cremation burials and cemeteries, along with depositing bundled, individual, or killed funerary materials (Ritchie 1965a, 1969b; Robbins 1967; Dincauze 1968, 1972; 1975; Sanger 1975; Dumais 1978; Bourque 1975, 1995; Leveillee 1999; Robinson 2001a). Cultural traits concerning settlement and subsistence patterns focus on isolated interior riverine and lacustrine sites, along with coastal sites on both the mainland and islands; while living in nuclear or extended family units within local networks of no more than 100 people (Ritchie 1965a; Dincauze 1968, 1972, 1975; Sanger 1979, 2008; Borstel 1982; Deal 1986, 2015; Petersen 1991, 1995; Robinson 2001a; Allen 2004).

Mobility is not entirely terrestrial as it appears that canoe travel is the most adequate method of travelling long distances with the least energy spent, especially along portage routes, which would account for the abundance of sites along interior waterways (Witthoft 1953, 1959; Ritchie 1965a, 1969b; Dincauze 1968, 1975; Sanger 1979, 2009; Borstel 1982; Deal 1986; Petersen 1991; Blair 2003). The cultural traits surrounding wood-working implements include canoe making, fish weir construction, and other minor dendrological components associated with the Transitional Archaic period (Witthoft 1953, 1959; Ritchie 1965a; Dincauze 1968; Robinson 1985; Sanger 1991b, 2008, 2009; Bourque 1995; Decima and Dincauze 1998; Blair 2003).

Cultural traits in the form of subsistence strategies are seasonally opportunistic and more diversified than previous Archaic populations. A main staple in their diet, based on site locale, tool assemblages, and other cultural traits, appears to be anadromous and catadromous fish, which would have been smoked for preservation (Ritchie 1965a; Dincauze 1968; Turnbaugh 1975; Bourque 1975, 1995; Sanger 1975, 1979, 1991b, 2008; Borstel 1982; Deal 1986, 2015). Evidence from the Turner Farm site indicates a hunting focus of white-tailed deer, seals, waterfowl, mesopredator fish such as cod, and secondary harvesting of soft shelled clams during the late summer to early autumn (Bourque 1995; Spiess and Lewis 2001). Floral remnants have indicated a hardwood forest with nut bearing trees, which would have produced harvests of acorns, beech nuts, hickory nuts, and butter-nuts, along with huckleberries and blueberries (Largy 1998; Leveillee 1999; Spiess and Hedden 2000; Bourque et. al. 2006).

Estimates of the temporal span of the Transitional Archaic period has fluctuated over time, although research recognizes the broadpoint tradition concides with the limits of the Transitional Archaic period. The technological limits are from 4,100 B.P. (Dincauze 1972; Deal 1986) to 2,700 B.P. (Petersen 1995; Black 2000) and is divided into three temporal stages (Figure 3-1). The first temporal stage is related to the Lehigh/Snook Kill/ Atlantic broadpoint stylization which ranges from 4,100 B.P. to 3,600 B.P. (Ritchie 1965a; Dincauze 1972, 1975; Boudreau 2008). A medial phase dates between 3,600 B.P. to 3,200 B.P. and is defined by a projectile point technology related to the Susquehanna/ Wayland Notched/Perkiomen typologies (Witthoft 1959; Ritchie 1965a; Dincauze 1968; Bourque 1995). The concluding phase of the Transitional Archaic period is defined from 3,200 B.P. to 2,700 B.P. and is related to the Orient fishtail point stylization (Ritchie 1965a; Dincauze 1968, 1975; Petersen 1995; Black 2000).

The scale of precontact archaeological site investigation in Nova Scotia is modest in comparison to New Brunswick and New England, especially sites representing the Transitional Archaic period and earlier. Although Nova Scotia has a long history of archaeological investigation, the quantity of sites discovered is relatively small compared to other places due to a complex set of issues. These issues include: the slow pace of industrial and urban development which limits cultural resource management's spatial coverage, the absence of graduate programs in the province, which would encourage archaeological research, and the arbitrary limitations of excavation depths within the province, which favors the discovery of later precontact sites (Catherine Cottreau-Robins 2015, per. comm.).

3 THEORY & METHODOLOGY

"A man is a method, a progressive arrangement;
a selecting principle, gathering his like to him;
wherever he goes."
– Ralph Waldo Emerson (2000 [1841]: 137), Spiritual Laws

This chapter offers a synopsis of the theoretical and methodological approaches used in this research. To begin with, the past chronological sequencing and artifact terminology used by archaeologists in previous publications is re-examined. The following section discusses an Indigenous archaeology framework and how cooperation with the Mi'kmaq is an integral aspect of research. The final sections provides an overview of the methodological approach to collections research in the region, along with the survey approach of the Boswell Site (BfDf-08) and laboratory procedures conducted during this investigation.

3.1 Theoretical Approach

The theoretical approach involved in this thesis combines *landscape ethnoecology* (Johnson and Hunn 2010) and *migration theory* (Rouse 1958, 1986; Sanger 1975; Anthony 1990). This approach is used to address questions related to the geographical distribution and cultural variability of the Transitional Archaic peoples, and especially their resource and subsistence practices.

3.1.1 Landscape Ethnoecology

The notion of landscape ethnoecology is easier to understand when the terms "landscape" and "ethnoecology" are first defined independently. The term "landscape"

has been defined a number of ways including: landscape as "viewscape" conceptualized in the literature of space drawing from "the artistic conventions of Renaissance and post-Renaissance European art (Hirsch 1995: 2); landscape from a cultural perspective where "landscapes are created by people – through their experience and engagement with the world around them" (Bender 1993: 1); landscape from a geography perspective is defined as "an area made up of a distinct association of forms, both physical and cultural" (Sauer 1963: 321); along with the concept of *topophilia*, or the "human love of place" (Tuan 1977, 1979, 1990). The term "ethnoecology" refers to the ontological perception of indigenous people and their environment, which includes aspects such as landscape knowledge, human practices, and human cosmological beliefs (Toledo 1992, 2002). In the field of landscape ecology the smallest unit of landscape is known as an "ecotope" (Tansley 1939; Troll 1971) and within landscape ethnoecology there is an evident array of culturally recognized "place kinds" or "folk ecotopes" (Johnson and Hunn 2010: 2).

Along with the ethnobiological intersection of classification concerning both plants and animals (Berlin 1992), in addition to understanding ecotopes, there is a third semantic realm "of geographic place names that is recognized in every society" (Hunn and Meilleur 2010: 17). The conception of place naming leads to the idea that "such focal points of the landscape preserve in memory critically important information needed to locate and acquire resources" (Hunn and Meilleur 2010: 18). These focal points in the perceived environment are entwined with social and emotional ties that establish a foundation of identity (Basso 1996) and represent cosmological rooting and "legal claims to the land" (Thornton 1995). When observing place names and the act of naming places

the focus on linguistics, and in this case archaeolinguistics, is necessary in the field of toponymy. Archaeoliguistics is the study of reconstructing aspects of past cultures by combining archaeological and linguistic evidence.

Edward Sapir's (1912) observations concerning toponymy characterize language of a group as interactive and reflexive of their culture and the role grammar "might play in setting at least some of the parameters for naming" (Fowler 2010: 243). Franz Boas (1934) in his research of indigenous languages of North America depicted the different "feel" and "look" of place naming among various languages based on peoples' significance in what was being named, along with the differences of grammars between the languages. Keith Basso (1996) intricately illustrated his observations in taking part of the place naming system and how these places are deeply attached to the people and maintain a sense of identity, in addition to witnessing how these places are utilized in teaching moral and social lessons. Concerning Mi'kmaw perspectives of landscape, Roger Lewis, Curator of Ethnology at the Nova Scotia Museum hypothesises that Mi'kmaw districts are bounded by "naturally existing drainage systems" and when applying the lens of the Smith-Francis orthography one can see "these drainage areas and river systems as containing a variety of ecosystems though which the Mi'kmaw moved to take advantage of animal migrations and fish runs, as well as other resources throughout the year" (Sable and Francis 2012: 20-22). It is shown through this theoretical framework of landscape ethnoecology that the entwined social, emotional, cultural, and environmental implications of place can be observed in the archaeological record.

3.1.2 Migration Theory

Theoretical perspectives on migration, and defining migration in archaeological contexts has become the subject of serious inquiry and analysis in the latter half of the 20th century (Anthony 1990: 896-897). Irving Rouse (1986) states that migration is a population movement of people "invading another's territory, traveling only in one direction" and establishing a "residence there" where the presence of the intrusive people becomes "so overwhelming that it is able to replace or to assimilate the local population", therefore a "change of people as well as culture" (Rouse 1986: 12). David W. Anthony (1990) argues that "this type of event is actually rare…because migrations almost always move in two directions: the initial migration is followed by a counterstream moving back to the migrants' place of origin" (Gmelch 1980; Lee 1966). Anthony continues his argument stating that Rouse (1986:161-163) has "explicitly rejected the findings of sociocultural anthropologists and geographers as irrelevant to the archaeological study of migration" (Anthony 1990: 898). The application of migration theory to this research recognizes Anthony's case and holds this theoretical approach to be congruent with landscape ethnoecology.

Past research on precontact peoples, especially those living within the time frame of the Transitional Archaic period, has employed Irving Rouse's (1958) criteria for identifying migratory movements of people. The five criteria Rouse establishes are as follows: 1) identify the migrating people as an intrusive unit in the region it has penetrated, 2) trace this unit back to its homeland, 3) determine that all occurrences of the unit are contemporaneous, 4) establish the existence of favorable conditions for

migration, and 5) demonstrate that some other hypothesis, such as independent invention or diffusion of traits, does not better fit the facts of the situation (Rouse 1958: 63-68). In addition to Rouse's archetype, David Sanger (1975) has added a sixth criterion; 6) establish the presence of all cultural subsystems and not an isolated one such as mortuary systems (Sanger 1975: 73). These criteria present evidence in support or opposition of migratory movement, yet do not satisfy the extreme complexity of precisely locating a proximate cause(s) of migration (Anthony 1990: 898).

When migration theory is imposed upon certain cultural or social units (Rouse 1986: 3-4) it is useful to obtain a "view of developments in demography and geography that might throw light on structure of prehistoric migrations" (Anthony 1990: 899). These structures defined by Anthony (1990: 899-905) as: *conditions favoring migration*, *short-distance migration*, and *long-distance migration*. When looking at the conditions of migration it is seen that "migration is likely to occur when there are negative (push) stresses in the home region and positive (pull) attractions in the destination region, and the transportation costs between the two are acceptable" (Anthony 1990: 899; Lee 1966). Short-distance migration as described through the "wave-of-advance" model (Ammerman and Cavalli-Sforza 1973, 1979, 1984; Martin 1973) "posits that locally high birthrates" among people along the "wave front would result in movement toward less settled locations", which "might accurately account for the idealized results of diverse population movements averaged over great spans of time (millennia)" (Anthony 1990: 901-902).

On the other hand, long distance migration can be seen as "migration across ecological and cultural boundary" that "would require considerable planning" (Anthony 1990: 902). There are five separate aspects and patterns incorporated with long-distance migration, such as: leapfrogging (Speare 1971; Ostergren 1979), migration streams (Lee 1966: 54), return migration (Lee 1966), migration frequency (Morrison 1971; Smith 1979), and migration demography (Simkins and Wernstedt 1971; Lefferts 1977; Swierenga 1982). These structures will help in defining the presence of migratory movements that may have occurred during the Transitional Archaic period in the northeast.

3.2 Terminology

3.2.1 Chronological Terminology

Scholarly literature pertaining to this temporal period use differing terminology, often confusing and overwhelming to the reader. Terminology such as: "Stone Bowl Burial Cult" (Fowler 1963b), "Stone Bowl Era" (Fowler and Luther 1950), "Susquehanna Tradition" (Witthoft 1953; Ritchie 1971b; Bourque 1975; Sanger 1975; Black 2000), "Broadpoint Culture" (Turnbaugh 1975; Cook 1976), and "Terminal Archaic" (Snow 1980; Deal et. al. 2006) have brought varying interpretations into the archaeological literature of the Northeast. A proposal to review and analyze the terminology employed seems necessary in the 21st century. The past terminological usage of "Stone Bowl Burial Cult" and "Stone Bowl Era" will not be revaluated since they were used once and focus on a singular technological and mortuary aspect of these people.

The first avenue in analyzing the taxonomic terminology of past investigators is to re-examine the established archaeological units and integration. Interchangeably, both of the terms *Terminal* and *Transitional* are used, yet both possess vastly different meanings. *Terminal* is defined as causing death eventually, or leading finally to death. The usage correlates to the end of the time largely defined as the Archaic Period, but it also conceptually establishes the end or "death" of the Archaic peoples. This is a quintessential faux pas when collaborating with First Nations whose belief systems argue continuity of people in their homelands (Sable and Francis 2012). The term *Transitional* works well with the current perception of what occurred during this time, especially when looking at technological and mortuary practices which transitioned between the Archaic period and the Woodland period (Leonard 1995a).

The Transitional Archaic period is defined by two traditions, where "tradition" is defined by Ritchie (1965a: xxviii) as a "custom, concept, trait, or any combination of such units with persistence in time", incorporating the notion that the "social sanction the group observes" will be relayed from one generation to the next, and so on. One of these traditions is delineated by the projectile point stylization. In previous publications *Susquehanna* (Witthoft 1949, 1953) *Broadpoint* (Turnbaugh 1975), and *Broadspear* (Borstel 1982) have been attached to the term tradition. Witthoft's conception of *Susquehanna* stems from the discovery of a projectile point technology within the Susquehanna River drainage system in New York and Pennsylvania. This term became embedded within the archaeological literature, yet over time with more archaeological research the origin of this technology stems from evidence of earlier production in the

Southeastern United States (Turnbaugh 1975; Cook 1976; Sassaman 2010: 83). Observing Turnbaugh's (1975) notions of "genetic affiliation" with the Savanah River point typology, it appears that there is a high potential of southern influence for the Susquehanna stylization.

The term *Broadpoint* gained notoriety within the archaeological lexicon with Turnbaugh's inclusion of the Savanah River point typology "demonstrat[ing] a strong genetic affiliation" to aforementioned typologies (Turnbaugh 1975:51). Defining a culture through "broadpoint production" (Turnbaugh 1975: 53-56), Turnbaugh came up against heavy criticism. Thomas Cook (1976: 340-341) dissects Turnbaugh's argument through a dimensional approach in order to figure out if broadpoint manufacturing determines either a culture, phase, horizon, tradition, or if it is only a knife. Turnbaugh's definition of broadpoint creates an inclusive term based on attribute stylization rather than place of discovery or implication of usage. *Broadspear* was first used in Christopher Borstel's (1982) master's thesis to designate all projectile points from the Transitional Archaic period. This can be problematic as this term implies that all projectile points from this time period were used as spears, while archaeological evidence shows that projectile points throughout their use-life were utilized in various ways. The use of "broadpoint tradition" implies an expansive inclusiveness with an allowance for genetic affinities in southern locations, but a singular artifactural trait should not define a culture (Binford 1965).

The other tradition that defines the Transitional Archaic period is the practice of cremation burials affiliated with the presence and distribution of broadpoints in the

northeast. Crematory practices during this time period are visible in the archaeological record when cremation platforms are unearthed and secondary interments of incomplete skeletal remains are recovered (Ritchie 1965a, Dincauze 1968, 1972; Bourque 1975, 1995; Pfeiffer 1977; Borstel 1982; Leveillee 1999). Osteological analysis of skeletal remains has assessed the common practice of defleshed cremation burials (Dincauze 1968; Pfeiffer 1977; Leveillee 1999). Another interesting aspect of the secondary interments is the "manipulation of the dead" where the secondary interment is reopened and interred with other individuals (Dincauze 1968; Bourque 1995). The establishment of the broadpoint and cremation burial traditions is known as a "co-tradition", as defined by Jones and Klar (2007) as the grouping of two or more interrelated traditions within a broad region.

Within the Transitional Archaic period, as defined by the co-tradition of broadpoint usage and cremation burials, there are three defined temporal phases with slightly varying cultural complexes (Willey and Phillips 1958: 23) (Figure 3-1). The first phase is confined to 4,100-3,600 B.P. and associated with the taxonomic stylizations of Lehigh (Witthoft 1953, 1959), Snook Kill (Ritchie 1958, 1961a, 1965a), and Atlantic (Dincauze 1972, 1975) projectile points. The intermediate phase has a temporal range of 3,600-3,200 B.P. affiliated with Susquehanna Broad (Witthoft 1953), and Wayland Notched types (Dincauze 1968, 1971, 1975). The last phase is associated with the Orient phase (Ritchie 1959, 1965a) and is temporally confined to 3,200-2,700 B.P. Knut Fladmark's (1978: 150) definition of *complex* states: "a consistently reoccurring assemblage of artifacts and traits which may be indicative of a specific set of activities, or

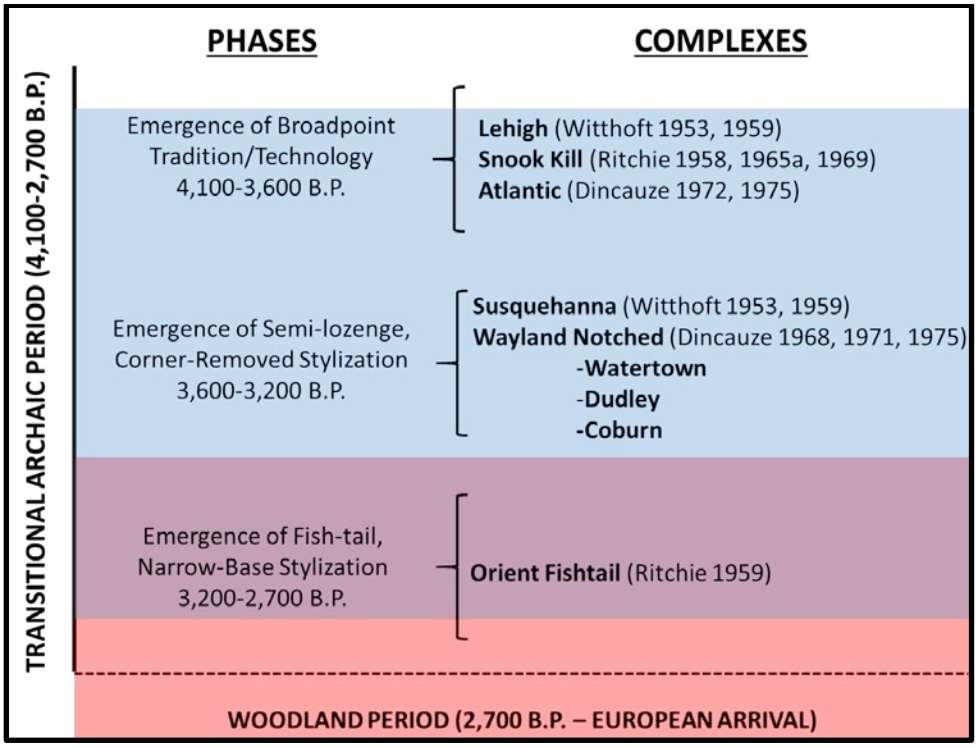

Figure 3-1: The temporal phases and complexes during the Transitional Archaic period. The blue background represents steatite vessel technological usage and the red represents ceramic vessel technological manufacturing.

a common cultural tradition." When studying reoccurring assemblages, a spatial pattern like a distribution map (Clark 1957) could aid in assessing a complex's limitations, along with subsistence patterns and strategies (Figure 3-2, Figure 3-3, Figure 3-4). Research surrounding the complexes during the Transitional Archaic period would fluctuate with geographic distributions, along with temporal ranges and overlap when new and revisited sites are excavated.

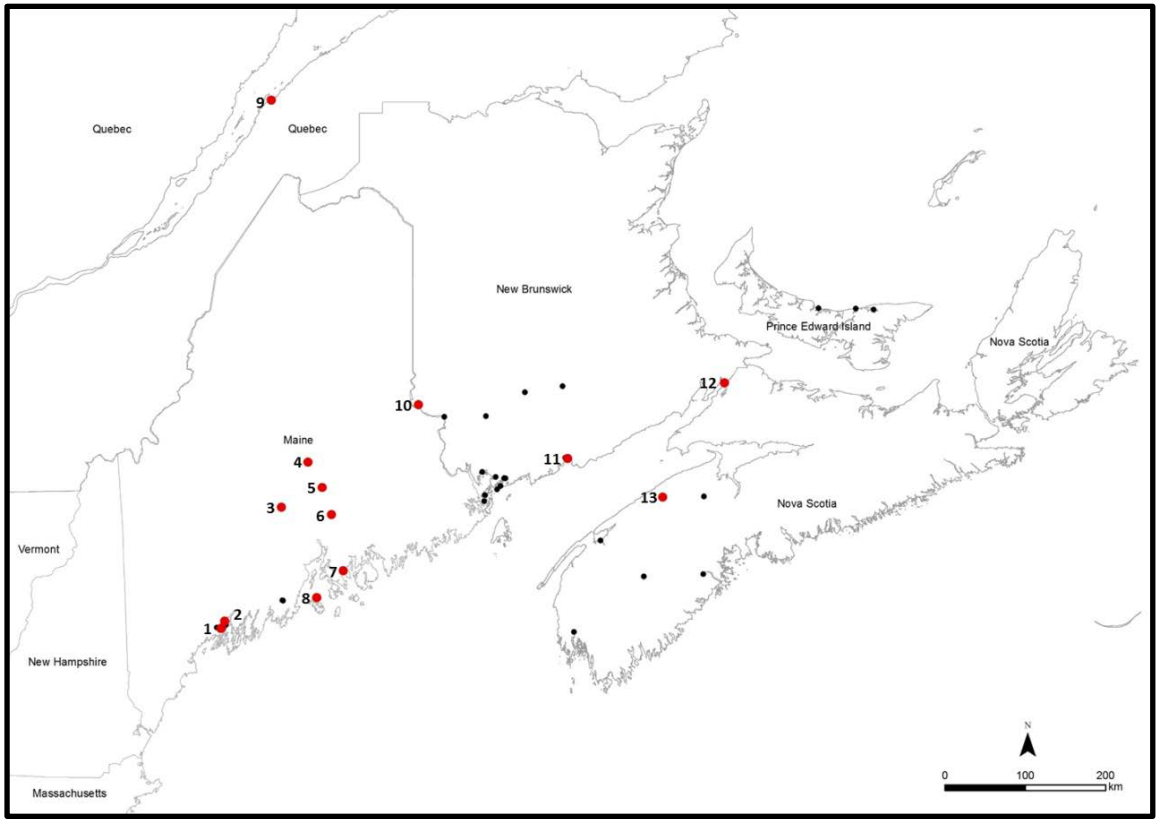

Figure 3-2: Archaeological sites in Maine and the Maritime Peninsula containing radiocarbon dates associated with the Lehigh/Snook Kill/Atlantic phase of the Transitional Archaic period (4,100-3,600 BP): 1. Ormsby Site Complex, 2. Cary's Garden Complex, 3. Sebasticook Fish Weir Complex, 4. Sharrow & Brigham sites, 5. Hirundo & Young sites, 6. Eddington Bend, 7. Nevin, 8. Turner Farm, 9. Ruisseau-des-Caps, 10. Mud Lake Stream, 11. Portland Point, 12. Beausejour Beach, 13. Boswell. (Courtesy of Bryn Perry-Tapper).

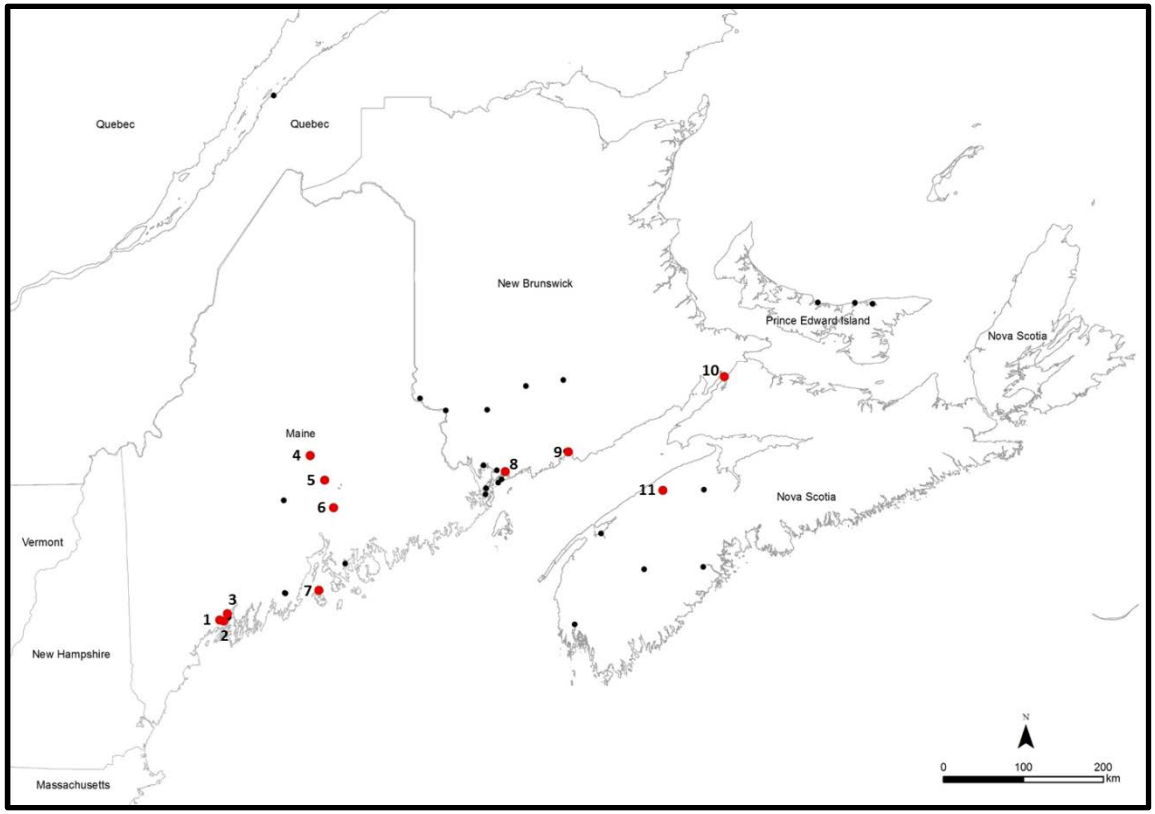

Figure 3-3: Archaeological sites in Maine and the Maritime Peninsula containing radiocarbon dates associated with the Susquehanna/Wayland Notched phase of the Transitional Archaic period (3,600-3,200 BP): 1. Mugford, 2. Indian Spring, 3. Cary's Garden Complex, 4. Sharrow & Brigham sites, 5. Hirundo & Young sites, 6. Eddington Bend, 7. Turner Farm, 8. Pennfield, 9. Portland Point, 10. Beausejour Beach, 11. Boswell. (Courtesy of Bryn Perry-Tapper).

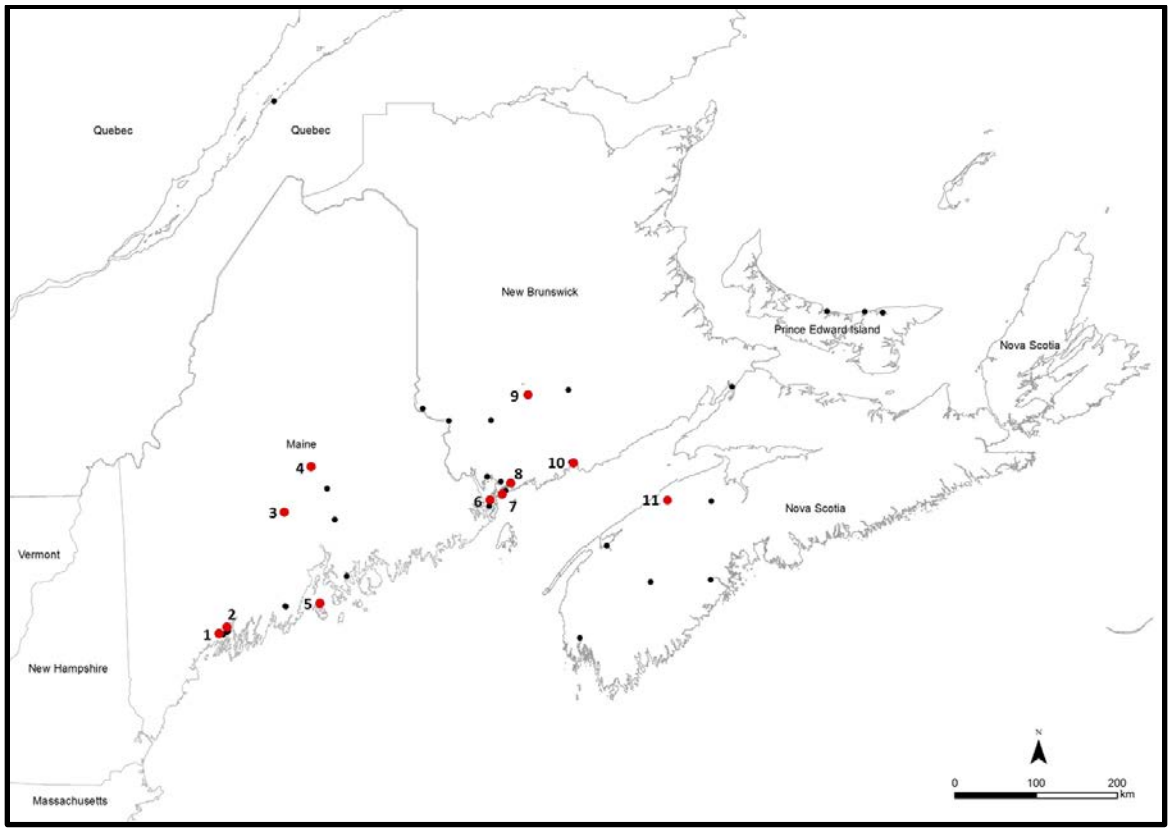

Figure 3-4: Archaeological sites in Maine and the Maritime Peninsula containing radiocarbon dates associated with the Orient phase of the Transitional Archaic period (3,200-2,700 BP): 1. Mugford, 2. Cary's Garden Complex, 3. Sebasticook Fish Weir Complex, 4. Sharrow & Brigham sites, 5. Turner Farm, 6. Weir, 7. Rum Beach, 8. Pennfield, 9. Jemseg, 10. Portland Point, 11. Boswell (Courtesy of Brynn Perry-Tapper).

When reviewing literature concerning terminology of archaeological units in the region, an article by David Sanger (1974) sums up the regionally collective view of this issue. In the report, Sanger's second objective is "to get some agreement on typology, taxonomy, and related problems" in Maine and the Maritime Provinces (1974: 128). Sanger (1974: 129) convincingly states:

> "the group felt that whole cultural traditions were better than phases and stages for organizing and expressing the history of cultural activities in the area. When the data does not justify the erection of a tradition, but cultural affiliations between components is recognized, the term complex can be used. In using 'complex' it is assumed that when full temporal, spatial, and cultural data is available it will be possible to propose a tradition."

According to Sanger the term to be appropriately used would be complex since archaeologists have yet to uncover all "temporal, spatial and cultural data" within the region; a region which has not been defined by archaeological investigations. Conclusively, Dean Snow (1980: 223) lends advice saying that "even if we avoid the trap of naming a whole cultural adaptation after a single artifact class, we find terminological confusion surrounding this regional expression".

3.2.2 Taxonomy & Grouping

The application of taxonomic labelling has dominated archaeological research in New England and the Maritime Provinces. Dena Dincauze's (1968, 1972) Cremation Cemeteries in Eastern Massachusetts and The Atlantic Phase: A Late Archaic Culture in Massachusetts are quintessential publications which lay the foundation for taxonomic categorization of lithic typologies. Dincauze (1968: 16-26) proposes the Wayland

Notched type as the "eastern New England analogue of the Susquehanna Broad" (Snow 1980: 236). The Wayland Notched type consists of three stylization sub-categories: Coburn, Dudley, and Wayland (Dincauze 1968: 20-23). Mansion Inn blades (Dincauze 1968: 16-18) are identified as preforms of the Wayland Notched point and possess the same sub-categorization as the Wayland Notched point.

Between place and site names from Massachusetts (e.g. Wayland, Mansion Inn, Coburn, and Dudley), along with the "fossilization" of material culture (Buchli 2004), a confusing taxonomic labelling system has been created based on artifactural evidence discovered in one corner of New England; missing the larger regional picture. Dincauze's taxonomic labelling is based on William Ritchie's (1959, 1964) and John Witthoft's (1953, 1959) earlier analysis, and has been "cemented" (Sanger 1975) within the archaeological lexicon of the northeast. Victor Buchli's (2004: 181) perspective of materiality from a poststructuralist viewpoint illustrates that:

> "material culture no longer was seen as the fossilized sign representing a social group or economic formation, or the 'extra-somatic' means of production or result 'generative grammar'. Instead, it was seen as produced by and productive of existing relationships, meanings, and contingencies that are contested, open-ended, and socially negotiated."

Dincauze's typology represents a state to state categorization that places the artifact into a vacuum, which stands at odds with Algonquian speaking First Nations philosophy of animism.

Reverend Silas T. Rand (1902: xvi-xvii), in his *Micmac Dictionary* establishes that "there are two primary classes or divisions in gender, known as *Animate* and *Inanimate*; the former includes besides animals, growing trees, the heavenly bodies,

household utensils, and weapons used in war and the chase." Such evidence within the field of linguistics provides an insight into how past people, including the Mu Awsami Keji'kewe'k L'nuk potentially viewed technology, including lithic products. Encapsulated in the perspective of animism is the archaeological concept of use life, described by Andrefsky (2005: 31) as the regular use or modification of a lithic technology from production to discard.

Inspecting Dincauze's Mansion Inn blades with Wayland Notched points, outside of the taxonomic designation and by employing use life and animism, Mansion Inn blades become Wayland Notched points when flake reduction results in a singular retouched edge and notched stem (Figure 2-6). By looking at the lithic technology with this lens it becomes apparent that there are stages within a use life and it is variable depending on how many people or "authors" (Deetz 1967) come in contact with the artifact and how many tasks it performs. Sanger (1975: 72) says that "taxonomic terms, even when clearly labelled as 'working hypothesis,' have a habit of getting firmly cemented in the literature"; along with the intrinsic imperialistic cataloging of indigenous objects that occurs in archaeology. In order to distance from past taxonomic classification, a model for lithic identification is vital in order to see the use life of artifacts.

A handful of past regional publications (Sanger 1973a; 1979a; Borstel 1982; Rutherford 1989) have applied the idea of "grouping" artifacts by attributes rather than imposing taxonomic designations. Christopher Borstel (1982: 17-18) approaches grouping artifacts first by attribute, then by plan and section, followed by comments and

regional comparisons. Borstel (1982: 18) defines a plan as having "the outline of a shape of an artifact when viewed from above", and explains section as "the shape of an artifact when cut along the long (longitudal) and median (cross) axes of the specimen". For this research an adaptation of Borstel's approach is used with the following groupings: *Group 1*: Ovate Base, *Group 2*: Broad Contracting Stemmed, *Group 3*: Broad Contracting Stem with Proximal Straight or Concave Base, *Group 4*: Expanding Broad Stem, *Group 5*: Contracting Stem, *Group 6:* Narrow Blade with Equal or Greater Tanged Base, *Group 7:* Perforators, *Group 8:* Bipointed Bifaces, *Group 9:* Non-Stemmed Scrapers, *Group 10*: Chipped Nodules, *Axe Style A*: Lipped groove, *Axe Style B*: Pecked groove, and all groundstone analysis will follow Sanger (1973b) and Adams (2002).

3.3 Indigenous Archaeology

The methodological application of indigenous archaeology is vital when researching First Nations groups, their ancestral homelands, and culture. Indigenous archaeology is the "application of the ways descendants relate to objects, historical knowledge, ancestors, ancient places, and cultural resources" (Lippert 2008b). In the past the Wabanaki Confederacy, notably the Mi'kmaq, were subjected to archaeological and ethnographic research (Colwell-Chanthaphonh 2012: 267). In recent decades, the Mi'kmaq have created a consensual voice concerning their past and future cultural preservation through the Mi'kmaq Rights Initiative. Contemporary Mi'kmaw empowerment entwined with renewed anthropological and archaeological inquiry from the sphere of academia has produced interesting and noteworthy research like *Ta'n Wetapeksi'k: Understanding From Where We Come* (Bernard, ed. 2011).

The nature of collaborative research is different from one research project to another. This research project was conducted within the framework of collaboration through participatory archaeologies (Shackel and Chambers 2004) and Indigenous archaeology (Atalay 2006). Particapatory archaeology at the Boswell site was practiced with the expectation of creating open dialogue with Mi'kmaw communities and organizations through its participant members, the community, archaeologists, and the provincial government. Indigenous archaeology refers to the aims of having First Nations peoples as archaeologists, archaeologists working on behalf of First Nations communities, and archaeologists working in collaboration with First Nations; which shows both First Nations and their advocates that they can effect change from within (Nicholas et. al. 2008; Colwell-Chanthaphonh 2012).

When conducting archaeological excavations in the Mi'kmaw homeland, or *Mi'kma'ki*, it would seem irrational to exclude the descendants of *Mu Awsami Keji'kewe'k L'nuk*, or "Not So Recent People". The correlation between *Mu Awsami Keji'kewe'k L'nuk*, and the Transitional Archaic period derives from the temporal compatibility, as the archaeological concept fits in the temporal space of the Mi'kmaq chronology (Table 3.1). Excavations at the Boswell Site were conducted by academic participants with Mi'kmaw people, alongside The Mi'kmaq Rights Initiative and its affiliates. Collaboration, as it is sought in terms of archaeological excavation, is "working jointly on a project" (Silliman and Ferguson 2010: 51), where a network of open dialogue between First Nations, the academic community, and local communities are established based on public engagement and social relevance of a project, like the

Table 3-1: Nova Scotia Cultural Chronological Sequence (Lewis 2006b; Pentz 2008).

Nova Scotia Cultural Chronological Sequence				
Mi'kmaw Chronology			Archaeological Chronology	
Period Dates (Calibrated B.P.)	Period Terminology		Period Terminology	Period Dates (Calibrated B.P.)
11,500-8,500 BP	Saqiwe'k L'nuk (Ancient People)	Pre-Contact Period	Paleo Period (Early) (Late)	11,500-8,500 BP 11,500-10,000 BP 10,000-8,500 BP
8,500-6,000 BP	Mu Awsami Saqiwe'k (Not So Ancient People)		Early & Middle Archaic Period	8,500-6,000 BP
6,000-3,000 BP	Mu Awsami Keji'kewe'k L'nuk (Not So Recent People)		Late & Transitional Archaic Period (Late) (Transitional)	6,000-3,000 BP 6,000-4,000 BP 4,000-3,000 BP
3,000-450 BP	Keji'kewe'k L'nuk (Recent People)		Woodland Period (Early) (Middle) (Late)	3,000-450 BP 3,000-2,000 BP 2,000-1,000 BP 1,000-450 BP
AD 1000-Present	Kiskukewe'k L'nuk (Historic and Modern Mi'kmaq)	Contact Period	Late Woodland/ Proto-Contact Period	AD (1000) 1450? -1500
			Contact Period	AD 1497-1604
		Post-Contact Period	Colonial Period (Early/French) (Late/British)	AD 1604-1867 AD 1604-1763 AD 1763-1867
			Post-Confederation Period	AD 1867-Present

Boswell Site excavations (Colwell-Chanthaphonh and Ferguson 2008; Dongoske et. al. 2000; Silliman 2008; Zimmerman 2008).

Aside from the contributions and accomplishments of Indigenous archaeology it is necessary to heed problematic issues that could have occurred such as: falsified biological connections and categorization of indigenousness (McGhee 2008; Echo Hawk 2010), "neo-nationalism" (Hodder 2008: 199), political maneuvers concerning heritage claims (Colwell-Chanthaphonh 2009c), along with theoretical and interpretational conflict (Trigger 2008). First Nations involvement in this research concerning the concepts of questioned and created indigenous, neo-nationalism, and political benefit are nonexistent. The concept of interpretational conflict has the potential to germinate into an issue. As Trigger (2008: 190) illustrates: "multivocality enhances rather than relieves the need for archaeologists to weed out erroneous assumptions and interpretations and to synthesize divergent viewpoints to produce more holistic explanations of the past".

Collaborating with the Mi'kmaq and listening to their concerns and cultural contributions has proven to be a successful approach to research in this region. By looking at Mi'kmaq language, Trudy Sable and Bernie Francis (2012: 17), were able to observe that "language includes the legends, songs, dances, and other forms of cultural expressions – forms that mirror and communicate the rhythms and sounds, movements and patterns, and seasonal cycles of the animals, plants, winds, waterways and stars across the skies of Mi'kma'ki". By decoding past multivocal narratives through linguistic excavation their milestone publication displayed how place name and legend reveals mobility through a region. It is quintessential that collaborative methodologies are used

during archaeological investigations in order to acquire a greater comprehension of the past by bringing metaphysical aspects to archaeological research.

3.4 Approach to Collections Research

To appropriately assess the Transitional Archaic period within Maine and the Maritime Provinces a re-examination of artifacts from sites and collections housed at various institutions was deemed necessary. An initial inventory of institutions in the region was evaluated, followed by an inventory of sites and collections that were essential to the research. The dimensions of artifacts archived at these institutions were measured and analysis included sample size, standard deviation, and mean dimension (Dincauze 1968; Borstel 1982). In total, 10 sites and collections in Maine, 10 sites and collections in New Brunswick, and five sites and collections in Nova Scotia have been re-examined and are further explored in Chapters 4 and 5.

Certain biases were introduced to the collections analysis due to display status, allowed or unauthorized access, and time constraints. At a couple of institutions, most notably The Maine State Museum and The Nova Scotia Museum, artifacts on display could not be measured. The Maine State Museum had the vast majority of Turner Farm artifacts from a single pivotal feature on display, which created a bias in collection analysis. Artifacts on display are defined by interpretative implications of aestheticism based on singular or limited viewpoints. Another issue concerning allowable access to artifacts became apparent while conducting collection research. Certain institutions, like Archaeological Services of New Brunswick, did not allow access to certain collections on

the premise of on-going archaeological investigations or governmental policies concerning particular artifacts.

Time constraint was another issue that occurred while examining artifacts at the institutions. Allotted amounts of time were given for each institution based on the number of sites and collections housed that were relevant to the research. An adequate amount of time was needed to allow for the examination of both large (i.e., Turner Farm) and small sites. Time constraints on larger sites required a more varied sampling of artifacts (i.e., axes, bifaces, perforators, and preforms) and lithic materials represented at the site or in the collection.

Lithic analysis of those artifacts examined included: material, lithic sourcing, knapping patterns, and ground stone usage, along with ritual characteristics, such as "snapping" or "killing" (Adams 2008; Borstel 1982: 58-64). Production of lithic technology is extremely viable since "chipped stone tools and debitage represent the most abundant form of artifacts" (Andrefsky 2005) when examining precontact sites. Documentation was not only limited to dimensional measurements, but included photography, site reference, associated artifacts, and closest associated body of water; along with date of discovery, individualized notes, and any additional information acquired.

3.5 Survey Approach

The Boswell Site (BfDf-08) is located along the Annapolis River in South Farmington, Nova Scotia, and is nestled within the vicinity of sites noted in Stephen Davis' (1982) preliminary report of the Annapolis River archaeological survey. In 2009,

a local couple fishing in the area had surface collected two lithic artifacts diagnostic to the Transitional Archaic period. Preliminary archaeological investigations of the Boswell Site were conducted by Michael Deal in 2011, in conjunction with the Mi'kmaq Rights Initiative and the Nova Scotia Museum. Archaeological excavations during the 2011 and 2012 field seasons have predominantly focused on the initial find spots on the northern bank of the Annapolis River. The objectives in conducting archaeological research at the Boswell Site are to find the Transitional Archaic component in situ and collect soil samples for faunal and floral analysis (Deal 2013).

The 2014 and 2015 field seasons at the Boswell site consisted of three-week excavation periods to investigate the area surrounding the initial find spots. Excavations conducted at the site in 2014 consisted of 25 1m² units, along with one 1x½ m unit, and a 50x50 cm unit located on the eroding riverbank slope (Figure 3-5). A riverbank profile of the site recorded in 2012 produced depths reaching to 2½ meters into glacial subsoils, whereas the 2014 field season had two units reach a depth of two meters. The southeast quadrant of Unit 22 was taken to a depth of 2½ meters in hopes of recovering an archaic component.

Further excavations in 2015 added an additional 16 1m² units and five 1x½ m units, as well as a 50x50 cm unit located along the riverbank slope where surface collected lithic debitage was recovered. In order to re-evaluate the depth of archaic horizons, two 1m² units and one 1x½ m unit that were previously excavated in 2014 were re-opened. Additionally, a 100 meter transect of 50x50 cm shovel-test units were excavated in 10 meter intervals between the Boswell Site and the Wilkins Site (BfDf-01)

Figure 3-5: A map of excavations of the Boswell site from 2011 to 2015. The 2015 investigations are highlighted in grey. Note the transect of shovel test pits heading south along the riverbank (Courtesy of Bryn Perry-Tapper).

in order to uncover site boundaries along the Annapolis River. All unit soil excavated at the Boswell Site was sieved with quarter-inch mesh screens.

3.6 Laboratory Procedures

Paleoethnobotanical analysis was performed on soil samples collected during the 2014 and 2015 field season following protocol illustrated by Pearsall (2000). Herlich and Morell-Hart (2015) emphasize that "paleoethnobotany lends unique insight into the past lived experiences, landscape reconstruction, and ethnoecological connections." Samples

from the Boswell Site were brought to the Paleoethnobotany Laboratory at Memorial University of Newfoundland in Ziploc bags then were then weighed, dried, sieved, weighed by granular size, and then processed through an IDOT flotation system. Deal and Halwas (2008: 175) describe the IDOT in the Paleoethnobotany Laboratory as a "flotation device that consists of an aluminum frame, with two U-shaped flanges, which supports a 0.5mm mesh copper screen."

Soil samples collected in 2014 from the site included a column sample within Unit 22, judgemental samples from features containing dense quantities of ceramic debris and faunal remains, along with a soil sample collected from the east wall of Unit 27. In 2015 all soil samples were judgmental and were extracted from Features 8, 9, 10, 11, 12, and 14; along with a sample collected near the vicinity of cultural material in Unit 47. Paleoethnobotanical analysis was conducted with an IDOT flotation device for the 2014 field seasons soil samples. The 2015 field season soil samples were analyzed by undergraduate students for their participation in the Paleoethnobotany course, supervised by Michael Deal. These students utilized both the IDOT flotation device and forced air flotation (Deal and Halwas 2008: 175) on samples in order to learn laboratory methodology and reported on their findings.

The 2014 field season was affiliated with Ian Spooner (Department of Earth Sciences, Acadia University) and his undergraduate research student, Erin McKee. The research conducted at Acadia University was focused on microfossil analysis of soil samples from the varying strata at the Boswell Site for paleoenvironmental reconstruction of the site during occupation (McKee 2015). Karl Butzer (1964: 222) addresses that "the

specific relation of a cultural horizon to a geomorphic event can provide direct paleo-environmental information. This local environmental setting may in turn be stratigraphically linked to regional or world-wide changes of climate." All sampling strategies were equally divided between Acadia University's Paleoenvironmental Research Group and Memorial University of Newfoundland's Paleoethnobotany Laboratory.

Aside from paleoethnobotanical analysis, portable x-ray fluorescence spectrometry (pXRF) analysis was conducted on nine lithic artifacts from the Boswell Site that were diagnostic of the Transitional Archaic period. Phillip Potts (2008) states that advantages of utilizing pXRF include: multi-element capability of technique, non-destructive analysis, and data concerning chemical composition is immediately available to the operator. XRF, primarily pXRF, has been applied to lithic provenancing internationally (Williams-Thorpe 2008) and in eastern North America (Boisvert 1992; Kristmanson 2004; Pollock et. al. 2008). An artifact contains the same chemical composition as the source it came from, otherwise known as "fingerprinting" (Sandra Barr 2015, pers. comm.), which is resolved by conducting analysis with a portable x-ray fluorescence spectrometry.

Under the supervision of Stephen Piercey of Earth Sciences at Memorial University of Newfoundland, a benchtop Olympus/Innov-X X5000 portable x-ray spectrometer was used to conduct this research (Figure 3-6). It has a Ta tube with a 10W max, 25 mm^2 detector, and <165 eV spectral resolution. The two modes of analysis used were Mining Plus (MP), which uses two beams at 10 and 50 kV ad is best for major

elements (MG, Al, Si, P, K, Ca, Ti, Fe) and high abundance (>1%) trace elements, and 3 Beam Soils mode (S3B) which uses beams at 15, 35, and 50 kV which is best for low abundance trace elements and most major elements. The main focus was on S3B to determine the relationship between rock units. The instrument precision was previously determined as excellent (better than 10%) according to the relative standard deviation, but Rb, Sr, Zr Ba, and Nd produced an accuracy of better than 20% RD (Piercey and Devine 2014). To determine the accuracy and prevision of the instrument, five powdered certified reference materials (CRM) were used as calibration standards (including JR-1, DTS-2b, PACS-1, Sy-3, and BHVO-2), while nine non-archaeological felsitic rock samples were used to determine the degree of variation in a non-homogenized rock.

The nine artifacts from the Boswell Site are of a felsitic composition and were analyzed by point scanning each artifact four times in different surface locations that were flattest, in order to obtain a scatter plot of multi-element composition. A number of source samples were point scanned at Memorial University while additional scatter plot data was collected to conduct a comparative investigation. Analysis on the nine Boswell Site artifacts via pXRF will aid in understanding of where the lithic source is located, distance from source to site, and how lithic production and acquisition aligns with seasonal movement and subsistence strategies (Pollock et. al. 2008: 689, Sable and Francis 2012: 65-68).

Figure 3-6: Benchtop Oymps/Innov-X X5000 portable x-ray spextrometer.

4 REGIONAL ANALYSIS

"*The only true voyage of discovery…would be not to visit strange lands but to possess other eyes, to behold the universe through the eyes of another, of a hundred others, to behold the hundred universes that each of them beholds…*"
–Marcel Proust (1929: 253), The Captive

This chapter explores previously excavated collections from sites in Maine, New Brunswick, and Nova Scotia. A brief synopsis of the total collections analyzed for each state/province is followed by more concise background and artifact summaries for each site. The selection of collections analyzed was based on time constraints, and does not include artifacts on display during the visit, or otherwise unavailable. Following this will be an overview of the measurements and lithic sources of all artifacts analyzed.

4.1 Maine

A total of ten sites and one collection (Dunn Collection: 25.1) were analyzed (Table 4.1). The previously excavated collections are housed at the Maine State Museum in Augusta, with the exception of the Young site (73.10) which is housed at the University of Maine, Orono. These collections represent the largest portion of analyzed artifacts in the region due to the history and rate of archaeological investigations in Maine compared to New Brunswick and Nova Scotia (Table 4-1).

Table 4-1. The number of artifacts analyzed by site and lithic group from Maine.

Site Name	Lithic Group																		Grand Total
	1	2	3	4	5	6	7	8	9	10	Abrader	Adze	Axe A	Axe B	Celt	Gouge	Organic	Steatite Vessel	Whetstone	
Cary's Garden (15.57)		12	10		51		14		2	3									1	93
Dunn Collection (25.1)			2	1	10			1						1						15
Hart's Falls (28.5)													1							1
Indian Spring Site (15.272)		7			2		2	1						1		3			1	17
Merrymeeting Park (15.52)			1		3															4
Mugford (15.238)					8															8
Site 27.59					2															2
Site 27.60		1			7		1													9
Overlock (28.6)	1				12		1													14
Turner Farm (29.9)	7	8	18	34	19	2	9	5	1	1					1	2	1			108
Young Site (73.10)		4			20		3													27
Grand Total	**8**	**32**	**31**	**35**	**134**	**2**	**30**	**7**	**3**	**4**			**1**	**2**	**1**	**5**	**1**		**2**	**298**

Group 1: Ovate Base, Group 2: Broad Contracting Stemmed, Group 3: Broad Contracting Stem with Proximal Straight or Concave Base, Group 4: Expanding Broad Stem, Group 5: Contracting Stem, Group 6: Narrow Blade with Equal or Greater Tanged Base, Group 7: Perforators, Group 8: Bipointed Bifaces, Group 9: Non-Stemmed Scrapers, Group 10: Chipped Nodules, Axe Style A: Lipped groove, Axe Style B: Pecked groove.

4.1.1 Cary's Garden (15.57)

Cary's Garden is a large complex encompassing the southern edge of the Muddy River and was first reported by a local collector Henry Lamoreau in 1977 (Bourque et. al. 2006) (Figure 3-2, Figure 3-3, Figure 3-4). The Muddy River has been reported to be a fossil channel of the Androscoggin River, placing the positioning of the site in a favorable area (Adkins 2000). The site itself extends one kilometer along the shore of the Muddy River. Excavations were conducted between 1983 and 1985, with extensive reconnaissance conducted in 1984 and 1989 (Wilson et. al 1989: 24-79). The site has been seen as the "earliest in the Susquehanna sequence", which could be seen as a "staging area for Susquehanna immigrants entering the region for the first time" (Bourque 1995:100-114; Bourque et. al. 2006: 315).

Analysis undertaken by the author examined 92 artifacts from the complete assemblage which includes; Group 2 (11), Group 3 (10), Group 5 (51), Group 7 (14), Group 9 (2), Group 10 (3) and a single whetstone. The dominating Group 5 exemplifies the idea that this site was occupied by the "earliest in the Susquehanna sequence". Certain artifacts within Group 5 exhibited repurposing where one artifact was reworked from a broken proximal stem base into a scraper, while another was in the midst of use life phases becoming a perforator. The chipped stone tools are predominantly felsitic, with artifacts sourced as Kineo-Traveller Porphyry and Vinalhaven Spherulitic Banded Rhyolite, in addition to chert and jasper. Cary's Garden possesses a radiocarbon date from wood charcoal resulting as 3,960 ± 110 BP (Bourque et. al. 2006: 326).

4.1.2 Dunn Collection (25.1)

The Dunn Collection comes from Gerald C. Dunn's excavations conducted between 1957 and 1959 at the Eel Bridge site along the Seabasticook River (Dunn 1968). His archaeological investigations of the site recovered a range of artifacts from the Archaic period to the 17th century. Artifacts relating to the Transitional Archaic period comprise of Group 3 (2), Group 4 (1), Group 5 (10), Group 8 (1), and a pecked groove Axe Style B. All of the chipped stone artifacts are felsitic with the exception of one Group 5 specimen. The artifacts display extensive use wear with one Group 5 artifact exhibiting distal reduction in order to be repurposed as a perforator. The bipointed biface is asymmetrical due to use wear and is comprised of a flow banded rhyolite. The pecked groove axe has a heavily damaged bit edge and evidence of battering on the poll end expressing possible hammering practices.

4.1.3 Harts Falls (28.5)

A singular siltstone lipped Axe Style A from the artifacts collected during Benjamin Smith's excavations at Harts Falls along the shallow rapids on a floodplain of the St. George River, opposite the Overlock site (Smith 1948; Robinson 2001a: 394). The axe is thicker than other artifacts analyzed in the regional analysis, yet possesses the conical poll section of the implement keeping that attribute consistent with this artifact grouping. On its surface, the grooved axe shows signs of pecking from manufacture along with some polishing on the conical poll segment. The bit edge displays minor use wear.

4.1.4 Indian Spring Site (15.272)

The Indian Springs site is a land locked site located 35 kilometers south of the Ormsby upper terrace site, which is situated along the Androscoggin River (Bourque et. al. 2006) (Figure 3-3). The site was discovered during a survey conducted in 1990 with extensive excavations occurring in 1993. During excavation the site yielded three distinctly Transitional Archaic ceremonial features including a small cylindrical feature containing seven Group 2 style bifaces overlain by two adzes and a fully grooved gouge, a second feature yielded a grooved axe, a pecking stone and charcoal, in addition the last feature contained a discoidal pecking stone along with a Group 8 bipointed biface (Table 4-1) (Figure 4-1) (Bourque et. al. 2006: 316). Radiocarbon analysis of the charcoal recovered from the second feature provided a date of 3,558 ± 135 BP. All of these artifacts, with the exclusion of the fully grooved gouge and pecking stones, were analyzed including two Group 5 bifaces, two Group 7 perforators, and a whetstone.

The fully grooved pecked Axe Style B appears to be composed of a basalt with iron oxide surficial inclusions and is heavily damaged on its bit section. Its poll section is rounded and is pitted. The two adzes and the gouge are composed of quartzite and possess roughly the same dimensions which speaks to the possibility that these were manufactured from river cobbles. The whetstone recovered is composed of a shale and minor linear incisions parallel to the longitudal axis. All chipped stone tools are made from felsitic sources. Group 2 bifaces are a blueish-gray felsite with some white banded inclusions that has not been sourced. One Group 5 artifact appears to be composed of Kineo-Traveller Porphyry. The Group 8 bipointed biface shows use wear along its edges

with no presence of grinding and an intentional notch made toward the base of the artifact.

Figure 4-1: Group 8 bipointed biface from Indian Spring Site.

4.1.5 Merrymeeting Park (15.52)

Merrymeeting Park is a multicomponent site located in Brunswick, Maine, along the Androscoggin River. A total of four bifaces recognized as Group 3 (1) and Group 5 (3) were associated with the Transitional Archaic period and analyzed (Table 4-1). All of the bifaces were proximal sections and were incomplete in either length or width which established that their measurement wouldn't be accurate and were not measured, but accounted for individual specimens. All of the bifaces are composed of felsitic lithic material while one of the Group 5 specimens is made from Vinalhaven Spherulitic Banded Rhyolite.

4.1.6 Mugford Site (15.238)

The Mugsford site is located atop a river terrace in Topsham, Maine, along the Androscoggin River opposite Merrymeeting Park (15.52) (Figure 3-3, Figure 3-4). The site was discovered in 1989 and excavations continued into the early 1990's under the supervision of Steven Cox, and later by Bruce Bourque, as Bates College field schools (Wilson et. al. 1989; Cox and Wilson 1991; Bourque et. al. 2006: 318). Eight radiocarbondates from the Mugford site correlate with the Transitional Archaic period and fall between 3,315 ± 70 BP and 2,890 ± 40 BP (Bourque et. al. 2006: 326). Excavations at the site encountered a fire-cracked-rock and charcoal "pavement" which varied in density and was present in all excavation units (Bourque et. al. 2006: 320). The presence of this "pavement" could not be determined as overlapping individual hearths or a single event.

Eight Group 5 bifaces were analyzed from the site with the majority being felsitic and a singular specimen made of quartzite (Table 4-1). Four of the bifaces are complete while the other four are proximal sections with one composed of Vinalhaven Spherulitic Banded Rhyolite. One of the complete artifacts appears to be heavily reworked toward the tip or distal section, possibly showing the use life of the artifact from a Group 5 to a Group 7. Another specimen, a proximal section of weathered greenish-gray rhyolite, appears to have a similar notched shoulder and reworked barb form to two Group 5 artifacts recovered from the Boswell Site.

4.1.7 Overlock Site (28.6)

The site was discovered along the St. George River in Warren, Maine, and excavated in 1929 by Gerald Towle who was transferred to the Overlock site from the Erkkila site located upstream next to the Stevens site (Robinson 2001a: 202). The Overlock site is located on the opposite site of the St. George River from Harts Falls (Smith 1948). Fourteen chipped stone artifacts from the collection were analyzed including Group 1 (1), Group 5 (12), and Group 7 (1) (Table 4-1). All of the artifacts are composed of felsite with two specimens composed of Kineo-Traveller Porphyry. Twelve of the Group 5 and the Group 1 artifacts are proximal segments whereas the complete Group 5 artifact is reworked and has nearly the same measurements for length and width. The Group 7 is a basal and medial fragment exhibiting a square base like that of the Group 5 artifacts.

4.1.8 Site 27.59 & Site 27.60

Both sites are located along the St. George River in Warren, Maine, and were excavated under the supervision of Arthur Spiess in the early 1990's. Site 27.59 contains two Group 5 bifaces while Site 27.60 contains a Group 2, seven Group 5, and a Group 7 perforator associated with the Transitional Archaic period (Table 4-1). Artifacts from both sites are dominated by felsite, with the exception of a chert perforator and a Group 5 biface composed of Kineo-Traveller Porphyry. The Group 2 specimen is asymmetrical due to heavy utilization along a singular blade edge. Eight of the Group 5 artifacts are damaged proximal sections which can only be analyzed through the minimal number of individual (MNI) specimens. The remaining Group 5 specimen is complete with heavily reworked blade edges that almost appear to be serrated, but broad flake reduction is more likely the reason for its appearance.

4.1.9 Turner Farm (29.9)

Located on North Haven Island, one island of the Fox Islands (McLane 1982: 95) in Penobscot Bay, the Turner Farm site was excavated under the supervision of Bruce Bourque for his doctoral research (Figure 3-2, Figure 3-3, Figure 3-4). Since archaeological excavations began in 1969 a total of 6,500 artifacts, excluding faunal and flora specimens, have been collected signifying a 5,000 year span of site occupation (Bourque 1995: vii). In particular, the excavations of Occupation 3 starting in 1971 revealed a significant discovery of Transitional Archaic period occupation in the northeast. Occupation 3 was encountered in 110 out of 163 excavated sections, with a

total of 703 lithic artifacts from both midden and burial features. Due to a limited schedule of research at the Maine State Museum only a representative sample of features was included in this review, including: Feature 7-1975, Feature 8-1974, Feature 9-1975, Feature 12-1975, Feature 18-1975, and Feature 19-1975.

Feature 7-1975 is a secondary cremation deposit that included at least five individuals ranging in age from six months to over eighteen years old based from mostly calcined bone (Bourque 1995: 156-157). The skeletal remains that were subadult appeared to have been ocher stained. Faunal and floral remains of the cremation deposit include the calcined left maxilla of a bobcat, a few deer bones, one Canada goose humerus, and four beechnuts (Bourque 1995: 157). Four chipped stone bifaces were analyzed representing Group 3 (1), Group 4 (1), Group 5 (2), and Group 8 (1) (Table 4-1). All chipped stone artifacts are composed of felsite, with the Group 8 specimen composed of Vinalhaven Spherulitic Banded Rhyolite. All of the chipped stone artifacts are complete except for one of the Group 5 specimens which is only a proximal section.

Feature 8-1974 is a pit feature that is associated with a possible concave house floor complex defined by its shell-free surface with an overlying shell midden (Bourque 1995: 134). The house floor complex incorporates a nearby pit, a hearth area defined by up to five different features, and a cluster of pits including Feature 8-1974. Two artifacts, a Group 9 and Group 7, represent specimens associated with the Transitional Archaic period (Table 4-1). The non-stemmed scraper is composed of Kineo-Traveller Porphyry that appears to have been repurposed and reworked along the shoulders and neck portion of the body when the stem had broken off (Figure 4-2). The Group 7 specimen is a

medial perforator fragment made of dark volcanic material most likely from Passamaquoddy Bay, New Brunswick.

Figure 4-2: The Group 9 non-stemmed scraper from Feature 8-1974 exhibiting resharpening along the neck and shoulders at the top of the photograph.

Feature 9-1975 is a primary inhumation of a woman, greater than 55 years old, including secondary cremation deposits of possibly two adults and five subadults (Bourque 1995: 157). The primary inhumation was below the secondary cremation deposits and covered by an intricate arrangement of lenses. The skeletal remains were tightly flexed on the left side with the arms folded across the chest and the hand beneath the chin. Above the left ear and cranium was redeposited soil that contained a cluster of

artifacts including a unilaterally barbed harpoon that was analyzed. Resting on her forearms was the maxilla of a young timber wolf, while a painted turtle plastron and six rounded quartz pebbles, resembling a rattle were interred with the skeleton. A dark charcoal lens covered the skeleton above and contained fire-broken artifacts which were analyzed. Artifacts analyzed from the dark charcoal lens include: Group 2 (1), Group 3 (3), Group 4 (3), Group 5 (3), Group 7 (3), Group 10 (1), one celt, and a single gouge (Table 4-1).

The lithic chipped stone tools are composed of felsite with the exceptions of two (Group 3 and Group 10) artifacts made from Vinalhaven Spherulitic Banded Rhyolite and one Group 7 created from dark volcanic material. The gouge and celt appear to be made from granitic material with the celt exhibiting iron oxidization. The unilateral barbed harpoon is in surprisingly good condition given the acidity of soil in the northeast, although the barbs themselves have decayed. Of all the chipped stone artifacts only six (two Group 3, one Group 5, and all of Group 7) are incomplete specimens. The bifaces are proximal sections, while the Group 7 perforators are comprised of two tips and a medial section. A radiocarbon date from a red ochre lens above the dark charcoal lens revealed a date of 3,470 ± 60 BP, while human bone gel from the interred skeleton relayed two dates of 3,770 ± 260 BP and 3,662 ± 59 BP (Bourque 1995: 157-158).

Feature 12-1975 is a secondary cremation deposit containing postcranial fragments in a basin-shaped pit above another secondary cremation deposit that was excavated through an Occupation 2 feature and shell midden (Bourque 1995: 155). The interment containing the postcranial fragments also yielded an interesting assortment of

artifacts including: modified box and painted turtle scutes with 18 pebbles representing shell rattles, three ground slate pendants, two ungual phalanges from raptorial birds, 15 fragments of deer antler representing flaking tools or awls, and 12 small cylindrical copper beads (Bourque 1995: 155). In addition fourteen chipped stone artifacts recovered from the secondary cremation deposit including: Group 1 (2), Group 3 (2), Group 4 (5), Group 5 (1), Group 6 (1), Group 7 (1), Group 8 (2), along with a possible gouge and adze fragments were analyzed (Table 4-1).

Nine of the chipped stone artifacts were composed of Vinalhaven Spherulitic Banded Rhyolite specifically: Group 1 (2), Group 3 (1), Group 4 (3), Group 7 (1), and Group 8 (2), while a Group 4 and Group 6 were composed of chert. One Group 3 was made of quartzite while one Group 4 is made of Rhyolitic Tuff not associated with Vinalhaven Spherulitic Banded Rhyolite. Both of the groundstone tools are medial fragments composed of quartzite and were not measured. All chipped stone tools are asymmetrical due to use wear, in addition to the Group 7 perforator exhibiting primary flaking reduction from its previous use life phase.

Feature 18-1975 is a primary inhumation of an adult male interred flexed on his right side with his head east, facing north (Bourque 1995: 147-149). This feature is in close proximity to two other features (Feature 6-1975 and Feature 30-1974), which contained four other primary inhumations. A dark soil lens containing redeposited shell and flecks of red ochre covered the body over thoracic and abdominal areas and possesses an average radiocarbon date of 3,668 BP. Skeletal gelatin from the remains established two dates of 3,825 ± 76 BP and 3,945 ± 230 BP (Bourque 1995: 149).

Interred with the individual was 27 charred antler fragments, bone gaming pieces (Bourque 1995: 126), carbonized plum pits, in addition to complete and fire-broken chipped stone tools. Of the lithic bifaces interred nine fire-broken artifacts were analyzed representing Group 1(2), Group 2 (2), Group 5 (4), and Group 7 (1) (Table 4-1). The lithic composition of the bifaces consists either of Kineo-Traveller Porphyry (5), or Vinalhaven Spherulitic Banded Rhyolite (4). The Group 7 perforator appears to have been a repurposed Group 5 due to the expressed stem to shoulder junction present on the proximal section.

Feature 19-1975 is a secondary cremation burial of skeletal remains of four adults and five subadults that were dry burned and calcified (Bourque 1995: 155). Artifacts found in the interment include; bone tools including four gouges, a barbed spear, an awl, a tubular bead, a porcupine incisor, several worked bone and antler fragments, a grooved axe, a beveled cobble, a grooved abrading stone, and four limonite nodules (Bourque 1995: 156). Faunal remains consist of one moose bone, one deer bone, one sea mink bone, and fragments of turtle shell possibly representing a rattle. Fifty-five of the 66 lithic chipped stone tools from Feature 19-1975 were located and analyzed, consisting of: Group 1 (3), Group 2 (5), Group 3 (12), Group 4 (24), Group 5 (7), Group 6 (1), Group 7 (3), and Group 8 (1) (Table 4-1).

A large percentage of the chipped stone artifacts analyzed exhibited fire damaged and possessed a similar cracked appearance to lithic artifacts recovered in Feature 18-1975. The dominating lithic material from this collection was felsite including nine artifacts (Group 3: 2, Group 4: 5, and Group 5: 2) made from Kineo-Traveller Porphyry,

12 (Group 1: 2, Group 2: 5, Group 4: 4, and Group 8: 1) made from Vinalhaven Spherulitic Banded Rhyolite, and only two Group 4 specimens were composed of quartzite. All stemmed bifaces displayed an asymmetrical shape indicating varying degrees of use wear. Two complete artifacts, a Group 3 and Group 4, expressed heavy longitudal use and reworked edges causing the length to be less than the width. Artifacts representing Group 1, Group 2, and Group 8 exhibit the most extensive fire-cracked damage. The Group 7 perforators consist of a distal tip portion, a proximal section, and a complete specimen.

4.1.10 Young Site (73.10)

The Young site is located on a bank opposite the Hirundo site along the Pushaw Stream in Alton, Maine. Both sites are situated along the only set of quickwater and rapids where the stream "drops 5.9 meters along a bedrock channel" (Sanger et. al. 1977: 36; Borstel 1982: 5) (Figure 3-2, Figure 3-3). On a larger scale, the Pushaw Stream is a tributary to the Penobscot River beginning at Pushaw Lake. The Hirundo-Young Archaeological Project began in 1971, yet field excavations for the Young site began in 1975 with extensive excavations in 1977. Excavation and artifact analysis for the Young site was conducted by Christopher Borstel, a Master's candidate, under the supervision of David Sanger. Occupation of the Young site ranges from possibly 7,000 years ago up to European contact in 1600 AD (Borstel 1982: 80).

Excavations at the Young site revealed an extensive Transitional Archaic component, which was primarily associated with Feature 3 (Borstel 1982: 58-65, see Figure 2-8). During the meticulous investigation of Feature 3, 52 biface fragments, found

mostly between 20 to 40 centimeters below surface of the 52 biface fragments, 13 are stemmed bases, two are non-stemmed bases, 27 are medial fragments, and 10 are distal fragments; whereas 30 of the fragments can be reconstructed into 12 partial or complete specimens (Borstel 1982: 58). Forty-two of the fragments are comprised of felsite, while the other 10 are chert. Sixteen of the fragments are indicative of intentional breakage according to the socketed break pattern. Feature 3 is interpreted as a possible cremation burial or nonfunerary ceremonial feature and provided eight one sigma radiocarbon dates spanning from 3,715 ± 60 BP to 3,105 ± 50 BP.

Analysis of the collection was conducted at the University of Maine, Orono where 30 chipped stone tools were examined. Artifacts analyzed and consist of: Group 2 (4), Group 5 (20), Group 7 (3), and three ungrouped bifacial distal and medial fragments (Table 4-1). All of the artifacts were composed of felsite, in particular weathered and natural Kineo-Traveller Porphyry. One Group 2, and nine Group 5 represent complete or nearly complete specimens, while the rest represent proximal and medial fragments. Group 7 consists of three proximal perforator segments, along with a unifacial “teardrop” perforator (Borstel 1982: 45). One Group 5 proximal stemmed segment appears to have been reworked and repurposed as a bifacially convex stemmed scraper (Borstel 1982: 26).

An intentionally broken artifact comprised of distal and medial bifacial fragments displays an interesting detail into the use of the chipped stone tools during or after interment (Figure 4-3). The medial fragment was recovered within the context of Feature

3, while the distal portion was recovered above and outside of the feature matrix. Along one of the blade edges the arrises of the distal fragment does not match the flaking pattern and shape of the arrises of the medial fragment. The heavy use wear on the distal fragment is indicative of chopping or cutting utilization after the intentional break or "killing" of the artifact.

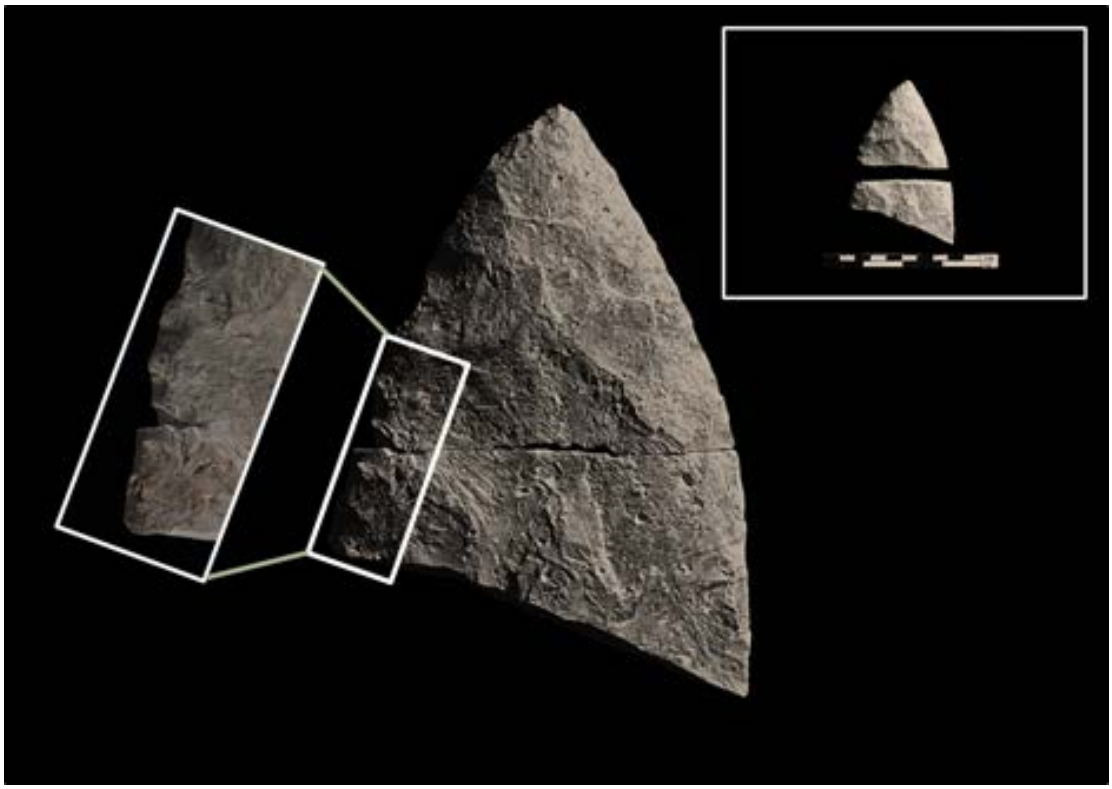

Figure 4-3: Intentionally broken or "killed" biface fragments from the Young site exhibiting reuse along the distal fragment blade edge.

4.2 New Brunswick

A total of four sites (Bentley Street: BhDm-02, Mud Lake Stream: BkDw-05, Pennfield: BgDq-39, and Portland Point: BhDm-07), four collections (AGL Collection, JBG Collection, WEH Collection, and WK Crawford Collection), and two singular artifact finds were analyzed in this study (Table 4-2). The AGL Collection and WK Crawford Collection each contain a singular artifact that pertains to the Transitional Archaic period. All of these archaeological specimens are housed with Archaeological Services of New Brunswick, in Fredericton.

4.2.1 AGL Collection

A singular chipped stone bifacial basal fragment defines the Transitional Archaic period in the AGL collection. Although there is no context tied to the specimen it can nominally be observed as associated to Group 5 (Table 4-2). Composed of a weathering felsitic material, from a macroscopic perspective it exhibits heavy use wear along the blade edges due to the high presence of secondary and small flake reduction to the arrises. Aside from the observable use wear via flaking, the asymmetrical nature of the biface and singular concave blade edge establishes heavy use wear around the shoulder and medial portion of the biface. The function of the artifact based on this information would point towards a knife or cleaver.

Table 4-2: The number of artifacts analyzed by site and lithic group from New Brunswick.

Site Name	Lithic Group																			Grand Total
	1	2	3	4	5	6	7	8	9	10	Abrader	Adze	Axe A	Axe B	Celt	Gouge	Organic	Steatite Vessel	Whetstone	
AGL Collection					1															1
Bentley Street (BhDM-2)																		4		4
French Lake Grooved Axe													1							1
JBG Collection (BjDu-17)	1																			1
JBG Collection (BjDu-7)														1						1
JBG Collection (BjDv-6)	1				1															2
Mud Lake Stream (BkDw-5)	1	3	3	1	4		4				1					1			1	19
Oromocto Steatite Bowl																		1		1
Pennfield (BgDq-39)		1	1		1		1													4
Portland Point (BhDm-7)					5	1												3		9
WEH Collection				4	5	2														11
WK Crawford Collection													1							1
Grand Total	**3**	**4**	**4**	**5**	**17**	**3**	**5**				**1**		**2**	**1**		**1**		**8**	**1**	**55**

Group 1: Ovate Base, Group 2: Broad Contracting Stemmed, Group 3: Broad Contracting Stem with Proximal Straight or Concave Base, Group 4: Expanding Broad Stem, Group 5: Contracting Stem, Group 6: Narrow Blade with Equal or Greater Tanged Base, Group 7: Perforators, Group 8: Bipointed Bifaces, Group 9: Non-Stemmed Scrapers, Group 10: Chipped Nodules, Axe Style A: Lipped groove, Axe Style B: Pecked groove.

4.2.2 Bentley Street Site (BhDm-02)

Located on the eastern shore of the Saint John River in Saint John, New Brunswick, the Bentley Street site is situated on a high bedrock shelf. The location of the site is in close proximity to the famed Reversing Falls, seen as a portage route during low tide (Burley 1976: 33-34). It was first discovered by George Fischer (1964, 1965) and later archaeological reconnaissance was undertaken by David Burley (1976). Direct affiliation to the Transitional Archaic period stems from the early findings of a single chlorite, or steatite, vessel fragment (Table 4-2). Within the vicinity of the mouth of the Saint John River was the chlorite quarry, which has been destroyed due to years of industrial development (Brent Suttie 2014, pers. comm.). The chlorite fragment has been associated with vessel technology based on observed concave manufacture and incised markings of production.

4.2.3 French Lake Axe

A single grooved axe recovered near French Lake in Sunbury County, New Brunswick, was surface collected during the early 20th century by George F. Matthew (1900) (Table 4-2) (Figure 4-4). Matthew published his findings of “stone implements” while identifying sites on Savage Island and around French, Maquapit, Grand and Swan lakes (Matthew 1900; Deal 2015: 6). These bodies of water are all connected by the Saint John River and its tributaries are part of an historic portage route. The specimen itself is part of the Axe Style A, which is defined as having a lipped groove based on manufacture. It is composed of a siltstone that shows great detail in craftsmanship, both

in the incised lines from carving and in polishing. During the curation of this artifact a paper label was attached, as was the methodology of the time.

Figure 4-4: The lipped grooved Axe Style A from French Lake with George Matthew's notation in the inserted picture.

4.2.4 JBG Collection (BjDu-07; BjDu-17; BjDv-04; BjDv-06)

The JBG Collection (Armstrong 1982; Murphy 1998) consists of four separate sites located at Lounder's Island (BjDu-07), Diggity (BjDu-17), Bayside (BjDv-04), and Musquash (BjDv-06) in New Brunswick. Each of these sites is located in Charlotte

County, New Brunswick along different bodies of water. A total of seven artifacts associated with the Transitional Archaic period have been analyzed (Table 4-2). A grooved axe from BjDu-07 made of sedimentary lithic material is included in the Axe Style B, pecked category. The sandstone specimen is broken along the longitudal axis, yet is complete enough for measurements. Two felsitic Group 1, ovate base artifacts from BjDu-17 appear to be affiliated to the Transitional Archaic period. Another felsitic Group 1, ovate base artifact was recovered from BjDv-04, along with a felsitic Group 8 bipointed biface medial fragment. BjDv-06 contains a felsitic Group 5 proximal base fragment and a felsitic Group 1, ovate base specimen.

4.2.5 Mud Lake Stream (BkDw-05)

The site is located on the northern edge of Spednic Lake, part of the St. Croix River drainage, which is located along the geopolitical borders of northeastern Maine, U.S.A. and southwestern New Brunswick, Canada (Deal 1984b, 1986) (Figure 3-2). The site was initially discovered by local collector Bliss Goodwin. Excavations were conducted under the supervision of Michael Deal between 1983 and 1985 and were successful in finding evidence of occupation spanning from the Late Archaic to Historic period (Deal 1986). The presence of Transitional Archaic period artifacts at Mud Lake Stream (see Figure 2-9), especially discovered in an interior setting, redefined the northward movement of people during this time. Fourteen calcined bones of American Shad (*Alosa sapidissima*) were found in association with the Transitional Archaic artifacts establishing the site as an interior fishing camp focused on the exploitation of anadromous fish (Deal 1986:89).

Two radiocarbon dates were analyzed from the Transitional Archaic component resulting in 4,000 ± 180 BP and 4,010 ± 100 BP. The radiocarbon dates appear to coincide with the dominant chipped stone tool stylization. Analyzed artifacts from the site include Group 3 (1), Group 4 (1), Group 5 (7), Group 6 (1), Group 7 (2), along with an abrader and whetstone (Table 4-2). The lithic composition of the chipped stone tools is felsitic, with a Group 3 and Group 7 being chert. Some of the bifaces were found in what may be a ceremonial feature with calcined fish bones, charcoal, heat damaged artifacts and with some of the chipped stone tools appears to have been ritually killed. Some archaeologists have associated spring fishing sites with ceremonial ritualism (Bortsel 1982: 61; Dincauze 1975: 31). Mud Lake Stream is one of the largest relatively undisturbed sites in the Maritime Provinces concerning the Transitional Archaic period (Deal 2015).

4.2.6 Oromocto Steatite Bowl

This artifact was discovered in 1842 in the vicinity of Oromocto Lake and was the only complete steatite, or chlorite, vessel recovered in the Canadian Maritime Provinces until the recent discovery of another steatite vessel recovered near the New Brunswick Museum in Saint John in 2016 (Table 4-2) (Brent Suttie 2014, pers. comm.). The vessel, like all other chlorite specimens, is assumed to be from a quarry that was once located along the mouth of the Saint John River before industrialization. Steatite vessel technology during the Transitional Archaic period is generally defined as being rounded with lugged handles, and in this case the Oromocto steatite bowl is rounded with one lug (Figure 4-5).

Figure 4-5: The Oromocto steatite vessel with the inserted picture exhibiting the unique “killed” perforated hole at the base of the vessel.

In observing the specimen, it is noticeable that the second lug was either abandoned during the preliminary stages of production or removed due to wear. Long term use and repair is evident among examples outside of Maine and the Maritime Peninsula, especially with drilled holes along the sides of the vessel for continued

use, but the Oromocto specimen has a unique attribute, as it contains a single drilled hole at the base of the vessel rendering it useless for gastronomic purposes, but gives the perception of being "killed" as part of its use life (Ritchie 1944, 1965a; Fowler 1943; Adams 2008). Being 'killed" has been observed as taking the physical artifacts "life" and allowing its "spirit" to traverse to the metaphysical spirit world. Another specimen from Brookfield, Massachusetts, housed at the Robert S. Peabody Museum at Phillips Academy Andover, also exhibits a single drilled hole at the base of the vessel (Catalogue Number: 52044). Although it is known to have been discovered in 1913 by A.E. Marles, no literature has shined light on this object and its significance in cosmological terms. Both vessels, especially the Oromocto specimen, exhibit a connection not only related to material, production, and utilization, but possibly also cosmological perspectives and metaphysical properties displayed through physical means.

4.2.7 Pennfield (BgDq-39)

Discovered in 2011 by Brent Suttie of Archaeological Services during mitigation work, the Pennfield site (BgDq-39), is located along Cripps Stream in Charlotte County, New Brunswick (Figure 3-3, Figure 3-4). The site was occupied from 3,800-2,000 BP and contained abraders, groundstone axes and adzes, three fragments of steatite and siltstone, and chipped stone artifacts (Suttie and Nicholas 2012). Analysis was conducted primarily on the felsitic chipped stone artifacts which comprised of Group 2 (1), Group 3 (1), Group 5 (1), and a Group 7 basal fragment (Table 4-2). All artifacts were heavily weathered, yet protein analysis was conducted and determined that the processing of catfish and deer were conducted by the chipped stone tool (Cummings et. al. 2012). The

asymmetry of the artifact and food protein analysis suggests that the bifaces were hafted as knives.

4.2.8 Portland Point (BhDm-07)

Preliminary excavations at Portland Point, on the Saint John River, took place in 1955 under the supervision of J. Russell Harper (1956) and were focused on locating Fort La Tour (Figure 3-2, Figure 3-3, Figure 3-4). During these excavations a precontact occupation was discovered stratigraphically beneath the fort's structure. Six chipped stone artifacts were analyzed and are primarily defined with Group 5 while one is categorized as Group 6 (Table 4-2). All specimens exhibit weathering and heavy use wear, leading to asymmetrical blades. Along with the chipped stone artifacts are three steatite, or chlorite, concave vessel fragments. These fragments represent at least one steatite vessel based on the minimal number of individual (MNI) fragments recovered at the site.

4.2.9 WEH Collection

This collection contains eleven bifaces representing Group 4 (4), Group 5 (5), and Group 6 (2), where four (two Group 5, and two Group 6) were recovered along the Richibucto River and one Group 4 artifact was found along the Miramichi River (Table 4-2). The majority of bifaces are composed of felsite, while three (one Group 4 and two Group 5) are composed of chert. All artifacts are complete, while some show extensive wear along the arrises and shoulders.

4.2.10 WK Crawford Collection

A siltstone grooved axe, also defined as an Axe Style A, is a part of the WK Crawford collection that can be clearly affiliated with the Transitional Archaic period (Table 4-2) (Figure 4-6). This specimen was discovered early in the 20th century and has an adhesive label attached, which states that the artifact was found in Norton, Kings County, New Brunswick, possibly along the Kennebecasis River. The artifact is nearly complete, yet is missing the bit edge section and exhibits use wear toward the conical poll end of the implement.

Figure 4-6: The lipped grooved Axe Style A from the WK Crawford Collection. Note the broken bit edge and the conical poll end of the implement.

4.3 Nova Scotia

A total of three sites (Tusket Falls: AlDl-15, Boswell: BfDf-08, and Wilkins: BfDf-01) and two collections (Harry Piers Collection and J. E. Greene Collection: AlDl-14) were analyzed (Table 4-3). Since the case study excavation for this thesis was conducted at the Boswell site, in conjunction with the Wilkins site, an in depth analysis of these site artifacts will be provided in Chapter 5. Additionally, the J.E. Greene Collection (AlDl-14) was recovered in close vicinity of Tusket Falls (AlDl-15) and will be combined for an appropriate assessment. All archaeological specimens are housed at the Nova Scotia Museum of Natural History in Halifax.

4.3.1 Harry Piers Collection

This collection consists of one Group 1, one Axe Style A, five Axe Style B, and three gouges discovered across southern Nova Scotia (Table 4-3). In the 19th and early 20th centuries artifacts were catalogued with paper labels. Considered faux pas by today's standards, these labels yield valuable information. The Group 1, felsitic ovate base artifact was considered to be either a "large Indian spearhead or possibly knife…Collected probably somewhere in the vicinity of Sherbrooke, Guys. Co. NS" by Rev. Richard A. Johnson in 1886 or 1887. Harry Piers himself collected a gouge from Waverley, Nova Scotia, in July of 1894. Grooved axes were collected from towns like Chelsea and Tracadie, Nova Scotia, in addition to one specimen bearing the notation: "Stone Axe found in a load of sand on Grove's Brickyard. ½ mile N from Windsor Junction. Sand from a cove in

Table 4-3: The number of artifacts analyzed by site and lithic group from Nova Scotia.

Site Name	Lithic Group																		Grand Total
	1	2	3	4	5	6	7	8	9	10	Abrader	Adze	Axe A	Axe B	Celt	Gouge	Organic	Steatite Vessel	Whetstone	
Boswell Site (BfDf-08)	5	3		2	6	1	5		2	2		2				1			1	31
Harry Peirs Collection	1												1	5		3				10
T.F.-J. Green Coll. (AlDl-14)			3	1	10		1													15
Tusket Falls (AlDl-15)					3	1														4
Wilkins Site (BfDf-01)								1												1
Grand Total	**6**	**3**	**3**	**3**	**19**	**2**	**7**	**1**	**2**	**2**		**2**	**1**	**5**		**4**			**1**	**61**

Group 1: Ovate Base, Group 2: Broad Contracting Stemmed, Group 3: Broad Contracting Stem with Proximal Straight or Concave Base, Group 4: Expanding Broad Stem, Group 5: Contracting Stem, Group 6: Narrow Blade with Equal or Greater Tanged Base, Group 7: Perforators, Group 8: Bipointed Bifaces, Group 9: Non-Stemmed Scrapers, Group 10: Chipped Nodules, Axe Style A: Lipped groove, Axe Style B: Pecked groove.

Long Lake near the yard" (Figure 4-7). According to this description the grooved axe was most likely recovered from Third Lake, just north of Windsor Junction, Nova Scotia.

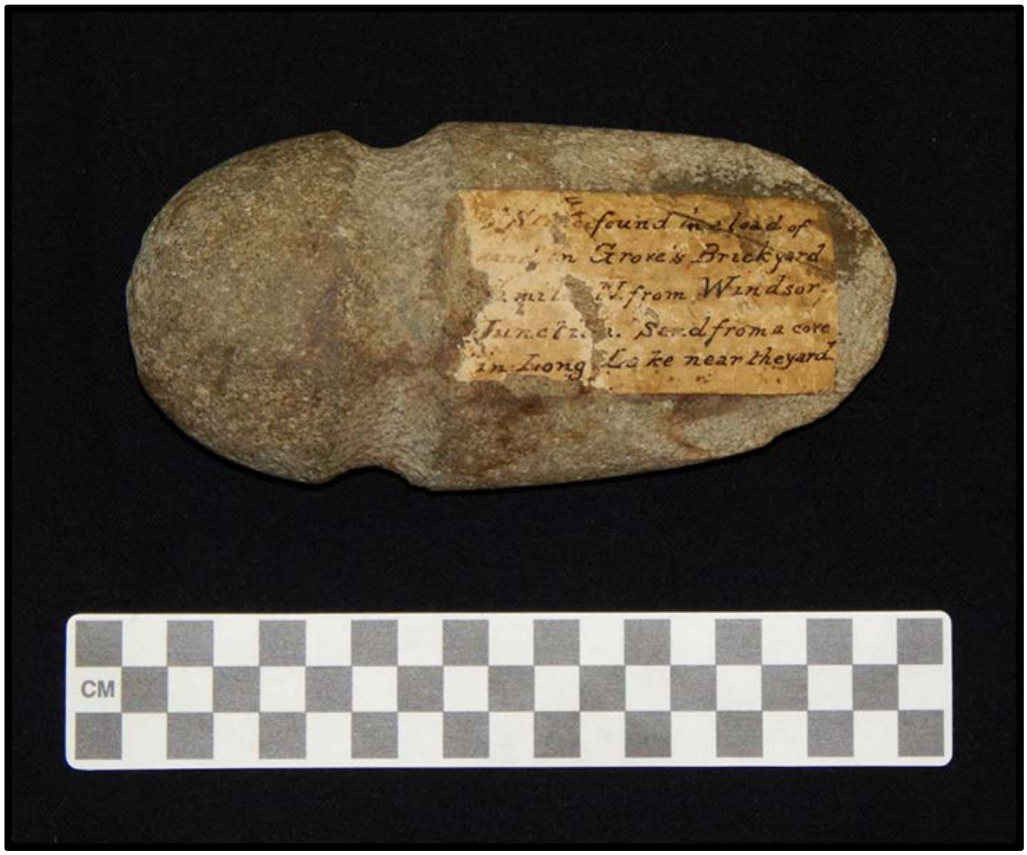

Figure 4-7: A pecked grooved Axe Style B from Windsor Junction, Nova Scotia.

4.3.2 Tusket Falls & J. E. Greene Collection (AlDl-14. AlDl-15)

Tusket Falls (AlDl-15) was first recorded by John Erskine (1998), when reporting on his excavations in the province from 1957 to 1966. The J.E. Greene Collection (AlDl-14) appears to have been discovered during 1967, based on the day

planner where he penned his findings. Tusket Falls is located along the Tusket River in Yarmouth, Nova Scotia. Stephen Davis (1991b) reported a total of eight projectile points, a drill, a fully grooved axe and a shallow-grooved gouge, with evidence that some of the artifacts were made from coastal Maine felsites (Sanger and Davis 1991). The total number of chipped stone tools from both Tusket Falls and the J.E. Greene Collection is 19, with artifacts representing Group 3 (1), Group 4 (1), Group 5 (13), Group 6 (1), and a Group 7 basal fragment (Table 4-3). Quartzite and felsite are the most common lithic materials reported among the chipped stone artifacts, including a quartzite complete Transitional Archaic Group 5 biface (Figure 4-8).

Figure 4-8: Complete Group 5 quartzite biface from Tusket Falls exhibiting slight use wear with barbs on both shoulders.

4.4 Artifact Analysis

Measurements of all applicable artifacts from Maine, New Brunswick, and Nova Scotia, with the inclusion of both the Boswell site (BfDf-08) and the Wilkins site (BfDf-01) were analyzed. The lithic composition of the artifacts will be displayed followed by tables expressing the length, width, and thickness of each artifact in terms of their grouping designation. Artifacts are represented by 15 different lithic material types and without division of material based on specific sources. The dominating lithic material within the scope of this regional analysis is felsite (n=267), which constitutes 79.6% of all artifacts analyzed. Chert (n=26) is second to felsite, porphyry, and rhyolitic tuff with 6.3%, while quartzite (n=21) ranks third with 5.1% (Table 4-4). Quartzite is the most versatile lithic since it is present in all groups, both axe stylizations, and with groundstone implements like gouges. Lithic materials like granite, basalt, quartzite, shale, and siltstone have been manufactured into groundstone implements. Seven steatite fragments and one complete steatite bowl vessel are believed to have been manufactured in the vicinity of Saint John, New Brunswick, and account for at least four vessels.

Considering the artifacts on a regional scale, analyzing the lithic composition and uniformity through manufacturing blueprints can be assessed (Table 4-5). Attributes such as length, width, and thickness, provide astute observations on the use-life of the chipped stone tools. Groups 1 and 2 are longer, wider, and slightly thicker than Groups 3, 4, and 5, establishing that Groups 1 and 2 are preforms for other groups. Groups 1 and 2 decrease in shape during lithic reduction strategies where broad, shallow flakes are initial knapped, followed by secondary retouch along blade edges and notches. Groups 3 and 4

are similar based on length, width, and thickness while Group 5 is much more variable in length, and based on certain collections (e.g., Turner Farm) the thickness can vary. A correlation between Group 3 and Group 4 is observed when the length, width and thickness are almost identical within standard deviation, yet the shape reveals that the difference between the two styles is secondary retouch along the blade and notches. Perforators exhibit similar thickness to Groups 3, 4, 5, and 6, while being shorter and narrower widths. Axe Style A is longer and wider than Axe Style B, while the thickness between the styles is comparable. The size and placement of the groove with Axe Style A specimens indicates that gravity-assisted, downward motions would be preferable, while Axe Style B is indicative of horizontal and utilitarian purposes. In their separate classifications, celts and gouges possess similar dimensions. Other groundstone implements are few in number and it would be difficult to determine a common regional blueprint based on these measurements.

Table 4-4. Regional Lithic Material Counts.

Lithic Material	Maine	New Brunswick	Nova Scotia	Grand Total
Basalt	1		3	4
Bone	1			1
Chert	22	4		26
Dark Volcanic	2		1	3
Felsite	197	32	38	267
Granitic	3	2	5	10
Igneous		1		1
Jasper	1	1	1	3
Porphyry	56		1	57
Quartz		1		1
Quartzite	10	3	8	21
Rhyolitic Tuff	3			3
Sandstone	1			1
Shale	2		1	3
Siltstone		2	3	5
Steatite		8		8
Grand Total	299	54	61	414

Table 4-5. The summary descriptive statistics of the A. length, B. width, and C. thickness of all artifacts analyzed form Maine, New Brunswick, and Nova Scoaita. The measurements are summarized as the mean ± standard deviation (number analyzed).

A. Length				
Lithic type	Maine	New Brunswick	Nova Scotia	Grand Total
1	-	10.6 ± 4.4 (3)	12.0 ± 1.7 (6)	11.5 ± 2.7 (9)
2	10.1 ± 3.0 (19)	7.2 ± 0.4 (3)	8.5 ± 3.4 (3)	9.6 ± 3.0 (25)
3	8.6 ± 2.3 (11)	6.8 ± 2.7 (3)	5.8 ± 2.0 (3)	7.6 ± 2.6 (18)
4	7.4 ± 2.2 (25)	7.1 ± 1.6 (5)	4.3 ± 0.9 (2)	7.2 ± 2.2 (32)
5	7.4 ± 2.3 (39)	6.9 ± 1.1 (10)	5.6 ± 1.9 (19)	6.8 ± 2.2 (68)
6	6.1 (1)	8.3 (2)	3.9 (2)	6.1 ± 2.9 (5)
7	5.6 ± 1.4 (9)	-	5.5 ± 0.7 (5)	5.6 ± 1.2 (14)
8	16.4 ± 2.4 (5)	-	12.1 (1)	15.7 ± 2.8 (6)
9	6.8 ± 1.3 (3)	-	4.2 (2)	5.8 ± 1.8 (5)
10	6.6 ± 1.9 (4)	-	5.9 (2)	6.4 ± 1.8 (6)
Abrader	-	8.3 (1)	-	8.3 (1)
Adze	-	-	19.8 (2)	19.8 (2)
Axe A	26.5 (1)	27.3 (2)	37.1 (1)	29.6 ± 6.3 (4)
Axe B	17.0 (2)	26.8 (1)	19.7 ± 3.8 (5)	19.9 ± 4.3 (8)
Celt	21.1 (1)	-	-	21.1 (1)
Gouge	9.4 ± 2.8 (4)	11.7 (1)	15.4 ± 3.0 (4)	12.3 ± 3.9 (9)
Whetstone	13.0 (2)	15.2 (1)	-	13.7 ± 1.3 (3)
B.Width				
1	-	6.1 ± 2.7 (3)	6.0 ± 0.9 (6)	6.0 ± 1.6 (9)
2	5.2 ± 0.9 (23)	2.7 ± 0.2 (3)	9.0 ± 6.3 (3)	5.3 ± 2.4 (29)
3	4.2 ± 0.6 (13)	2.7 ± 0.5 (3)	3.0 ± 1.0 (3)	3.7 ± 0.9 (20)
4	3.8 ± 0.8 (27)	2.9 ± 0.7 (5)	3.2 ± 0.6 (3)	3.6 ± 0.8 (35)
5	3.9 ± 0.7 (69)	3.5 ± 0.7 (11)	3.3 ± 0.9 (19)	3.7 ± 0.8 (99)
6	2.6 (1)	3.0 (2)	2.1 (2)	2.6 ± 0.5 (5)
7	1.7 ± 0.4 (17)	1.6 ± 0.9 (4)	1.2 ± 0.2 (5)	1.7 ± 0.5 (26)
8	5.4 ± 1.2 (5)	-	5.0 (1)	5.4 ± 1.1 (6)
9	4.5 ± 0.4 (3)	-	2.9 (2)	3.9 ± 1.0 (5)
10	3.3 ± 0.5 (4)	-	4.9 (2)	3.8 ± 1.1 (6)
Abrader	-	4.0 (1)	-	4.0 (1)
Adze	-	-	62.4 (2)	62.4 (2)
Axe A	4.5 (1)	5.5 (2)	5.5 (1)	5.2 ± 0.8 (4)
Axe B	4.5 (2)	6.8 (1)	4.7 ± 0.5 (5)	4.9 ± 0.9 (8)
Celt	5.9 (1)	-	-	5.9 (1)
Gouge	4.7 ± 1.3 (5)	29.7 (1)	5.7 ± 0.4 (4)	7.6 ± 7.8 (10)
Whetstone	2.3 (2)	3.0 (1)	1.2 (1)	2.5 ± 0.5 (4)

C. Thickness				
Lithic type	Maine	New Brunswick	Nova Scotia	Grand Total
1	-	1.2 ± 0.2 (3)	1.2 ± 0.1 (6)	1.2 ± 0.1 (9)
2	1.1 ± 0.2 (23)	1.0 ± 0.3 (3)	2.0 ± 1.7 (3)	1.2 ± 0.6 (29)
3	0.8 ± 0.4 (13)	0.8 ± 0.1 (3)	0.7 ± 0.1 (3)	0.7 ± 0.3 (20)
4	0.6 ± 0.2 (27)	0.8 ± 0.1 (5)	1.0 (2)	0.6 ± 0.2 (34)
5	1.0 ± 1.0 (61)	1.0 ± 0.3 (11)	0.8 ± 0.1 (19)	1.0 ± 0.8 (91)
6	0.6 (1)	0.8 (2)	0.7 (2)	0.7 ± 0.2 (5)
7	0.7 ± 0.2 (17)	0.7 ± 0.2 (4)	0.6 ± 0.2 (5)	0.7 ± 0.2 (26)
8	1.2 ± 0.2 (5)	-	1.3 (1)	1.2 ± 0.2 (6)
9	0.8 ± 0.3 (3)	-	1.1 (2)	0.9 ± 0.3 (5)
10	1.6 ± 0.7 (4)	-	2.1 (2)	1.7 ± 0.6 (6)
Abrader	-	1.3 (1)	-	1.3 (1)
Adze	-	-	29.7 (2)	29.7 (2)
Axe A	12.5 (1)	10.0 (2)	9.1 (1)	10.4 ± 1.5 (4)
Axe B	8.2 (2)	13.1 (1)	9.8 ± 1.0 (5)	9.8 ± 1.7 (8)
Celt	3.4 (1)	-	-	3.4 (1)
Gouge	2.2 ± 0.9 (5)	2.2 (1)	3.4 ± 0.8 (4)	2.7 ± 1.0 (10)
Whetstone	1.2 (2)	1.5 (1)	0.9 (1)	1.3 ± 0.2 (4)

5 THE BOSWELL SITE

"It's not what you find, it's what you find out"
- David Hurst Thomas (1989: 31), Archaeology

This chapter elaborates on the Transitional Archaic component at the Boswell site (BfDf-08) in southwestern Nova Scotia, beginning with a description, an overview of the local geography, and an environment reconstruction. This is followed by a brief analysis of previous research, culture history, stratigraphy, artifacts, ecofacts, and features discovered at the site. The concluding section presents an interpretation of the activities that took place there during the Transitional Archaic period.

5.1 Site Description

The Boswell site (BfDf-08) is located on farmland along the Annapolis River in South Farmington, Nova Scotia (Figure 5-1). The site consists of a flat terrace three meters above the surface of the river, along an eroding riverbank. A flooding episode that occurred in 2009 caused major erosion of the riverbank. In the same year a couple fishing off the eroding bank surfaced collected two bifacial artifacts; a stemmed base fragment of a green rhyolite, and a round base knife or preform made from a black volcanic material (Figure 5-2). The artifacts were brought to the Nova Scotia Museum of Natural History where any interested party could investigate the site further. Michael Deal decided to take on the project and has been the principal investigator of the Boswell Site Project since 2011.

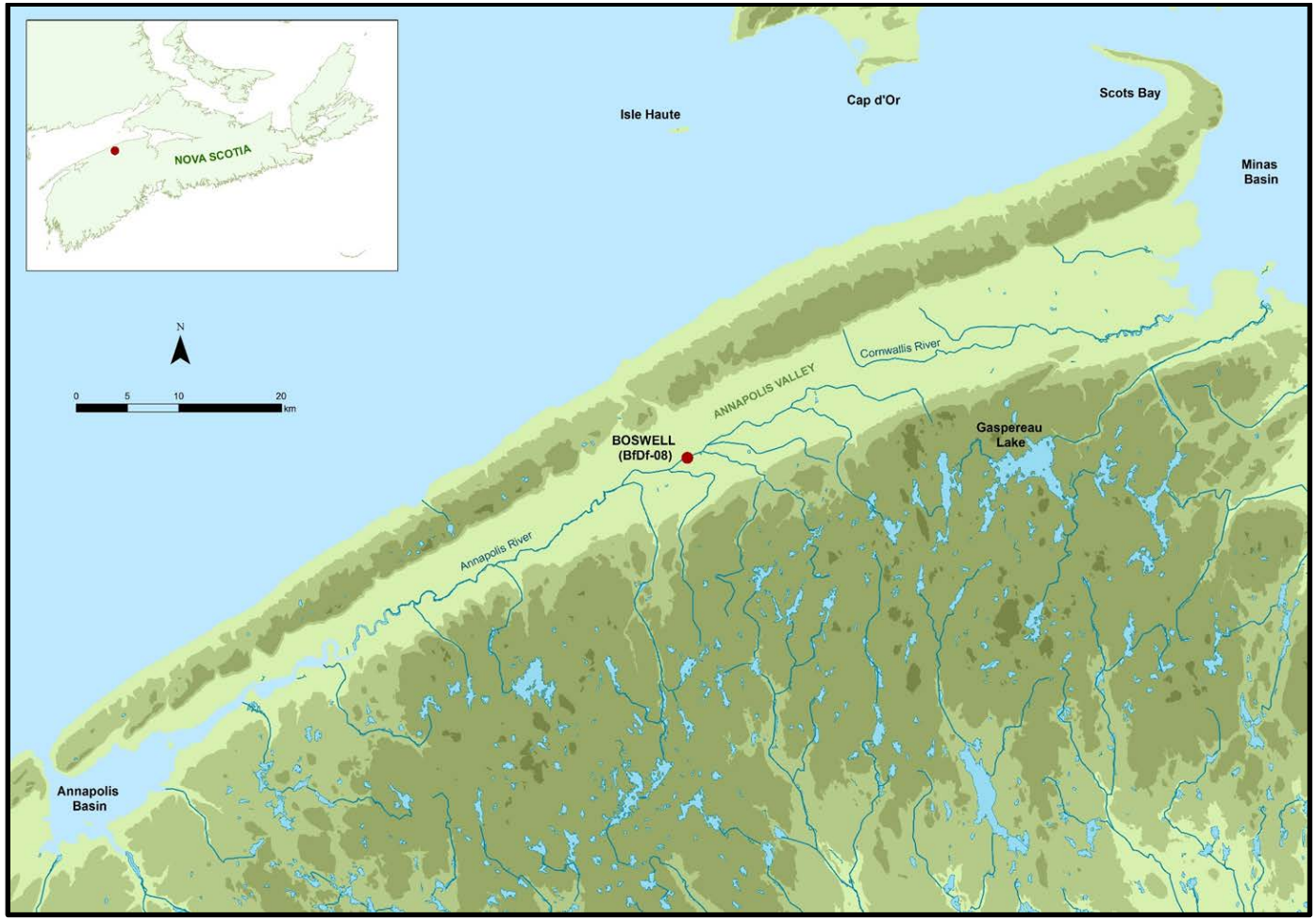

Figure 5-1: The Boswell site located in South Farmington, Nova Scotia, along the Annapolis River (Courtesy of Bryn Perry-Tapper).

Figure 5-2: The 2009 surface collected artifacts. Left: a stemmed base fragment consisting of a green rhyolite. Right: a round base knife or preform made from a black volcanic material.

5.1.1 Geography

The Boswell site is located in the middle of the Annapolis-Cornwallis River Valley, with the North Mountain and Bay of Fundy located to the north, the Caribou Bog, Cornwallis River, and the Minas Basin to the northeast, Gaspereau Lake to the southeast, and the mouth of the Annapolis River to the southwest. Within the view of Mi'kmaw cultural landscapes and communities, the Boswell site is located on the northeastern edge of *Kespukwitk*, or "end of flow", which is an area extending west of La Have River to Yarmouth, Nova Scotia (Sable and Francis 2012: 20-21). On an international stage, the

Boswell site is situated on the northern edge of the UNESCO designated Southwestern Nova Scotia Biosphere Reserve (SWNBR). The site itself is placed atop a flat terrace, along a straight section of the Annapolis River. Riverine features include; a natural granitic bedrock sill fish ladder, located 30 meters upstream, and a 60m² "fish hole" (formed during deglaciation), 20 meters upstream from site (McKee 2015). The locally named "fish hole" is sediment free due to high spring and autumn discharge, which makes a favorable hold spot for several species of anadromous fish during their annual migration.

5.1.2 Environment

The Boswell site is located on a fragmentation of Pangea that was tectonically separated during the end of the Triassic period "creating a vast network of cracks from which lava emerged" (Hild and Barr 2015: 230). The Ordovician Goldenville Formation with a comprised lithology of quartzite and slate, in conjunction with the latter Triassic Wolfville Formation (Annapolis Group) comprised of red sandstones and conglomerates (MacDougall et. al. 1969: 15). The Wolfville Formation stretches from the northern coast of St. Mary's Bay to the southwestern coast of the Minas Basin. These formations about the inclined basalt flows of the North Mountain and the South Mountain Batholith within the Meguma Terrane (Figure 5-3). The bedrock formations are buried beneath glacial till, glaciofluvial outwash, glacial clays, eskers, and riverine alluviums (MacDougall et. al. 1969: 13). The Annapolis riverbed is exposed granitic bedrock with minimal gravel veneer (McKee 2015). The flat terrace which houses the Boswell site provides evidence

of alluvial deposits from past flooding episodes, in addition to past increases in the water table (McKee 2015; Spooner et. al. 2014).

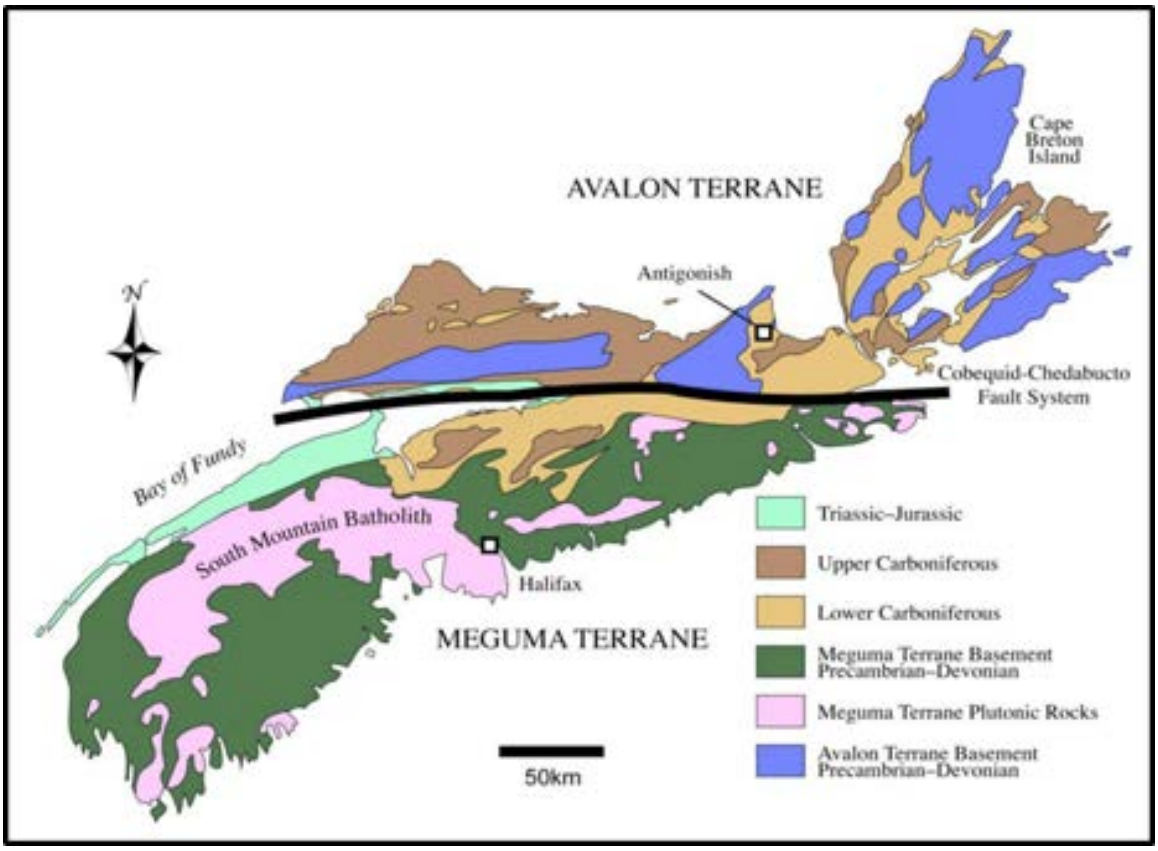

Figure 5-3: The Meguma Terrane shown as the southern portion of Nova Scotia. The Wolfville Formation is encapsulated in the light blue Triassic-Jurassic formations. (Courtesy of the Earth Sciences Department at Dalhousie University, Halifax).

Sedimentological analysis was simultaneously conducted on soil samples taken from the southern wall of Unit 22 for paleoethnobotanical research at Memorial University and paleoenvironmental analysis supervised by Ian Spooner at Acadia University in Wolfville, Nova Scotia. The following table (Table 5-1) outlines the soil horizons and sediments that were characteristic of the entire Boswell site stratigraphic

Table 5-1: Sediment Analysis of the Boswell Site (BfDf-08), Evaluative Unit 22

Sediment Analysis of the Boswell Site (BfDf-08), Evaluative Unit 22									
Level	Depth (CMBS)	Horizon	Munsell Color	Description	pH	Moisture	Grain Size (MM)	Organic Content (%)	Presence of Coarse Sand (%)
1	5	A	5 YR 5/4 Reddish-Brown	Mottled with 10YR 3/1 (Very Dark Gray); sand; loose; porous; structureless; numerous roots.	4.2	Moist	Medium	>75	<5
2	20	A	10 YR 5/6 Yellowish-Brown	Sand; loose; porous; structureless.	4.4	Moist	Fine	<75	<5
3	30	A	10 YR 4/3 Brown	Sand; loose; porous; structureless.	4.4	Moist	Coarse	<30	<5
4	38	B	7.5 YR 5/8 Strong Brown	Sandy loam; weak ortstein.	4.8	Moist	Coarse	<5	<5
5	105	B	7.5 YR 5/6 Strong Brown	Loamy sand; structureless; weakly mottled and firm in the upper 8 inches.	5.2	Moist	Coarse	<5	<5
6	115	B	5 YR 4/6 Yellowish-Red	Sand; mostly quartz.	5.5	Moist	Medium	<5	<5
7	210	B	5 YR 4/6 Yellowish-Red	Sand; mostly quartz.	5.5	Wet	Medium	<5	<5

sequence (MacDougall et. al. 1969: 35, 48; McKee 2015). These strata and their composition correspond with the Cornwallis Series soils which encompasses 8,113 acres of land, occupying 1% of Annapolis County (MacDougall et. al. 1969: 48-49). Neighboring Cumberland Series soils a few hundred meters both upstream and downstream from the Boswell site may have contributed to alluvial sediments during flooding episodes. A pH of 5.5 was reported from paleoethnobotanical samples extracted from levels 5, 6, and 7 exhibiting the scarcity of faunal and floral preservation (Deal et. al. 2015).

Contemporary flora surrounding the site includes tree species like: pine (*Pinus sp*.), spruce (*Picea sp*.), fir (*Abies sp*.), white birch (*Betula papyrifera*), wire birch (*Betula populifolia*), maple (*Acer sempervirens*), white oak (*Quercus alba*), red oak (*Quercus*

rubra), and poplar (*Populus sp*.) (MacDougall et. al. 1969: 48; Deal et. al. 2015). Notable ground vegetation consisted of: grass (*Panicum sp*.), dandelions (*Taraxacum officinale*), blueberry bushes (*Vaccinium sp*.), in addition to Indian Cucumber Root (*Medeola virginiana*) and ferns (*Pteridophyta sp*.) located in a wetland area on the northern border of the Boswell site. The site's location along the bank of the Annapolis River establishes a riverine feature focused on subsistence strategies.

Aquatic fauna; anadromous, catadromous, and marine fish inhabit differing sections of the Annapolis River. Marine fish are found toward the less brackish mouth of the river, while anadromous fish migrate toward the freshwater interior during seasonal feeding and spawning seasons, while contrasting catadromous fish, inhabit the freshwater interior and spawn in saltwater. All three types of fish have been observed in the archaeological record as being an important portion of subsistence and diet among Transitional Archaic peoples surrounding the Gulf of Maine, especially anadromous and catadromous fish (Rostlund 1952; Turnbaugh 1975; Borstel 1982; Brumbach 1986; Deal 1986; Spiess 1992; Bourque 1995, 2004; Spiess and Lewis 2001; Styles 2011). A list of the current aquatic fauna from the Annapolis River in Nova Scotia, and the Saint John River in New Brunswick (Table 5-2) illustrates the marine (green), marine and freshwater (yellow), and freshwater (blue) fish species associated with the Bay of Fundy (Daborn et. al. 1979; Labenski 2011; Munkittrick et. al. 2011; Deal et. al. 2015). The comparative list between the two rivers evaluates insightful ecological and current technological affects to the aquatic fauna.

Table 5-2: Fish Species Found in Saint John (NB) and Annapolis (NS) Rivers.

Fish Species Found in Saint John (NB) & Annapolis (NS) Rivers			
Family	Binomial Nomenclature	Common Name	River
Salmonidae	*Salvelinus fontinalis*	Brook Trout	Both
Catostomidae	*Catostomus commersoni*	White Sucker	Both
Cyprinidae	*Semotilus atromaculatus*	Creek Chub	Both
Clupeidae	*Alosa sapidissima*	American Shad	Both
Clupeidae	*Alosa pseudoharengus*	Gaspereau (Alewife)	Both
Clupeidae	*Alosa aestivalis*	Blueback Herring	Saint John
Clupeidae	*Clupea harengus*	Atlantic Herring	Both
Atherinidae	*Menidia menidia*	Atlantic Silverside	Both
Osmeridae	*Osmerus mordax*	Rainbow Smelt	Both
Anguillidae	*Anguilla rostrata*	American Eel	Both
Moronidae	*Morone americana*	White Bass	Annapolis
Moronidae	*Morone saxatilis*	Striped Bass	Both
Salmonidae	*Salmo salar**	Atlantic Salmon	Saint John
Fundulidae	*Fundulus diaphanus*	Banded Killifish	Annapolis
Cyprinodontidae	*Fundulus heteroclitus*	Mummichog	Both
Gasterosteidae	*Gasterosteus aculeatus*	3 Spine Stickleback	Saint John
Gasterosteidae	*Apeltes quadracus*	4 Spine Stickleback	Both
Gasterosteidae	*Pungitius pungitius*	9 Spine Stickleback	Both
Gasterosteidae	*Gasterosteus wheatlandi*	Black Spotted Stickleback	Saint John
Pleuronectidae	*Pseudopleuronectes americanus*	Winter Flounder	Both
Ammodytidae	*Ammodytes americanus*	American Sandlance	Saint John
Merlucciidae	*Urophycis tenuis*	White Hake	Saint John
Petromyzontidae	*Petromyzon marinus*	Sea Lamprey	Saint John
Acipenseridae	*Acipenser oxyrhynchus*	Atlantic Sturgeon	Both
Acipenseridae	*Acipenser brevirostrum*	Shortnose Sturgeon	Both
Gadidae	*Pollachius virens*	Pollock	Both
Labridae	*Tautogolabrus adspersus*	Bergall	Annapolis
Gadidae	*Microgadus tomcod*	Tomcod	Both
Cottidae	*Myoxocephalus aenaeus*	Grubby Sculpin	Saint John
Cottidae	*Myoxocephalus Scorpius*	Shorthorn Sculpin	Saint John
Cottidae	*Myoxocephalus octodecemspinosus*	Longhorn Sculpin	Saint John
Cryptacanthodidae	*Cryptacanthodes maculatas*	Wrymouth	Saint John
Sygnathidae	*Syngnathus fuscus*	Northern Pipefish	Both
Hemitripteridae	*Hemitripterus americanus*	Sea Raven	Saint John
Pholidae	*Pholis gunnellus*	Rock Gunnel	Saint John
*Extirpated in Annapolis River, but present in Saint John River (Munkittrick et. al. 2011)			

Rivers that drain into the Atlantic Ocean within the Gulf of Maine generally consist of the same species of fish based on seasonal migratory patterns. The infrastructure development of hydroelectric dams with both rivers has affected generational movement of anadromous and catadromous spawning and feeding migrations which inhibits contemporary accounts toward previous fish populations (Meth 1973; Munkittrick et. al. 2011). Aside from recent dam construction, both rivers house a number of precontact sites that are positioned appropriately for riverine fishing. Additionally, Speck's ethnographic observations confirm that the Annapolis and Saint John rivers were destination areas for canoe travel across the Bay of Fundy (Speck 1922).

During precontact occupation of sites along the Annapolis and Saint John rivers the Mi'kmaw, or the Wolastoqiyik at the Saint John River, would have created fish weirs in order to exploit riverine resources. According to Roger Lewis (2006a: 37-38), the construction of stone fish weirs occurred in southwestern Nova Scotia due to exposed bedrock river beds. Evidence of stone fish weirs is present in New England, with certain weirs associated with the Transitional Archaic period (Speck 1940: 90; Pfeiffer 1983; Lutins 1992; Watts 2009a, 2009b; Goodby et. al. 2014: 8-10). A larger recorded presence of wooden fish weirs defines a different style of construction in New England (Willoughby 1927; Johnson 1942; Petersen et. al. 1994; Décima and Dincauze 1998). Aside from these two stylizations of fish weirs, Marc Banks (1990: 77) proposes a hybrid type where the stone weir was the base "providing the foundation for a wall of stakes or interwoven brush" (Goodby et. al. 2014: 8). The hybrid fish weir design is a conceivable proposal for the Transitional Archaic period in Nova Scotia since the riverine and

lacustrine water levels were higher and that the wooden portion would have deteriorated over time leaving the stone weir base along the bedrock river bed. Adjacent to the Boswell site in the Annapolis River is a small grouping of boulders and cobbles that may have been part of a fish weir at some point in the past (Figure 5-4).

Figure 5-4: The grouping of boulders and cobbles that is possibly the remnant portion of a stone fish weir in the riparian zone a few meters to the east of Unit 39, which is located on the edge of the eroded riverbank.

5.1.3 Paleoenvironmental Analysis

A paleoenvironmental reconstruction is necessary to further understand the site environment during the Transitional Archaic period. A recent palynological and stratigraphic study was conducted at Pleasant River Fen located 50 kilometers to the south of the Boswell Site. Compiled data indicates from the beginning of the Transitional Archaic period to the end of the Late Woodland period that the region underwent "a rapid change in forest composition as cooler and moister conditions developed" (Spooner et. al. 2014; Deal et. al. 2015). During this climatological shift the forest flora principally comprised of: birch (Betula sp.), spruce (Picea sp.), pine (Pinus sp.), speckled alder (Alnus rugosa), fur (Abies sp.), holly (Ilex sp.), oak (Quercus sp.), hornbeam (Carpinus sp.), Canadian hemlock (Tsuga canadensis), and red maple (Acer rubrum) (Spooner et. al. 2014) (Figure 5-5). Other paleoenvironmental records from Baltzer's Bog and Big Meadow, Brier Island includes wood mats which reveals a higher water table from the Transitional Archaic period throughout the Woodland periods, with increases in the water table occurring after 3,400 cal. BP, 2,100 cal. BP, and 1,500 cal. BP (Spooner et. al. 2014; McKee 2015).

During the increases in sustained water tables in southern Nova Scotia there were brief periods of drought from the beginning of the Transitional Archaic period through the Woodland periods (Deal et. al. 2015). The dates affiliated with the forest cover were short lived which indicates that bogs transformed into wooden swamps during the drier periods. The collective data from the three paleoenvironmental study areas suggests cool and moist conditions in addition to a high water table which establishes that the Boswell

site would have been a favorable location for transportation, fish harvesting, and small game hunting. Preservation of the Boswell site is in large part due to its location on the Annapolis River, which has experienced little lateral migration in the past 3,000 years (Deal et. al. 2015).

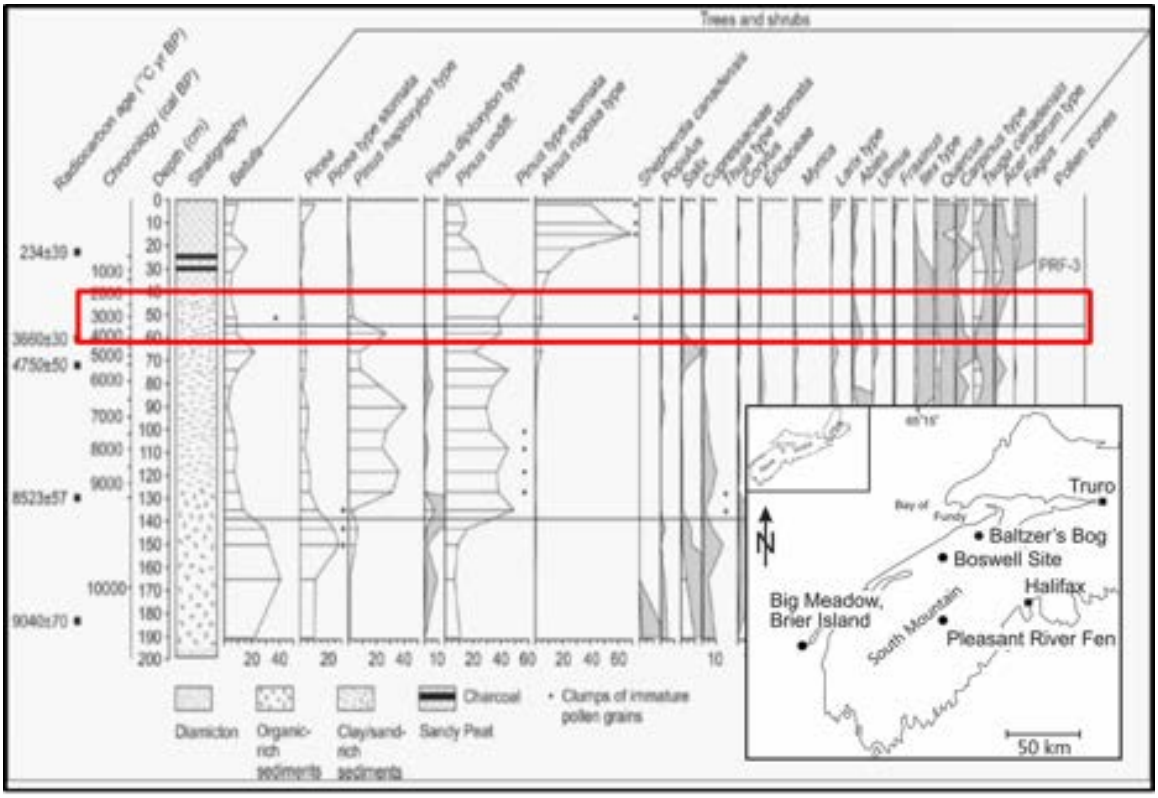

Figure 5-5: The red highlight outlines the palynological analysis from Pleasant River Fen, Baltzer's Bog, and Big Meadow, Brier Island from 4,000-2,000 cal. BP. The inserted picture shows the Boswell site in relation to the paleoenvironmental study areas. (Spooner et. al. 2014).

The positioning of the Boswell site is consistent with the "site catchment" principle which states that "sites will be located in those areas that offer the greatest

diversity of resources aquatic zones and terrestrial ecotones (bottomlands-uplands-ravines-thickets-bogs-swamps)" (Nash et. al. 1991; Lewis 2006a: 13-14). When an individual moves outward from the site the environment type changes and the acquisition and harvesting of resources "becomes increasingly energy expensive" (Lewis 2006a: 14). In southern Nova Scotia at least 20 sites with Transitional Archaic components have been identified in close vicinity to riverine and lacustrine bodies of water establishing an ecotone preference focused on anadromous and catadromous fish while rising sea levels may have flooded coastal areas (Connolly 1977; Christianson 1985; Ferguson 1986; Davis 1991b; Sanger and Davis 1991; Murphy 1998; Laybolt 1999; Deal and Rutherford 2001; Deal et. al. 2006; Sanders 2014; Deal et. al. 2015).

5.2 Archaeological Investigations

5.2.1 Previous Research

Under the supervision of Michael Deal field work at the Boswell site began in the summer of 2011 when the datum was placed on the terrace, 3.5 meters above the original find spot from 2009. A Leica TC600/TC800 total station was positioned upon the datum point where all point and elevation measurements were taken. Six 1x1m test units were opened in specific areas: Unit 1 was placed over a cluster of chipping debris located on the road entering the site along the woods, Unit 2 was placed near the river bank below the datum, and Units 3-6 were situated on the terrace above the original find spot (Deal et. al. 2015) (Figure 3-5).

Additionally, 11 shovel test pits were excavated on three separate transects tied into the datum point; two shovel test pits due north (ST 1-2) and three due west in five meter intervals (ST3-5), while the third transect was placed along a 250 degree angle from the datum along the riverbank in ten meter intervals (ST9-11). Data and artifacts recovered from the excavation included: a variety of lithic chipping debris from Unit 1, Feature 1 was recovered in Unit 3 which contained a dense concentration of charcoal with two pottery sherd clusters along with chipping debris, Feature 2 was defined by charcoal fragments and located in Unit 4, and Feature 3 was uncovered in Unit 5 and consisted of pottery sherds, unidentified mammal bones, and charcoal overlaying a rock formation interpreted as a hearth (Deal et. al. 2015).

The 2012 field season began by reinvestigating Feature 3 in Unit 5, which had been discovered the last day of the 2011 season. A grid was established off of the northeast and southwest corners of Unit 5 for one unit west (Unit 7) and four units to the north (Units 8-11) in order to evaluate the limitation of evident precontact activities. Five meters to the north of Unit 5 a second site datum was established and the new units were designated as Locus 2. The strategy for this excavation methodology was to excavate a one meter deep trench atop the terrace toward the Annapolis River where Unit 11 would extend to the eroded riverbank (Deal et. al. 2015). Profile drawings were made along the west walls of Units 8 and 9, while an east profile drawing was done in Units 9 to 11 to record the walls of the trench, while a 2.5 meter deep profile was conducted along the eroding shoreline with no additional cultural levels noted. An extension of Feature 3 was uncovered along with an extensive amount of pottery sherds and fragments in Unit 9,

while Feature 4 was discovered in Unit 7 and contained a large cluster of calcined bone, charred and uncharred seeds, and charcoal (Deal et. al. 2015). Sediment samples totalling in four large specimen bags were taken from Unit 7 for paleoethnobotanical analysis. Charcoal collected in Feature 3 and associated with pottery has been dated to 2,190 ± 30 BP (Beta-344775).

5.2.2 Current Research

Field work at the Boswell site resumed for three weeks during the summer of 2014 when Locus 2 was extended to the south and east additionally opening 19.75m² of excavation units on two separate terraces, where precontact material culture was recovered from each unit (Figure 3-5). This field season also utilized the step trench methodology in order to reach a subsurface depth of 2.5 meters in Unit 22 without wall collapse (Drewett 2000) (Figure 5-6). Excavation on the upper terrace revealed a strata comprising up to 40 cm of sterile fluvial sediments with a burned forest layer express by high proportions of charcoal, an absence of cultural material, which overlaid the Woodland period level.

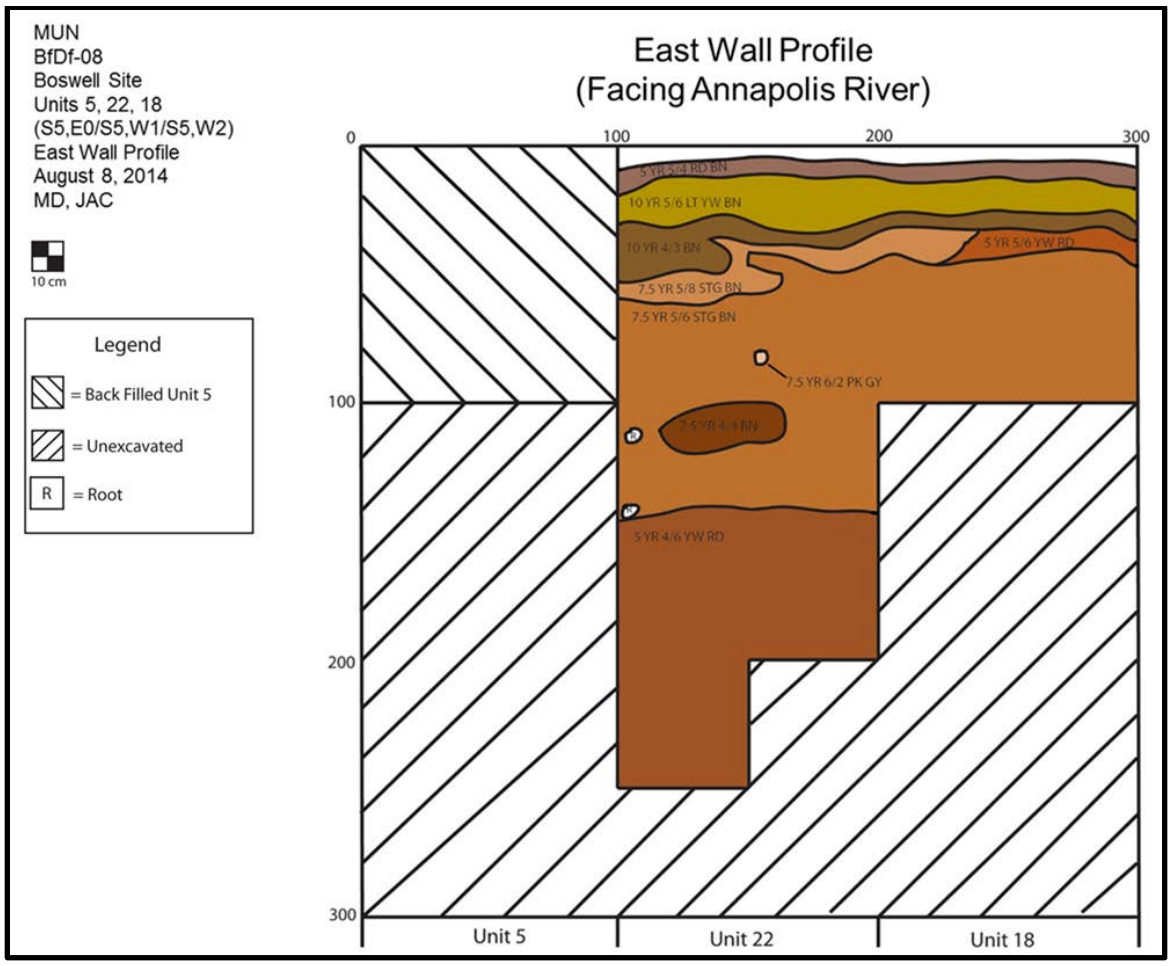

Figure 5-6: East wall profile displaying the step trench methodology used during the 2014 field season. Sediment samples were collected from the east wall of Unit 22 for both paleoenvironmental (Table 5.1a) and paleoethnobotanical analysis.

Previous excavation did not find any Archaic materials in situ, yet chipping debris of distinct rhyolitic materials were recovered on the surface of the eroding edge of the riverbank, along the edge of the lower terrace, indicating an Archaic period presence at the Boswell site. The presence of rhyolitic material prompted exploratory testing and the eventual in situ encounter of Transitional Archaic materials on the lower terrace. During the 2014 field season all Transitional Archaic period artifacts were unearthed in Units 27,

28, and 32, in addition to a 50x50cm² unit (Unit 26) located where the landowner had surface collected an Archaic scraper during the offseason. During the excavation of Unit 32 a Transitional Archaic a stemmed fire-kit-starter exhibiting a rounded bit, repurposed from a broken projectile point, was recovered along with a charcoal sample located directly beneath it dating to 3,630 ± 30 BP (Beta-409373).

As it became evident that there was a difference of cultural materials recovered from each terrace a North wall profile was conducted to record the slope from the upper to lower terrace revealing that modern erosion had displaced the Middle Woodland component from the lower terrace exposing the underlying Transitional Archaic component of the site (Figure 5-7). This discovery explains the low quantity of Transitional Archaic materials appearing one meter below the datum. Additional features were discovered in Locus 2: Feature 5 is a large calcined bone cluster recovered in Unit 23, Feature 6 was a cluster of pottery sherds and fragments along with charcoal in a dark brown matrix in Unit 24, and Feature 7 was uncovered in Unit 11 and consisted of a grouping of fire-cracked rock, charcoal, and charred acorns. Finding evidence of Transitional Archaic period lithic materials in situ prompted further investigations at the Boswell site the following summer field season.

Excavations during the 2015 field season focused on continuing to expose the Transitional Archaic component starting at the lower terrace and the adjacent units in the southern portion of the upper terrace. Heavy rains resulted in fruitful surface collecting from the eroding riverbank, which led to the discovery of several diagnostic Transitional

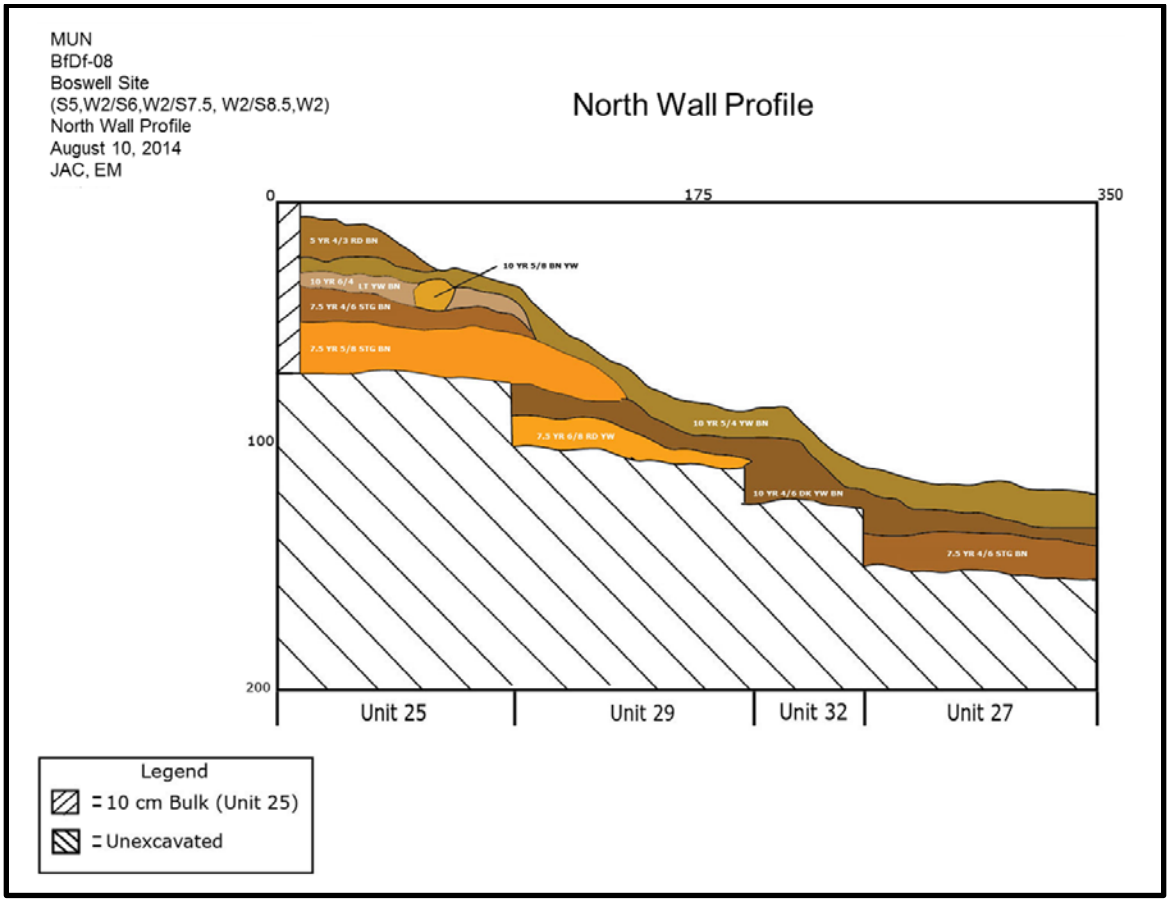

Figure 5-7: North wall profile displaying the slope between the upper to lower terrace, in addition to the erosion and displacement of the Middle Woodland component from the lower terrace.

Archaic artifacts from the riparian zone. These findings led to units (Units 41-45, 52-54) being super-imposed on the riparian zone in order to retrieve any Transitional Archaic artifacts from secondary or trinary contexts due to river erosion. Twenty-three units were excavated, including eight previously excavated units were reopened, along with a transect of twelve 50x50cm² shovel test pits heading south along the shoreline (Figure 3-5). All twelve shovel test pits were sterile and did not display any abnormalities.

During subsurface testing sediment samples for paleoethnobotanical, paleoenvironmental, and zooarchaeological analysis were collected.

During the 2015 field season a total of eight new features, along with an extension of Feature 5 were revealed during excavation. In 2014 Feature 5 was initially found in Unit 23 consisting of pottery sherds and fragments, faunal and paleoethnobotanical remains. Feature 5 was discovered to be sloping into Unit 33 in 2015 where a small cluster of calcined bone and charcoal was uncovered. Unit 33 also contained Feature 8, which extended into Unit 37, and the feature contained fire-cracked rock, chipping debris, charcoal flecks, and a cluster of unidentifiable calcined bone. Excavation in Unit 38 revealed Feature 9 which is defined by a small grouping of charcoal and chipping debris. At 102 centimeters below surface, Feature 10 was discovered and contained chipping debris, minor flecks of charcoal, and fire-cracked rock.

Other features were discovered in re-opened units from prior field seasons that had not been excavated deep enough to recover the Transitional Archaic component, in addition to features in units added to the south and east portions of Locus 2. A unique discovery, Feature 11 in Units 46, 49, and 50, was associate with a bifacial preform, a projectile point base, chipping debris, and six native copper nodules (Figure 5-8). Feature 11 was bisected in quadrants for sediment samples in order to conduct paleoethnobotanical analysis, along with a charcoal sample radiocarbon dated to 3,211 ± 38 BP (UOC-1207).

Figure 5-8: A photograph showing Feature 11 and two copper nodules in situ in Unit 46. The inserted picture shows the six copper nodules recovered during the 2015 field season, which date to 3,211 ± 38 BP (UOC-1207).

Unit 11 contained Feature 12 which comprised of a minor amount of chipping debris and flecks of charcoal. Feature 13 was recovered at 102 centimeters below the surface in Unit 21 where a concentration of calcined bone, chipping debris, and flecks of charcoal were found. Due to the close proximity of Feature 11 and 13 in adjacent units leads to the probability that the features are associated (Deal et. al. 2015). Unit 47 housed Feature 14 which contained a small amount of chipping debris and charcoal flecks. Another unique feature to the site, Feature 15, was located in Unit 51 along the eroding riverbank and densely comprised entirely of charcoal. Three large sediment sample bags

were taken from Feature 15 and were sieved during post-excavation analysis, recovering two lithic fragments whose material macroscopically matched a Transitional Archaic projectile point from Unit 33.

5.3 Cultural Components

5.3.1 Woodland Period

The Woodland components at the Boswell site date to the Middle (2,000-1,000 BP) and Late (1,000-450 BP) Woodland periods, as evidenced by reconstructed pottery manufacture and design (Figure 5-9). Although there is an absence of diagnostic lithic artifacts, there is an abundance of 1,921 ceramic sherds and fragments representing at least five individual vessels (Deal et. al. 2015: 10). Aside from a lack of diagnostic lithic artifacts the medial portion of a groundstone axe was recovered during the 2011 excavations, in addition to either an axe preform or lap anvil recovered in the bulk wall between Unit 46 and 50. The Woodland component of the Boswell site contains interesting ecofacts, both faunal and floral. Calcined bone recovered from Feature 4 and 5 in Units 7 and 23 contained the remains of at least three beavers (*Castor canadensis*) along with other unidentifiable medium sized mammals and at least one bird (Harris 2015). Paleoethnobotanical analysis has revealed a diversity of flora used during the Woodland periods, including: 266 charred cranberry seeds (*Viburnum sp.*), 79 charred chokeberry seeds (*Prunus virginiana*), 72 charred soapberry seeds (*Shepherdia canadensis*), and 62 charred fir needles (*Abies sp.*) (Deal et. al. 2015: 17-19). A

radiocarbon date of 2,190 ± 30 BP (Beta-344775) from Feature 3 in Unit 5 represents the Middle Woodland component at the Boswell site.

Figure 5-9: A map showing the dispersal of cultural material associated with the Woodland component of the Boswell site. (Courtesy of Bryn Perry-Tapper)

5.3.2 Transitional Archaic Period

The Transitional Archaic (4,100-2,700 BP) component of the Boswell site includes all three temporal phases of the broadpoint and cremation burial co-tradition. A total of 71 artifacts associated with the Transitional Archaic period were recovered during the 2014 and 2015 field seasons; including the 2009 original surface collected artifacts

(Figure 5-10). One specimen included in this collection comes from a close neighboring site known as the Wilkins site (BfDf-01). The Wilkins site is located at the first southern bend of the Annapolis River roughly 100 meters from Locus 2 of the Boswell site. A three-piece collection of artifacts was recovered by the landowner and includes: a bipointed biface; a heavily weathered preform, and a quartz projectile point from the Woodland period. The bipointed biface is similar to other specimens analyzed in the region and will be described in the succeeding section.

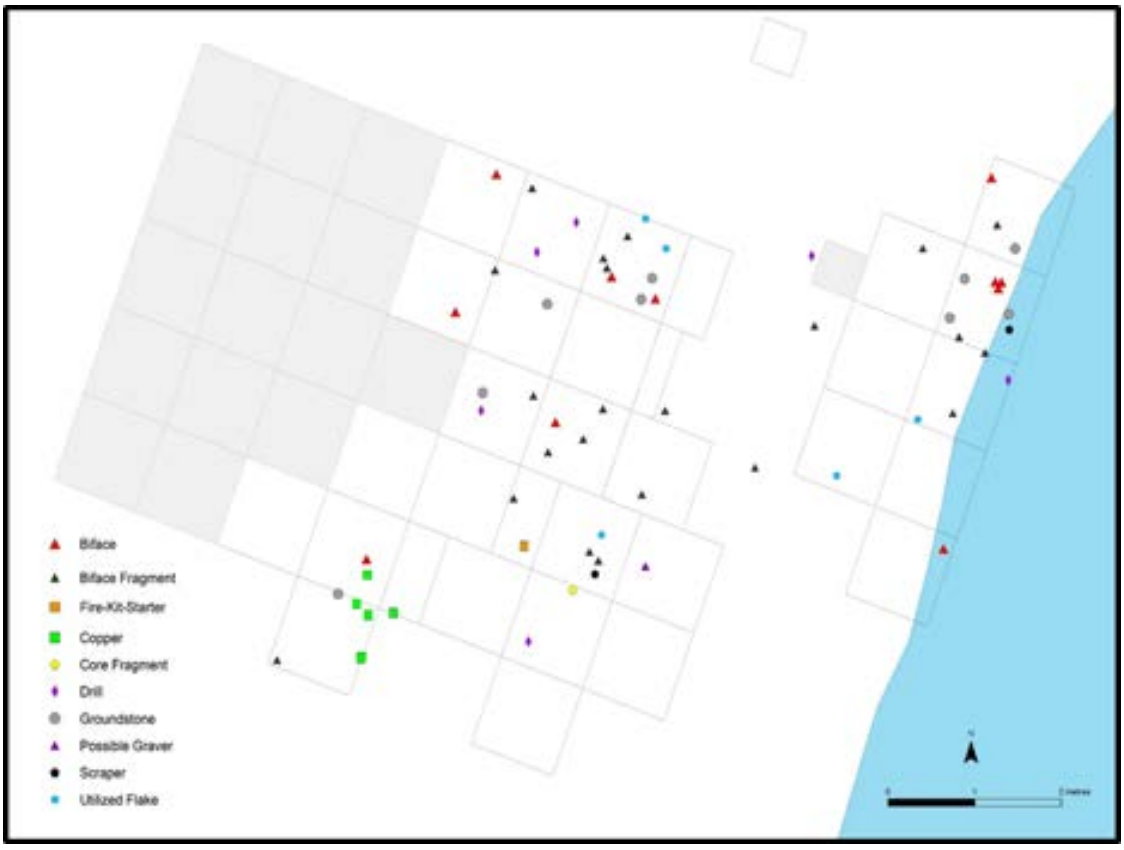

Figure 5-10: A map showing the dispersal of the Transitional Archaic component artifacts along the lower terrace and riparian zone. (Courtesy of Bryn Perry-Tapper).

Two radiocarbon dates associated with the Transitional Archaic component represent the shift between the first temporal phase affiliated with Lehigh/Snook Kill/Atlantic stylizations, and the second temporal phase often affiliated with Susquehanna Broad/ Wayland Notched. The dates are 3,630 ± 30 BP (Beta-409373) and 3,659 ± 46 BP (UOC-1208) and represent the juncture of the first and second temporal phases. The second radiocarbon date comes from a charcoal sample in close proximity of two in situ projectile points uncovered in Units 33 and 37. A third radiocarbon date correlates with the last temporal phase regularly associated with the Orient stylization lithic materials found at the site, along with six copper nodules, and dates to 3,211 ± 38 BP (UOC-1207). The six copper nodules represent the earliest known evidence of precontact metallurgy in Nova Scotia. These three temporal phases can be spatially grouped at the site providing insight into site use over time (Figure 5-11).

The riparian zone revealed a unique collection of twenty artifacts associated with the Transitional Archaic, along with an individual artifact that is associated with the Moorehead phase of the Late Archaic period. The projectile point was made of White Rock quartzite and is characterized by its narrow, single shouldered blade and rounded contracting stem. These projectile points have occurred alongside Transitional Archaic artifacts in the region (Borstel 1982; Deal 1986; Bourque 1995: 44-46). Aside from flaked stone tools a few groundstone artifacts were collected including: two celts, one which was recovered in two broken halves, and a gouge preform. Three fragments and one complete perforator have been discovered at the site. Lithic materiality for the Transitional Archaic component is dominated by felsite and also includes quartzite, chert,

jasper, and siltstone. The following sections will further explore lithic analysis, portable x-ray fluorescence, and paleoethnobotany for the Transitional Archaic component of the Boswell site.

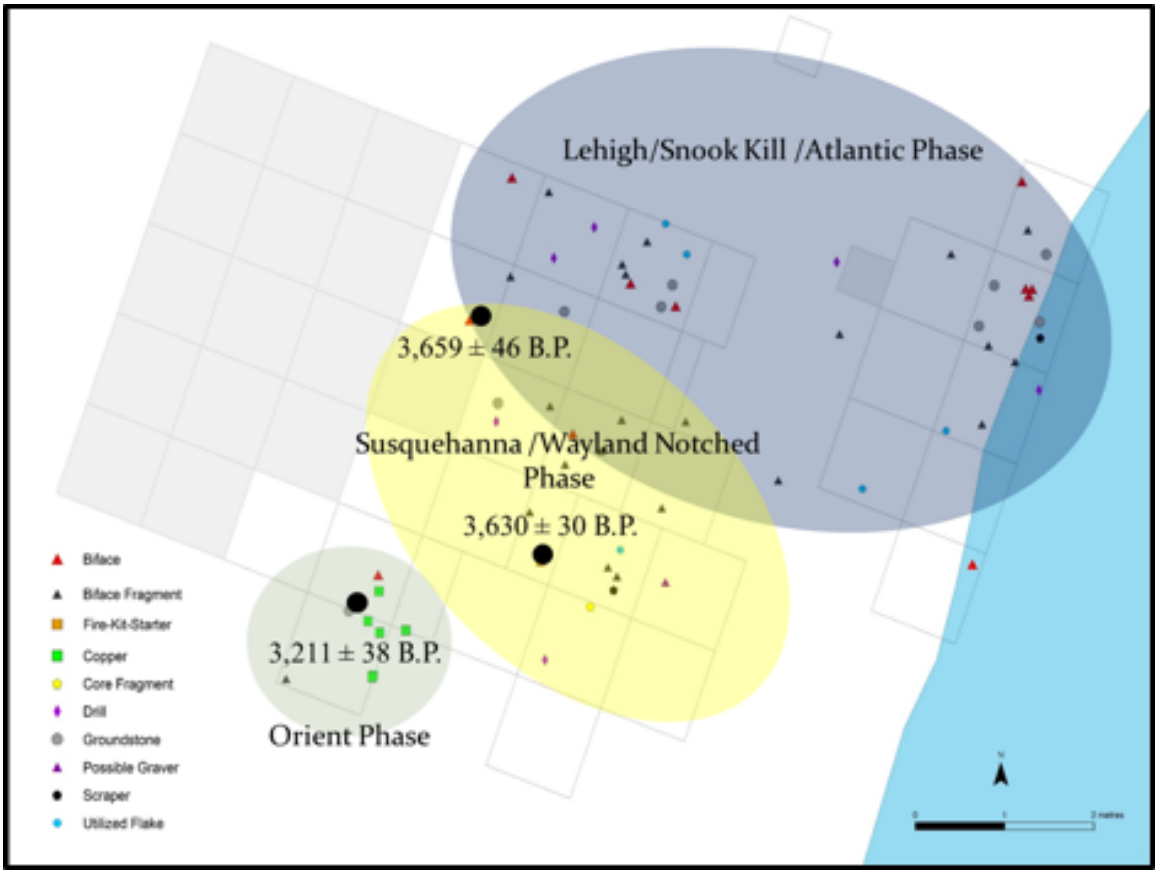

Figure 5-11: Site map displaying the three temporal phases and their spatial placement with correlating radiocarbon dates. (Courtesy of Bryn Perry-Tapper).

5.4 Lithic Analysis of the Transitional Archaic

This section will divide artifacts recovered from the Transitional Archaic component of the Boswell site by observed and measured attributes. The division of

attributes will aid in understanding stages of use-life, temporal utilization, and practical implementation. Lithic analysis will use the same methodology as Christopher Borstel (1982), whose work on the Young site in Alton, Maine, successfully analyzed artifacts by analytical means instead of taxonomic (Rouse 1960). Taxonomic affiliations are applied in order to compare artifacts with published and research data to other sites within the Northeast region. This approach is effectively known as attribute analysis, where an attribute is "the smallest analytical unit distinguished on a set of artifacts" (Borstel 1982: 17).

Attributes are the result of "modes", which are "any standards, concepts, or customs which governs the behaviour of the artisans of a community, which they hand down from generation to generation, and which may spread from community to community over considerable distances" (Rouse 1939). Analytic classification is used to single out cultural modes, and in this case to look at the material used, the technique of manufacture, shape and usage (Rouse 1960: 314; Borstel 1982: 17). While conducting this analysis one must take into account that not all attributes are indicative of modes, but rather exemplify the "personal idiosyncrasies of the artisans" (Rouse 1960: 313). Similar to Borstel's research, this analysis does not classify the artifacts based on artifact provenience, but rather strictly based on co-occurring observable and measureable attributes (Borstel 1982: 17). These co-occurring attributes establish relationships between artifacts both intersite and intrasite, along with the artifacts being indicative of shared modes (Rouse 1960; Deetz 1967; Borstel 1982).

The Transitional Archaic lithic assemblage from the Boswell site was measured for length, width, and thickness. Length was measured along the long axis from the distal tip to the proximal base and width was measured along the perpendicular wide axis either by maximum width (Group 1,7,8,9, and 10) or by shoulder width (Group 2,3,4,5, and 6). The intersection of the two axes is where the thickness measurement was taken, unless otherwise noted. Basal fragments were including in the grouping process for minimal number of individual (MNI) chipped artifacts. Groundstone artifact analysis observes the length from bit edge to poll base, width from the median between bit face and poll face to the opposite surface, thickness from the median between bit side and poll side, and bit width along the worked bit edge (Sanger 1973b; Borstel 1982; Adams 2002). Chipping debris from both Woodland and Transitional Archaic components are observed for spatial analysis to assess where manufacture areas can be identified based on debitage raw material recovered in each unit. Additional techniques, like facet count will be briefly discussed in understanding the practice of manufacture for the Transitional Archaic component.

5.4.1 Group 1: Ovate Base

Most ovate, or rounded, base specimens are complete with one exception of C (BfDf-08: 332&352), which creates a nearly complete artifact (Figure 5-12). Ovate base artifacts are the preform stage of the use-life, and can be concurrently utilized for a variety different functions (Odell 1981, Kelly 1988). Dimensional measurements including length to width and width to thickness ratios establish the reduction process in the use-life of the artifact (Table 5-3). The length to width ratio shows that length

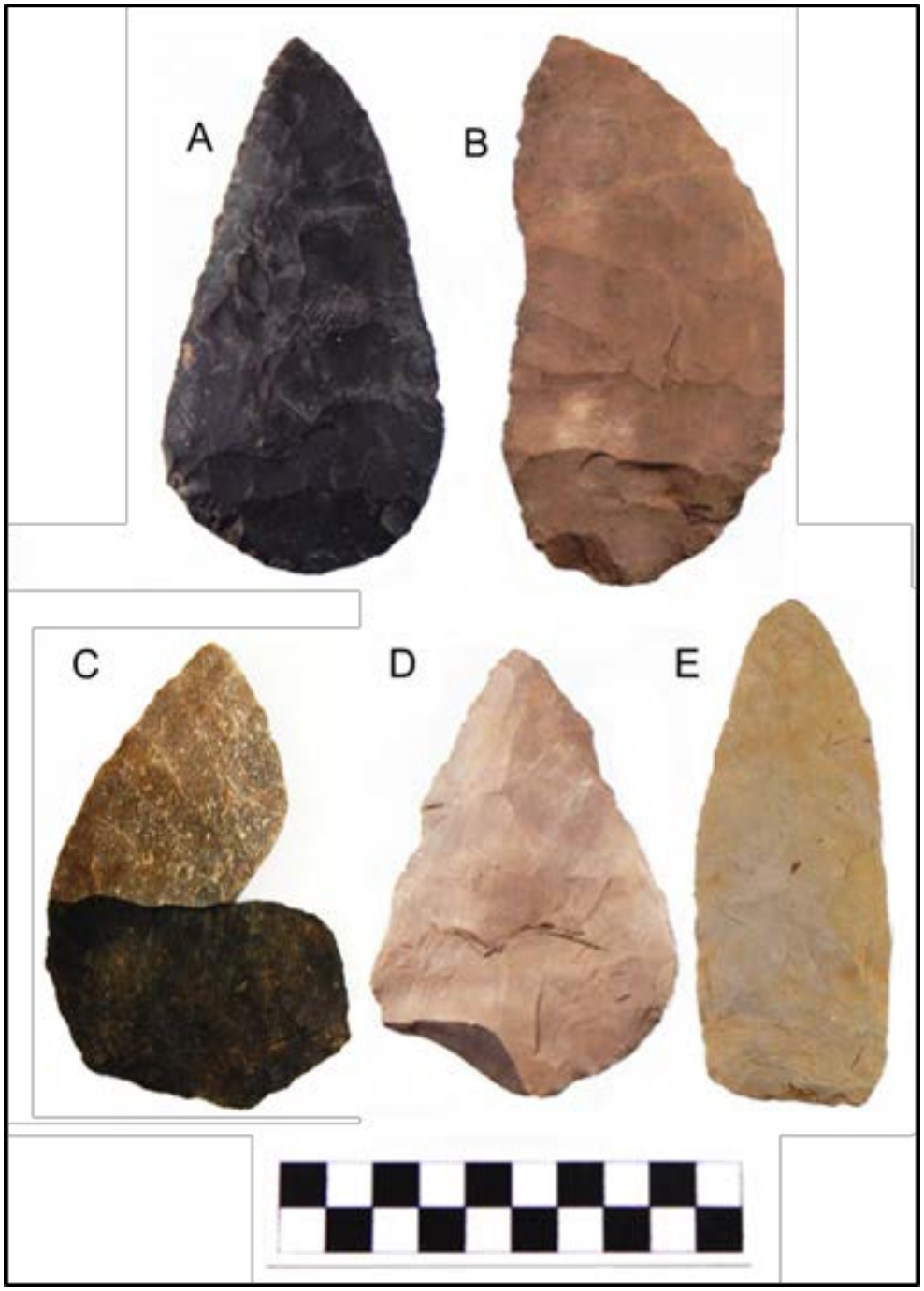

Figure 5-12: Ovate base artifacts from the Transitional Archaic component of the Boswell site. A (BfDf-08:1), B (BfDf-08:322), C (BfDf-08:332&352), D (BfDf-08:321), E (BfDf-08:352).

Table 5-3: Dimensional Measurements of Ovate Base Artifacts

Artifact	Unit	Material	Length	Width	Thickness	L:W	W:T
BfDf-08:1	-	Dark Volcanic	127.0	62.0	13.0	2.0	4.8
BfDf-08:321	42	Felsite	102.0	64.6	12.8	1.6	5.0
BfDf-08:322	42	Felsite	129.7	60.6	13.0	2.1	4.6
BfDf-08:342	46	Felsite	113.2	41.2	10.9	2.7	3.8
BfDf-08:332 & 352	42	Quartzite	100.5	62.9	10.1	1.6	6.2
		n	5	5	5	5	5
		$\bar{x}$	114.5	58.3	12.0	2.0	4.9
		σ	13.6	9.6	1.4	0.5	0.9

averages to twice the size of width, while the width thickness ratio establishes that the width average is roughly five times the size of the thickness average. In analyzing the lateral cross section; two of the artifacts (A and C) are biconvex, while two artifacts (B and E) are plano-convex, and another (D) is diamond shaped. Lithic materials represented in this group incude of felsite (3), a dark volcanic and quartzite (Table 5-3). Broad flaking scars, expanding from the edge toward the longitudal axis are exhibited on both surfaces of all specimens. Striking platforms are evident on all specimens within the proximal margin, either on the proximal left or right.

As preforms some of the artifacts (A, C and D) would be regionally identified as Boats Blades (Dincauze 1968; Bourque 1995). Artifact B can be seen as an ovate base preform with a present semi-lunar, or ulu, function (Suttie 2005: 100-104). Artifact E was recovered from Unit 46 in association with Feature 11, copper nodules and a tanged projectile point base (BfDf-08:364) , and a radiocarbon date of 3,211 ± 38 BP (UOC-

1207). In addition to the lanceolate shape of artifact E it has a fluted basal flake reduction, which appears on Orient Fishtail style projectile points, placing this artifact as an Orient Fishtail (Group 6) preform (Ritchie 1965a: 168, 172; Boudreau 2008: 35).

5.4.2 Group 2: Broad Contracting Stem

There are two broad contracting stem bifaces in the Transitional Archaic component of the Boswell site (Figure 5-13). In lateral cross section artifact F is plano-convex and artifact G is biconvex. These bases are convex, and shoulder to stem intersection is indeterminate. Again, like the ovate base artifacts, these also exhibit broad thinning flake scars widening from the edge to the longitudal midline, in addition to small flake removal along the edges, or arrises (Borstel 1982: 26). The stems tapered form is caused by basal thinning, where small flake reductions are made on both faces of the biface. Striking platforms have been identified on the proximal stem base of both artifacts. The length to width ratio of the complete artifact (G) expresses the length being twice the width like the ovate base specimens, while width to thickness ratios are slightly more than five times the width to the thickness of these bifaces (Table 5-4).

Table 5-4: Dimensional Measurements of Broad Contracting Stem Bifaces

Artifact	Unit	Material	Length	Width	Thickness	L:W	W:T
BfDf-08:319	43	Flow Banded Rhyolite	119.5	60.1	11.0	2.0	5.5
BfDf-08:355	11	Felsite	51.5	47.9	9.7	1.1	4.9
		n	1	2	2	1	2
		$\bar{x}$	-	54.0	10.4	-	5.2

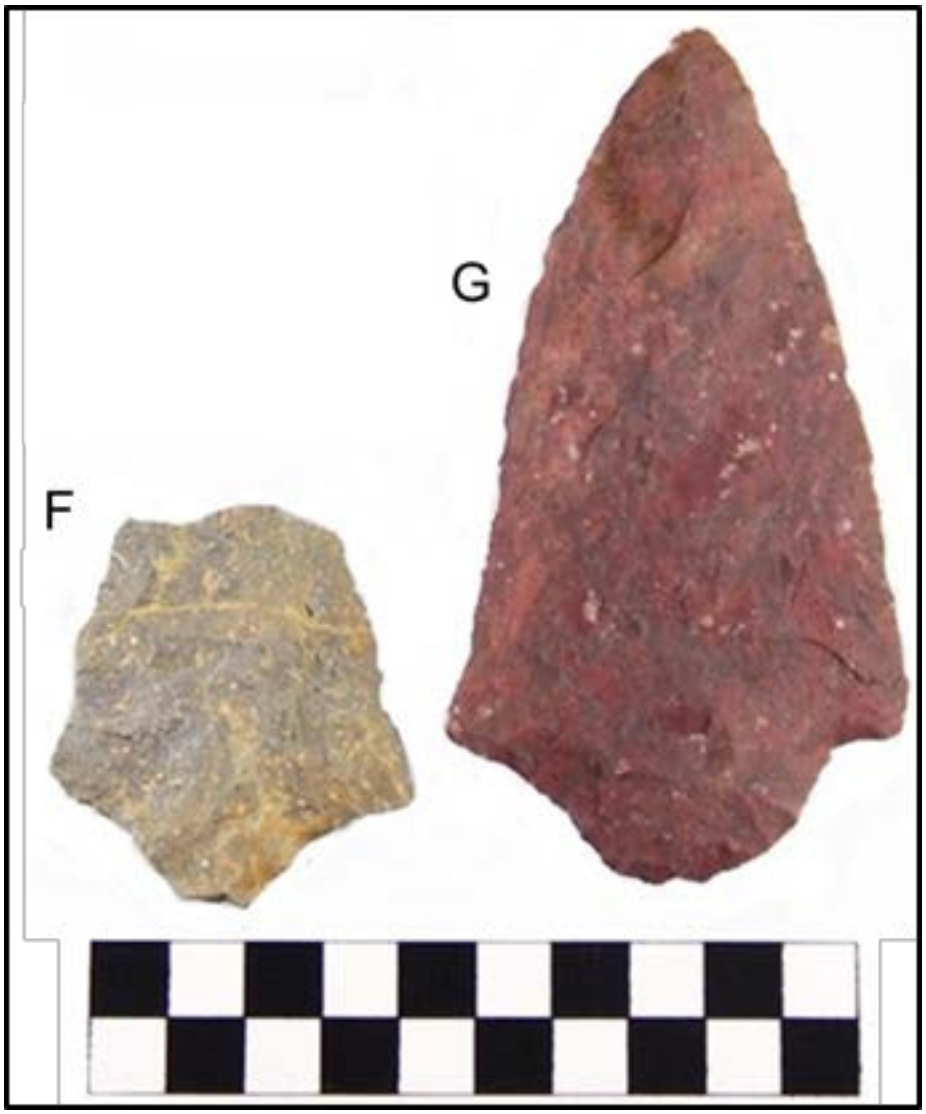

Figure 5-13: Broad Contracting Stem bifaces from the Transitional Archaic component of the Boswell site. F (BfDf-08:355), G (BfDf-08:319).

The lithic material of both bifaces are from unidentified felsite sources, and artifact G will be further discussed in the portable x-ray florescence section. In regional published literature this group fits well with broadpoint manufacture and is often affiliated with the Snook Kill or Atlantic biface stylization (Witthoft 1953; Ritchie 1965a; Dincauze 1968, 1972). Some archaeologists have interpreted the function of this group as

a knife (Ritchie1965a: 138), or as a stage of use-life manufacture (Bourque 1971: 60); both are plausible. This group, or stage of the use-life certainly has relations with both Group 4 and 5 when further flake reduction is conducted. Regionally, similar bifaces have been discovered at the Weir site (Ritchie 1965a: 139, Plate 49, Number 30), the Nevin site (Bourque 1971), Turner Farm site (Bourque 1975, 1995), and the Hirundo/Young sites (Borstel 1982: 26, Plate 4).

5.4.3 Group 3: Broad Contracting Stem with Proximal Straight or Concave Base

No artifacts recovered from the Boswell site fit the parameters of this grouping. On a regional scale this stylization would be otherwise defined as a Mansion Inn Blade (Dincauze 1968: 16-23). This group slightly differs from Group 2 when focusing on the concave-contracting or broad straight stem with a base proximally either concave or straight (Dincauze 1968: 17). Dincauze separates the Mansion Inn Blade into three groups: Wayland, Coburn, and Dudley, based on size. These blades are preforms for projectile points known as Wayland Notched Type, where the edge of blade is retouched and beveled, and the stem is notched (Dincauze 1968: 23). These bifaces have been found at regional sites like: Watertown Arsenal, the Vincent site, the Mansion Inn site (Dincauze 1968: III-IV, V, IX-XVII), and the Turner Farm site (Bourque 1975; 1995: 107 and Plate 6.4).

5.4.4 Group 4: Expanding Broad Stem

The minimal number of individual (MNI) artifacts in Group 4 is four, but only two have measurable attributes (Table 5-5) (Figure 5-14). Two artifacts (H and I) are present in the group due to their observable attributes of basal expansion from either the stem neck or notch. In lateral cross section artifact J is biconvex, while artifact K exhibits a diamond shape. Neither artifact of ordinal accessibility (J and K) are complete in length, but in width to thickness ratio displays the width to be three times the thickness. The thickness of these artifacts correlates with the thickness of Group 1 and 2. Rounded shoulders are present on both J and K, in addition to K exhibiting a tanged stem base. Artifact J is made from a felsite, while artifact K was macroscopically identified as being made of Ross Creek Jasper located southwest of Scots Bay, Nova Scotia.

Table 5-5: Dimensional Measurements of Expanded Broad Stem Bifaces

Artifact	Unit	Material	Length	Width	Thickness	L:W	W:T
BfDf-08:237	32	Felsite	37.2	29.0	9.5	1.3	3.1
BfDf-08:316	33	Ross Creek Jasper	49.7	38.9	10.7	1.3	3.6
		n	-	2	2	-	2
		$\bar{x}$	-	34.0	10.1	-	3.3

Figure 5-14: Expanding Broad Stem bifaces from the Transitional Archaic component of the Boswell site. H (BfDf-08:204), I (BfDf-08:353), J (BfDf-08:237), K (BfDf-08:316).

Regional comparisons for artifacts J and K share unique insights into lithic manufacture and repurpose. Artifact J appears to be a mesial broken stemmed base with one intact shoulder, in addition to having a rounded bit where the break would have occurred. This establishes that it was abrasively used as a fire-kit-starter and shares a likeness to specimens around the region at sites including the Weir site (Ritchie 1965a: 139, Plate 49, Number 27), the O'Neil Site (Ritchie 1969a: 158, Plate 51, Number 15), and Turner Farm (Bourque 1995: 112, Plate 6.8). Artifact K fits within the parameters of a Susquehanna Broadpoint (Witthoft 1953; Ritchie 1965a; Boudreau 2008: 29) more so than the Wayland Notched Type (Dincauze 1968). Regionally, artifact K is a one-of-a-

kind specimen due to the lithic material used, aside from that attribute it is represented at sites from Maine and the Maritime Peninsula including: Turner Farm (Bourque 1971, 1975, 1995), Walter B. Smith site (Moorehead 1922), and Tusket Falls (Davis 1991b).

5.4.5 Group 5: Contracting Stem

Group 5 is the largest stemmed biface assemblage comprising of a minimum number of ten individual (MNI) artifacts with four (P, Q, R, and S) not included for measurement since they are proximal stem base fragments (Table 5-6) (Figure 5-15). Contracting stem bifaces are an alternative divergence of lithic manufacture and use-life, alongside Group 4, from the preform bifaces of Group 1 and 2. Contracting stem bases in this assemblage are seen as marginally contracting or nearly parallel sided (Borstel 1982: 26). All junctures of base to stem, stem to shoulder, and shoulder to blade are clearly outlined. In a lateral cross section artifacts L, M, T and U are biconvex, artifact N is diamond shaped, while artifact O is slightly plano-convex.

Table 5-6: Dimensional Measurements of Contracting Stem Bifaces

Artifact	Unit	Material	Length	Width	Thickness	L:W	W:T
BfDf-08:2	-	Felsite	56.0	49.0	8.0	1.1	6.1
BfDf-08:311	37	Flow Banded Rhyolite	63.7	30.1	5.3	2.1	5.7
BfDf-08:318	41	Kineo-Traveller Porphry	30.1	36.2	7.4	0.8	4.9
BfDf-08:320	42	Felsite	82.4	57.2	7.1	1.4	8.1
BfDf-08:366	47	Felsite	60.3	33.5	9.4	1.8	3.6
BfDf-08:351	43	Felsite	23.0	39.0	8.4	0.6	4.6
		n	3	6	6	3	6
		$\bar{x}$	68.8	40.8	7.6	1.8	5.5
		σ	11.9	10.3	1.4	0.9	1.5

Figure 5-15: Contracting Stem bifaces from the Transitional Archaic component of the Boswell site. L (BfDf-08:2), M (BfDf-08:320), N (BfDf-08:366), O (BfDf-08:311), P (BfDf-08:238), Q (BfDf-08:317), R (BfDf-08:345), S (BfDf-08:367), T (BfDf-08:351), U (BfDf-08:318).

Length to width ratios of complete bifaces (M, N, and O) establish a length nearly twice the width, while width to thickness ratios average to width being five times larger than the thickness. The thickness of the Group 5 bifaces averages thinner than those of Group 1 and 2, which is explained by the flake scarring that is evident on the artifact faces. Broad flake scars are apparent on both faces while small shaping flake reduction along the edges is nearly absent, and basal thinning is present in a few artifacts (L, M, O, and U). All stems are manufactured by the corner reduction of preforms (Group 1 and 2) with a few large flake reductions on both faces. Group 5, similarly to Borstel's (1982: 26)

research, did not see any obvious case of “a single steeply inclined flake scar” that had been reported with Dincauze’s Atlantic bifaces (Dincauze 1972: 41).

Group 5 lithic raw material is dominated with felsite with specific sourcing being a flow banded rhyolite specimen (O) and Kineo-Traveller porphyry (U). The flow banded rhyolite specimen has a similar appearance to a Mansion Inn Blade artifact recorded by Dincauze from the Mansion Inn site (Dincauze 1968: Plate XII, Number 1). Artifact U will be discussed in further detail later on in this chapter. Artifacts L and M are related in shape, yet reveal the fine line between stages of lithic use-life through use-wear. Artifact M is a complete asymmetrical bifacial specimen with one convex blade edge and the other is concave with an elongated barbed shoulder. Both artifacts exhibit shoulder to stem angles around 90°, while there is a presence of a shoulder to stem juncture notch (photographed proximal left on artifact L, and photographed proximal right on artifact M). The notch displayed on artifact L which would be defined as a Snook Kill style projectile point (Ritchie 1965a: 134-142) based on its heavily retouched blades, while artifact M would be defined as an Atlantic style projectile point (Dincauze 1972). The function of the notch appears to deal with the hafting of the biface, and alternatively represents an individual or communal innovation that has not been recorded in previous literature.

Regional comparisons of these artifacts, as previously mentioned, have similarities to Snook Kill (Ritchie 1965a: 134-142; Ritchie 1971b: 47-48) and Atlantic styles (Dincauze 1972: 41-42). The radiocarbon date associated with artifact O (BfDf-08:311) was 3,659 ± 46 BP (UOC-1208) which represents the shift between the

aforementioned Lehigh/Snook Kill/Atlantic temporal phase and the latter Susquehanna/Wayland Notch temporal phase. Similar projectile points have been recovered at sites in Maine and the Maritime Peninsula including: the Hirundo/Young sites (Sanger et. al. 1977; Borstel 1982), Eddington Bend (Snow 1975: 53), Ellsworth Falls (Byers 1959), Turner Farm (Bourque 1971, 1975, 1995), Mud Lake Stream (Deal 1986), Portland Point (Harper 1956), Tusket Falls (Davis 1991b), and Gaspereau Lake (Erskine 1959, 1967; Sanders 2014).

5.4.6 Group 6: Narrow Blade with Equal or Greater Tanged Base

Group 6 is summed up by a single artifact (Table 5-7) (Figure 5-16). It is incomplete in length and width and was identified as being in Group 6 based on one noticeable shoulder (Photographed proximal right/mesial right), which is rounded and narrower than the tanged base. The artifact is made out of siltstone, and its striking platform is on the proximal base edge. The base shows small flake reductions, especially around the broad side notching. This specimen would be defined as an Orient Fishtail projectile point (Ritchie 1958, 1959, 1965a; Boudreau 2008: 35) and is found at sites in Maine and the Maritime Peninsula such as: Turner Farm (Bourque 1971, 1975, 1995), Portland Point (Harper 1956), Rum Beach (Black 2000), and Tusket Falls (Davis 1991b).

Table 5-7: Dimensional Measurements of a Narrow Blade with a Greater Tanged Base.

Artifact	Unit	Material	Length	Width	Thickness	L:W	W:T
BfDf-08:364	50	Siltstone	13.6	20.8	5.7	0.7	3.6

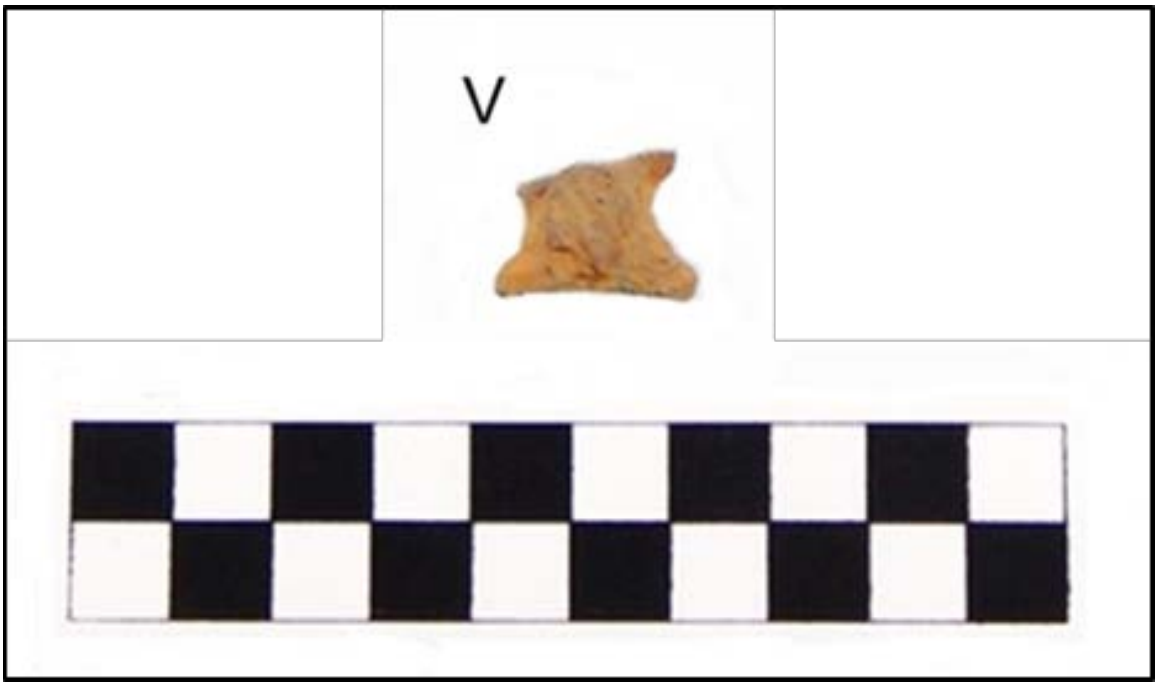

Figure 5-16: The Narrow Blade with a Greater Tanged Base from the Boswell site (BfDf-08:364).

5.4.7 Group 7: Perforators

A total of five perforators were recovered from the Boswell site with two complete specimens (W and AA) (Table 5-8) (Figure 5-17). All perforators are bifacially flaked and biconvex in cross section. Two artifacts (Y and Z) are medial fragments while artifact X is a proximal fragment. Artifact Z is the only artifact in this group that appears to be manufactured from lithic material that was not previously a grouped biface. The remaining four specimens display signs of previous use-life where artifact W was

formerly a Group 5 biface and artifact AA was formerly a Group 4 biface. Based on artifact W the thickness of the perforator appears to correlate with the thickness of Group 5 bifaces establishing that the perforator is the longitudal axis of a heavily flake reduced biface. Macroscopically the lithic material identification is felsite, which echoes the predominately used material for Groups 1 through 6. On a regional scale perforators have been defined as either drills or awls and are found at: Turner Farm (Bourque 1995: 113, Plate 6.9), Hirundo/Young sites (Sanger et. al. 1977; Borstel 1982), Eddington Bend (Smith 1926: 59-84), and Mud Lake Stream (Deal 1986).

Table 5-8: Dimensional Measurements of Perforators.

Artifact	Unit	Material	Length	Width	Thickness	L:W	W:T
BfDf-08:215	28	Felsite	52.4	10.8	4.9	4.9	2.2
BfDf-08:306	-	Felsite	47.4	14.0	7.5	3.4	1.9
BfDf-08:328	33	Felsite	53.8	10.2	5.1	5.3	2.0
BfDf-08:357 &348	40,11	Felsite	54.9	20.7	9.0	2.7	2.3
BfDf-08:336	41	Felsite	66.7	17.8	7.8	3.7	2.3
		n	2	5	5	2	5
		$\bar{x}$	60.8	14.7	6.9	3.2	2.1
		σ	8.4	4.5	1.8	0.8	0.2

Figure 5-17: Perforators from the Transitional Archaic component of the Boswell site. W (BfDf-08:336), X (BfDf-08:306), Y (BfDf-08:215), Z (BfDf-08:328), AA (BfDf-08:357&348).

5.4.8 Group 8: Bipointed Bifaces

A singular artifact from the neighboring Wilkins site (BfDf-01:1) along the Annapolis River constitutes Group 8 (Table 5-9) (Figure 5-18; Figure 5-19). In regional archaeological literature these bipointed bifaces have been lumped with large shouldered bifaces under the term “Boats Type Implement Blades” (Dincauze 1968: 26-27), which was coined after being discovered at the Boats site in Dighton, Massachusetts. Bipointed

bifaces are observed as lithic implements that are not in the manufacturing progression, or use-life, of the previous groups mentioned. Artifact AB exhibits non-uniform broad flake scars, including smaller flake reduction along the arrises establishing an extensive amount of use wear. In cross section artifact AB is a diamond shape with an evident striking platform on the photographed proximal point, and no evidence of grinding. Macroscopic use wear analysis has determined that this specific bipointed biface was utilized for chopping (e.g. like a meat cleaver).

All dimensional mesurements in comparison to regional literature, along with specimens recorded during regional analysis, suggest a Transitional Archaic association (Boulanger and Eren 2015: 134-141). The uniqueness of this bipointed biface from other studied specimens is that the raw material it is composed of is quartzite, which is abundantly found in various forms in southwestern Nova Scotia. Regional comparisons are found in New England and Eastern Canada at sites such as: the Boats site (Rose 1953; Dincauze 1968), Coburn site (Kremp 1961), Site 95.20 (Cox 1991), Turner Farm (Bourque 1995), Indian Springs site (Bourque et. al. 2006: 316), Cary's Garden Complex (Bourque et. al. 2006: 315-316), and in Tadoussac, Quebec (Wintemberg 1943).

Table 5-9: Dimensional Measurements of the Bipointed Biface

Artifact	Unit	Material	Length	Width	Thickness	L:W	W:T
BfDf-01:01	-	Quartzite	120.8	49.9	13.3	2.42	3.75

Figure 5-18: The Bipointed Biface from the Wilkins site (BfDf-01:1).

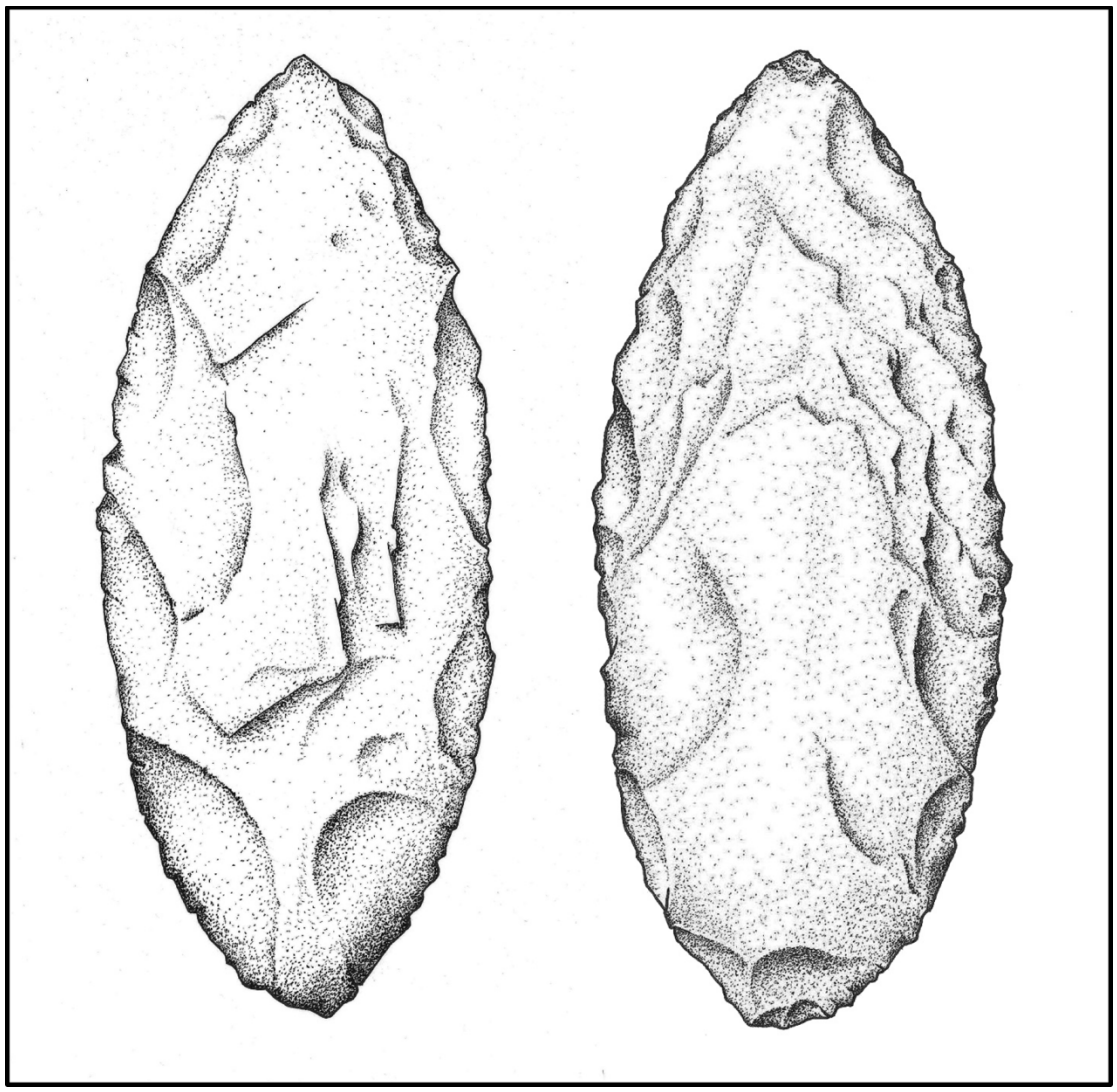

Figure 5-19: A detailed drawing displaying the flaking scars on both faces of the Bipointed Biface (BfDf-01:1). (Courtesy of Courtney Coldon)

5.4.9 Group 9: Non-Stem Scrapers

The two specimens in this group have a distinct bifacial manufacture and are ovoid in plan (Table 5-10) (Figure 5-20). These artifacts are thick in cross section with artifact AC being plano-convex and artifact AD being biconvex. Broad flaking scars are

evident on artifact AD with smaller flake reduction present along the distal blade edge. Artifact AC exhibits extensive use wear along the blade edges. Each specimen has intact cortex on the face of the artifacts. Both specimens are made from a distinct purple-tan flow banded rhyolite which appears to be related to other flow banded rhyolite artifacts. Although these are not distinctly diagnostic to the Transitional Archaic period, specimens like these have been found at sites like: Turner Farm (Bourque 1995, Plate 6.8), and the Young Site (Borstel 1982: 32, Plate 6, Letter H).

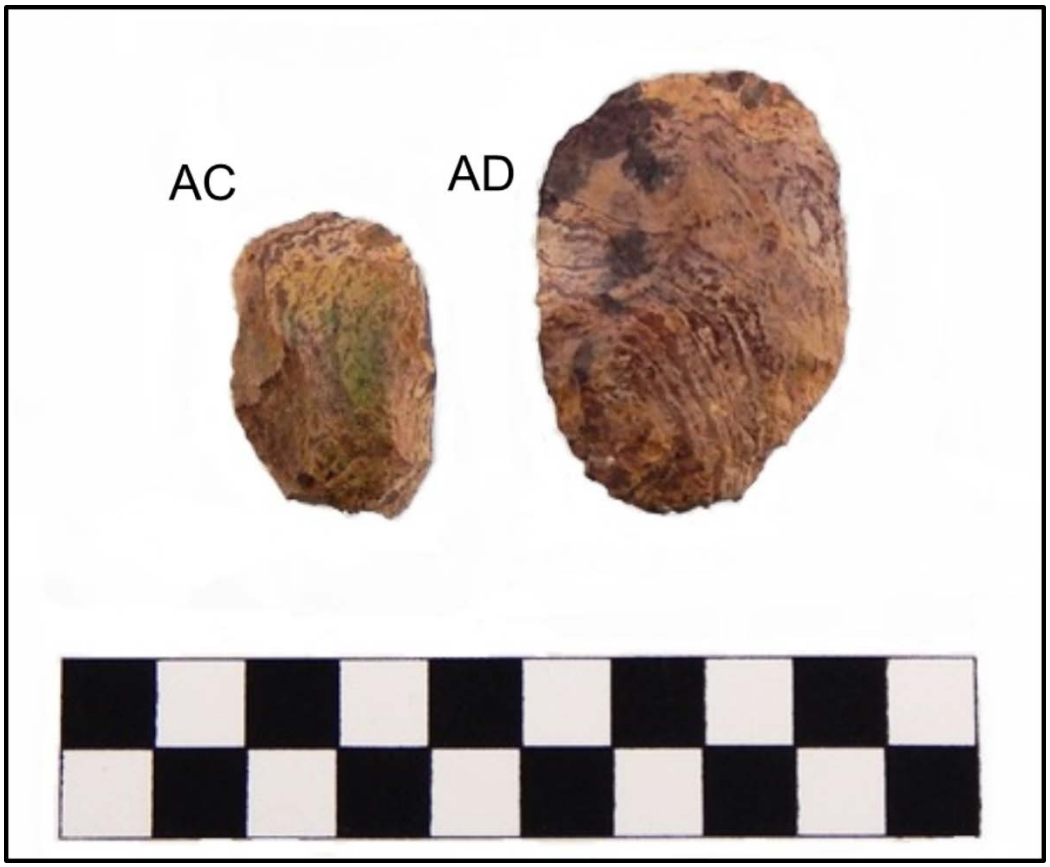

Figure 5-20: Non-Stem Scrapers from the Transitional Archaic component of the Boswell site. AC (BfDf-08:331), AD (BfDf-08:150).

Table 5-10: Dimensional Measurements of Non-Stem Scrapers

Artifact	Unit	Material	Length	Width	Thickness	L:W	W:T
BfDf-08:150	-	Flow Banded Rhyolite	49.4	35.0	11.7	1.4	3.0
BfDf-08:331	42	Flow Banded Rhyolite	35.3	23.0	10.7	1.5	2.2
		n	2	2	2	2	2
		$\bar{x}$	42.3	29.0	11.2	1.5	2.6

5.4.10 Group 10: Chipped Stone Nodules

Group 10 includes two chipped stone nodules recovered in the Transitional Archaic component (artifact AE) and at suggestive depths related to the Transitional Archaic period temporal parameters (artifacts AF) (Figure 5-21). One complete artifact (AF) displays core fracture and a striking platform on its proximal edge with broad flake scars bifacially. The function of the artifact is expressed as a chopper due to its rough use wear pattern (Hoffman 1991: 38). The chipped stone nodule fragment was recovered with a mesial/distal flaked perforator fragment (artifact Y) in Unit 28. Both artifacts are made from a flow banded rhyolite that appears to be related to both non-stem scrapers, as well as artifact L from Group 5 since its lithic makeup can be identified in the photographed mesial left margin of artifact AF (Table 5-11). The sourcing of this material will be discussed further in the Portable X-Ray Fluorescence section.

Table 5-11: Dimensional Measurements for Chipped Stone Nodule

Artifact	Unit	Material	Length	Width	Thickness	L:W	W:T
BfDf-08:195	13	Flow Banded Rhyolite	73.4	59.6	22.5	1.2	2.6
BfDf-08:221	28	Flow Banded Rhyolite	45.6	38.1	19.4	1.2	2.0
		n	2	2	2	2	2
		$\bar{x}$	59.5	48.8	21.0	1.2	2.3

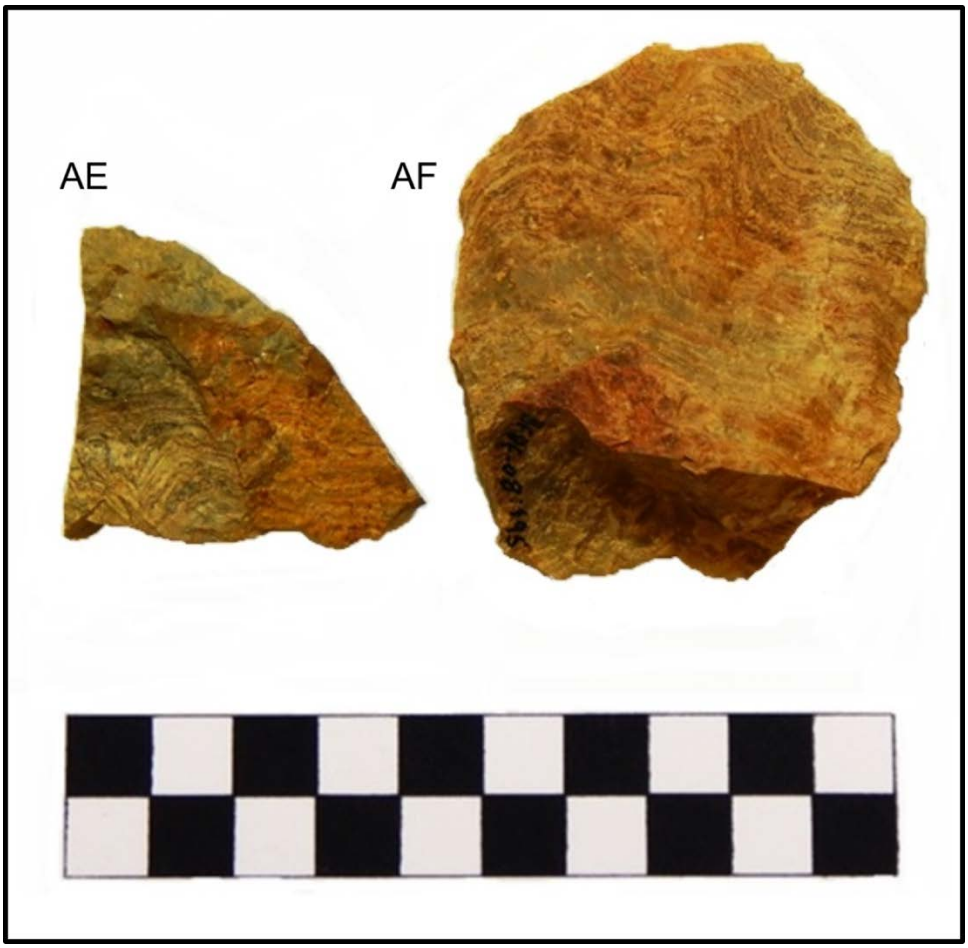

Figure 5-21: Chipped Stone Nodules recovered from the Transitional Archaic component of the Boswell site. AE (BfDf-08:221), AF (BfDf-08:195).

5.4.11 Groundstone: Celts

Two specimens were recovered from the riparian zone of the Boswell site, where one (Ah) was recovered above the eroded river silt, while the other artifact (AG) was recovered within a 20 centimeter proximity in Unit 42 (Table 3-1) (Figure 5-22). Both artifacts exhibit a medial bit expressing its distinction as a celt aside from an adze or gouge, in addition to surficial pecking and grinding. Artifact AG appears to be siltstone through macroscopic analysis and shows signs of heavy use wear toward the poll margin of the implement. This heavy use wear establishes not only flaked reduction for shaping, but also extensive battering on the poll margin and longitudal edges which could be interpreted for heavy wood working activities (Hoffman 1991: 48). In lateral cross section artifact AG is a combination of a trapezoidal and plano-convex, with a partially rounded dorsal face. The artifact also has an asymmetrical bit in plan view. Where artifact AG is broken appears to be a ground groove which was most likely used for hafting onto a wooden handle for better productivity.

Through macroscopic analysis artifact AH appears to be a metasiltstone, which also displays signs on battering on the poll margin. Like artifact AG, artifact AH based on its appearance would render the interpretation of being utilized for wood working activities. Along the longitudal edges of artifact AH there seem to be shallow grooves three-fourths the length of the artifact from the bit. The bit of artifact AH shows heavy utilization. Both specimens are relative in dimensional measurements excluding length. This aids in the understanding of the perpendicular hafting that would be conducted in order to “facilitate grubbing or pulling motions” (Adams 2002: 160). Recovered celts

from sites within the region include: Eddington Bend (Smith 1926: 66-67), Young site (Borstel 1982: 47-48), Turner Farm (Bourque 1995: 116, Plate 6.11), in addition to sites in Massachusetts (Dincauze 1968: 34).

Table 5-12: Dimensional Measurements of Celts

Artifact	Unit	Material	Length	Width	Thickness	L:W	W:T	Bit L
BfDf-08:323	43	Metasiltstone	210.5	33.6	65.1	3.2	1.9	57.35
BfDf-08:324 &334	42	Siltstone	186.1	25.9	59.7	3.1	2.3	54.15
		n	2	2	2	2	2	2
		$\bar{x}$	198.3	29.7	62.4	3.2	2.1	55.8

Figure 5-22: Celts recovered from the riparian zone of the Annapolis River in close association with the Transitional Archaic component of the Boswell site. AG (BfDf-08:324&334), AH (BfDf-08:323).

5.4.12 Groundstone: Gouges

A single artifact represents the gouge collection from the Boswell site. In lateral cross section the gouge is plano-convex and minimally expresses a channel (Table 5-13) (Figure 5-23). Artifact AI is a well-shaped specimen without extensive channelling conducted. The exception of a distal corner (photographed distal right) showing signs of primary abrasion. The poll margin of the artifact becomes narrower, which in indicative of perpendicular hafting. The manufacture of this quartzite artifact is through pecking, and more so grinding. Measurements of the gouge are relative to other gouges found at sites in the region such as: Turner Farm (Bourque 1995), Indian Spring site (Bourque et. al. 2006: 316), Hirundo/Young sites (Sanger et. al. 1977; Borstel 1982: 48-50), Eddington Bend (Smith 1926: 66), Ellsworth Falls (Byers 1959), Mud Lake Stream (Deal 1986), along with other sites in the area of Spednik Lake (Sanger 1975), and in the Harry Piers collection at the Nova Scotia Museum (personal observation).

Table 5-13: Dimensional Measurements of the Gouge

Artifact	Unit	Material	Length	Width	Thickness	L:W	W:T
BfDf-08:325	-	Quartzite	114.6	23.3	56.3	2.0	2.4

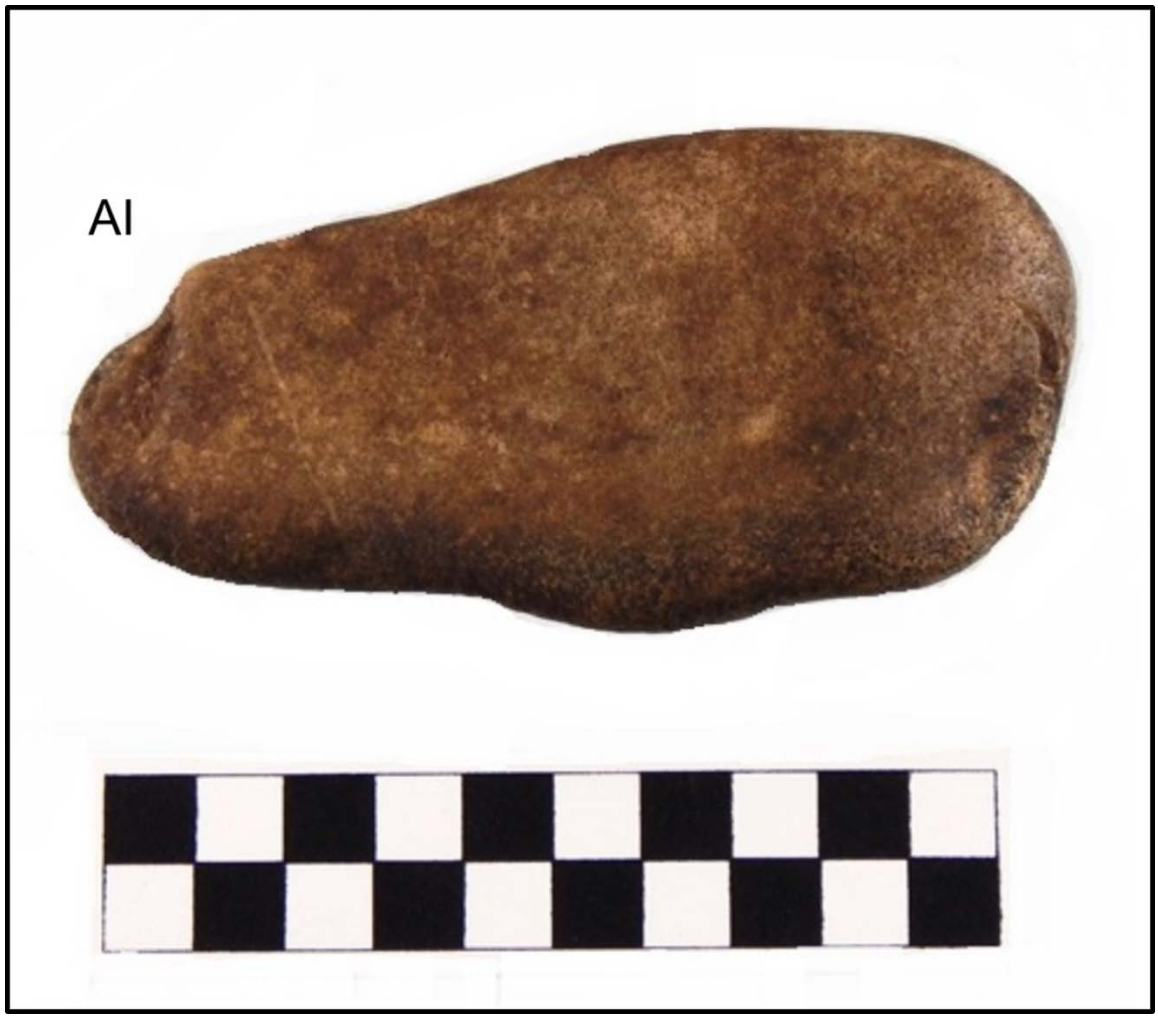

Figure 5-23: Gouge discovered in the riparian zone of the Annapolis River in close association with the Transitional Archaic component of the Boswell site. (BfDf-08:325).

5.4.13 Groundstone: Whetstone

A singular whetstone from the Boswell site was recovered in situ with a projectile point, artifact K from Group 4 (Table 5-14) (Figure 5-24). This artifact could be deemed an abrasive shale lithic, but due to its context and size it appears to be a whetstone used to sharpen other artifacts such as groundstone implements. The specimen is rectangular in

shape and possesses striations on two narrow tabular faces, parallel with the longitudal axis. A regional analysis finds other whetstones at sites such as: Young site (Borstel 1982: 57, Plate 14), Turner Farm (Bourque 1995: 119-121), Indian Spring site (Bourque et. al. 2006: 316), Cary's Garden Complex (Bourque et. al. 2006: 315-316), and Mud Lake Stream (Deal 1986).

Table 5-14: Dimensional Measurements for the Whetstone

Artifact	Unit	Material	Length	Width	Thickness	L:W	W:T
BfDf-08:329	33	Shale	62.1	12.0	9.3	5.2	1.3

Figure 5-24: Whetstone recovered in Unit 33 from the Transitional Archaic component of the Boswell site. (BfDf-08:329).

5.4.14 Chipping Debitage

Chipping debitage comprising of 1,692 pieces from both the Woodland and Transitional Archaic components (Deal et. al. 2015: 12). The range of chipping debris extends from unbroken specimens, to fragmented or amorphous chips and shatter, to utilized flakes. Less than .5% of the chipping debris from the site consisted of fragmented or amorphous flakes reflecting on the utilization of flakes for a multitude of functions (e.g. scraping, cutting, or piercing). The lithic materials are broken down into six different overarching material designations which include: chalcedony, chert, jasper, quartz, quartzite, and rhyolite (Figure 5-25). As shown, the most abundant chipping debris material recovered from the Woodland component is quartzite, while rhyolite, or felsite, dominates the lithic material most frequently discovered in the Transitional Archaic component. Groundstone and slate chipping debris collectively constitute less than five total specimens.

Chipping debris can speak to the practices of flake reduction of a biface in what kind of hammer was used based on the variation and style of striking platforms, including facet count (Frison 1968; Cotterell and Kamminga 1987; Hayden and Hutchings 1989; Andrefsky 2001, 2005). Focusing on the Transitional Archaic period, the high volume of rhyolite contained a spectrum of variation where large broad fakes with less than 3 facets or striking platforms were the largest proportion. The abundance of multidirectional core, or preform, flake debris correlates with the large presence of felsite or rhyolitic chipped stone tools recovered from the Transitional Archaic component of the Boswell site. When relating this observation to published academic literature, Dena Ferran Dincauze's

analysis of flake and flake reduction seemed to mirror the activity being conducted at the Boswell site.

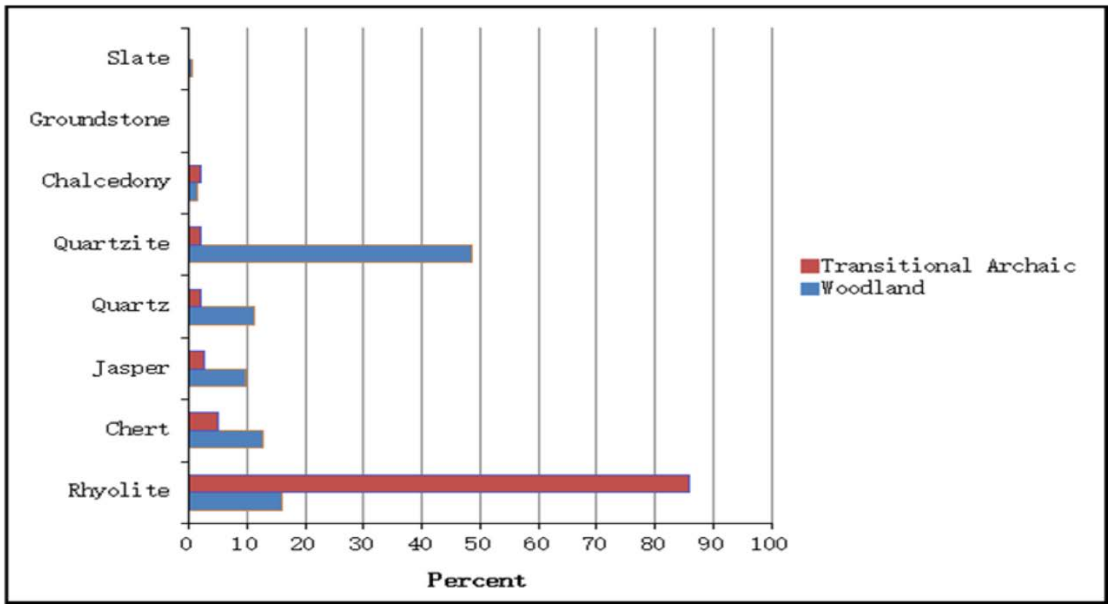

Figure 5-25: Percentage of chipping debris recovered from the Woodland and Transitional Archaic components of the Boswell site.

Dincauze illustrates that the shaping of bifacial tools "was accomplished by direct percussion with hammerstones" (Dincauze 1968: 15-16). She continues to state that flakes exhibit that the core was struck in multiple directions where core facets were practically made, in addition to the presence of bulbs of percussion were produced by "direct blows on such cores" (Dincauze 1968: 16). Although not many flakes with bulbs of percussion were recovered, it is understandable that some artifacts (Group 10), may be reduced cores since it is seen that cores were valued, and not abandoned casually

(Dincauze 1968: 15-16). No hammerstones were recovered from the Transitional Archaic component of the Boswell site.

The spatial distribution of chipping debris can aid in understanding places for lithic manufacture, repair, and reduction (Figure 5-26). When looking at centers of lithic activity for the Woodland component it appears that lithic materials like chert, jasper, quartzite, and quartz are favored during this epoch compared to lithics favored at the Transitional Archaic component of the Boswell site (Figure 5-26: B, C, D, and E). The Transitional Archaic period in the northeast region saw a preference for felsite, or rhyolitic, and chalcedony lithic materials, in addition to a split between chert during the Woodland and Transitional Archaic occupations (Figure 5-26: A, B, and F). The units expressing a high density of felsite chipping debris were in close proximity or related to artifacts recovered in the same or adjacent units. Although each category of lithic material was recovered in both occupied components, there is a defined lithic preference, and the density of lithic chipping debris concentration may reveal taskscapes throughout the Boswell site (Ingold 1993). For example, Woodland period materials appear to intensify around Feature 5.

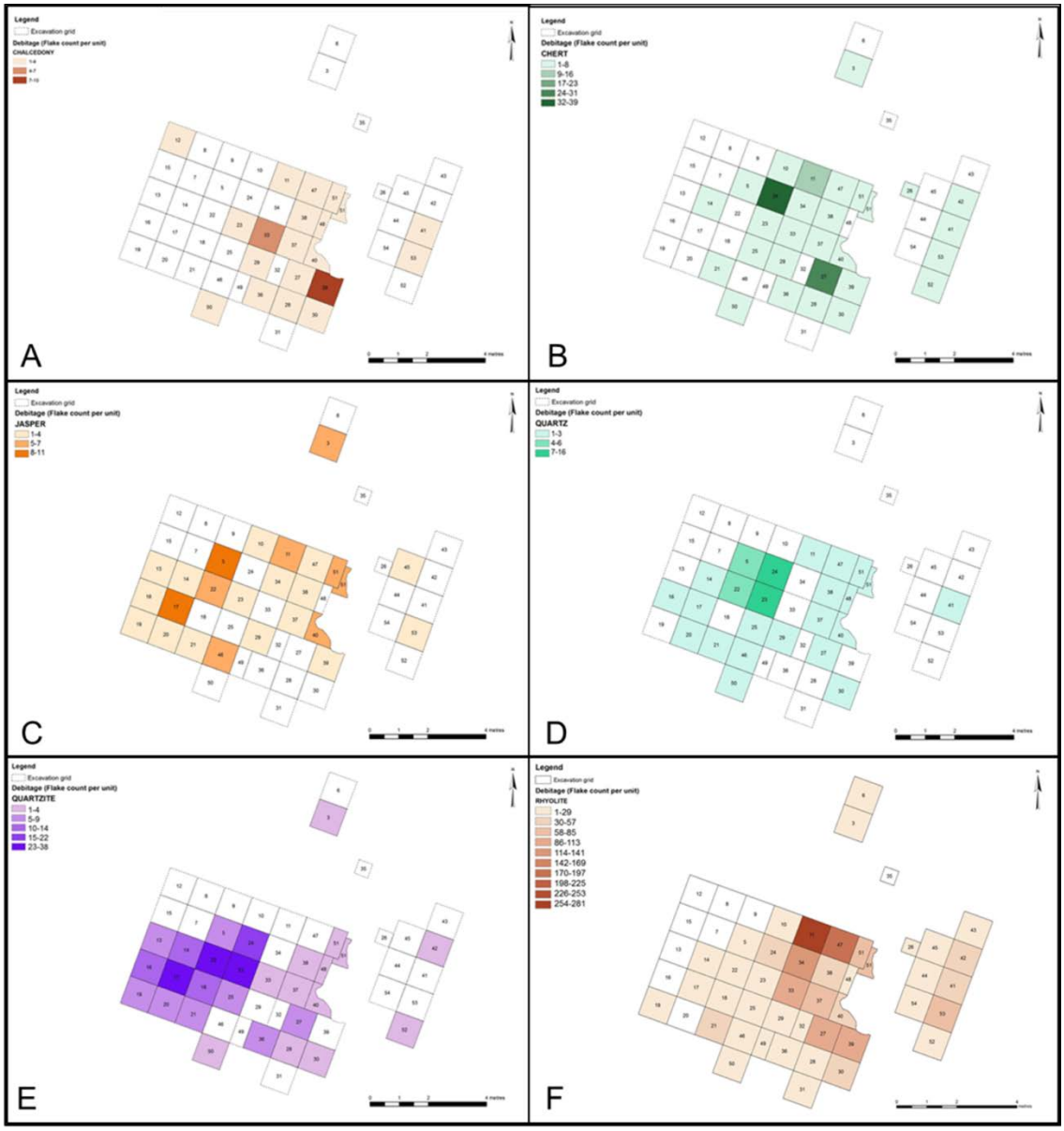

Figure 5-26: Spatial distribution of lithic chipping debris by raw material. (A) Chalcedony, (B) Chert, (C) Jasper, (D) Quartz, (E) Quartzite, (F) Rhyolite. (Courtesy of Bryn Perry-Tapper).

5.5 Portable X-Ray Fluorescence

A total of nine artifacts from the Boswell site (Figure 5-13: G; Figure 5-15: L, O, U; Figure 5-20: AC, AD; Figure 5-21: AE, AF; and BfDf-08:265, utilized flake) were analyzed using an Olympus/Innov-X X5000 portable x-ray spectrometer. Initial macroscopic observations of artifacts AC, AD, AE, and AF were believed to possibly be Mount Jasper or Jefferson and weathered Vinalhaven Banded Spherulitic rhyolites (Adrian Burke 2015, per. comm.). The same artifacts, including artifact L, were thought to possibly originate from a rhyolitic source located along the Fales River in Nova Scotia (Christopher White 2015, per. comm.). Since the artifacts were macroscopically examined to plausibly be sourced from these quarries it was determined to compare the elemental makeup. The author received source data for Mount Jasper and Jefferson from Richard Boisvert, State Archaeologist of New Hampshire, and Tom Williams, Texas State University, in addition to source data for Fales River from Christopher White, Senior Geologist Department of Natural Resources of Nova Scotia. Comparable source samples for Kineo-Traveller Porphyry and Vinalhaven Banded Spherulitic Rhyolite were acquired by the author at the University of Maine, Orono and Vinalhaven Island, Maine.

During the analysis the elements that express meaningful values when comparing the known source to the artifacts were Zr, Nb, Rb, Sr, and TiO2. Artifacts are distinct from Mount Jasper and Jefferson (pink and red) when considering the distributions of Zr: Nb and Rb/Sr: Zr/Nb (Figure 5-27; Figure 5-28). The Fales River source (yellow) runs on the same trend as the other sources and samples, but does not geochemically overlap with

any of the artifacts. The difference of distribution between Mount Jasper, Jefferson, and Fales River sources to the artifacts indicates that the three sources are not related.

Artifact U (light purple) and the Kineo-Traveller Porphyry source (dark purple) overlap in the Rb/Sr: Zr/Nb and TiO2: Zr/Nb graphs to indicate that they are highly likely the same lithic material (Figure 5-28; Figure 5-29). The Vinalhaven Banded Spherulitic Rhyolite (green) and the collection of artifacts (blue) appear to have four points overlapping in the Zr: Nb, Rb/Sr: Zr/Nb, TiO2: Zr/Nb, and TiO2: V (Figure 5-27; Figure 5-28; Figure 5-29; Figure 5-30). The four points that commonly overlap are point scanned from the utilized flake (BfDf-08:265) that was originally thought to be weathered Vinalhaven Banded Spherulitic Rhyolite. The utilized flake did not overlap well with the Vinalhaven Banded Spherulitic Rhyolite sample along the Rb/Sr axis which could be the result of weathering or alteration.

Although not all artifacts were identified via portable x-ray spectrometer, five artifacts (L, AC, AD, AE, and AF) macroscopically appear to be Big Scott Mountain Flow Banded Rhyolite from the Mount Pleasant Caldera located roughly 9 kilometers west of Magaguadavic Lake and 15 ½ kilometers northeast of Spednic Lake in York County, New Brunswick. Spednic Lake, the headwater of the St. Croix River, and the Magaguadavic River, an outlet for Magaguadavic Lake, both empty into Passamaquoddy Bay. Future portable x-ray spectrometry will indicate if the flow banded rhyolite recovered from the Boswell site originated from the Mount Pleasant Caldera.

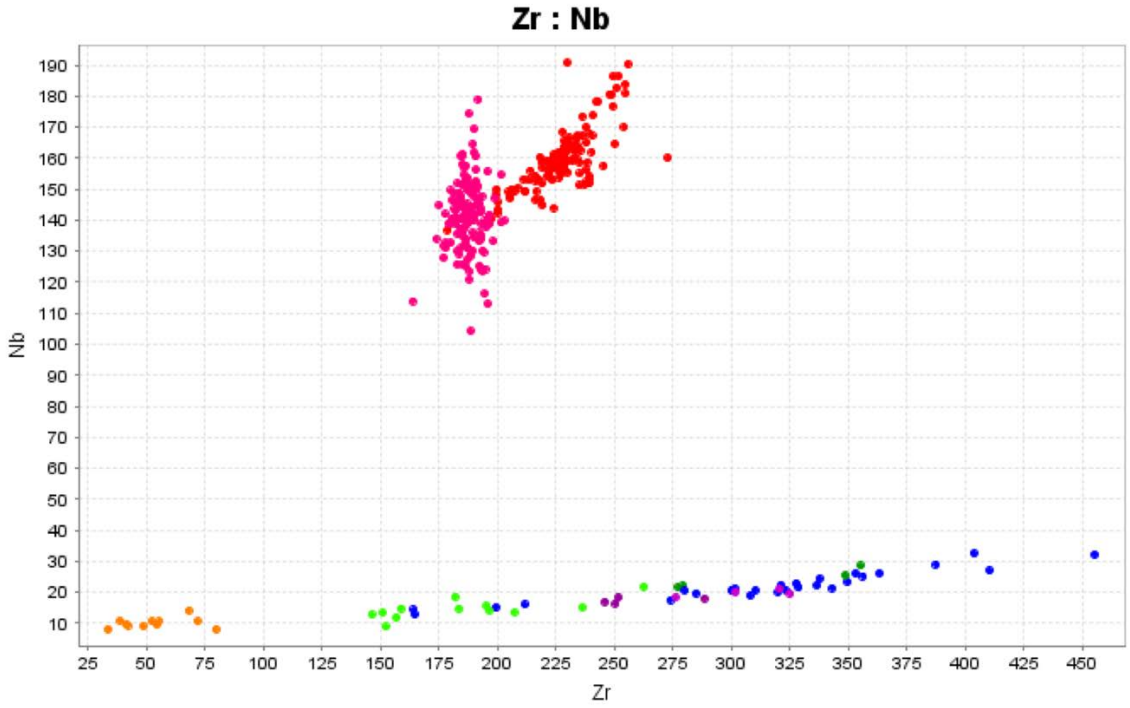

Figure 5-27: The concentration of Zirconium and Niobium in artifacts and comparative source materials determined using portable x-ray fluorescence. The arifacts include: seven artifacts from the Boswell site (blue), a Group 5 base fragment BfDf-08:318/ Arifact U (light purple), and a Vinalhaven Utilized Flake BfDf-08:265 (dark green). The comparative source materials are: Vinalhaven Banded Spherulitic Rhyolite (light green), Jefferson Rhyolite (pink), Mount Jasper Rhyolite (red), Kineo Traveller Porphyry (dark purple), Fales River Rhyolite (orange).

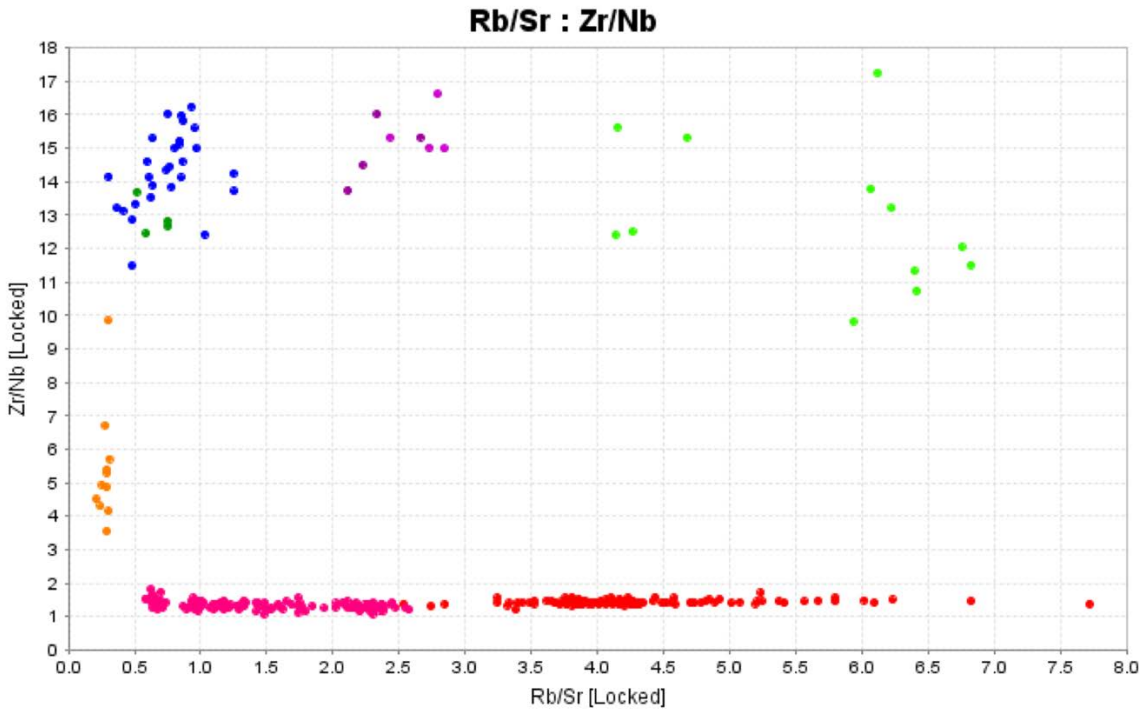

Figure 5-28: The ratio of Zirconium to Niobium and Rubidium to Strontium in artifacts and comparative source materials determined using portable x-ray fluorescence. The arifacts include: seven artifacts from the Boswell site (blue), a Group 5 base fragment BfDf-08:318/ Arifact U (light purple), and a Vinalhaven Utilized Flake BfDf-08:265 (dark green). The comparative source materials are: Vinalhaven Banded Spherulitic Rhyolite (light green), Jefferson Rhyolite (pink), Mount Jasper Rhyolite (red), Kineo Traveller Porphyry (dark purple), Fales River Rhyolite (orange).

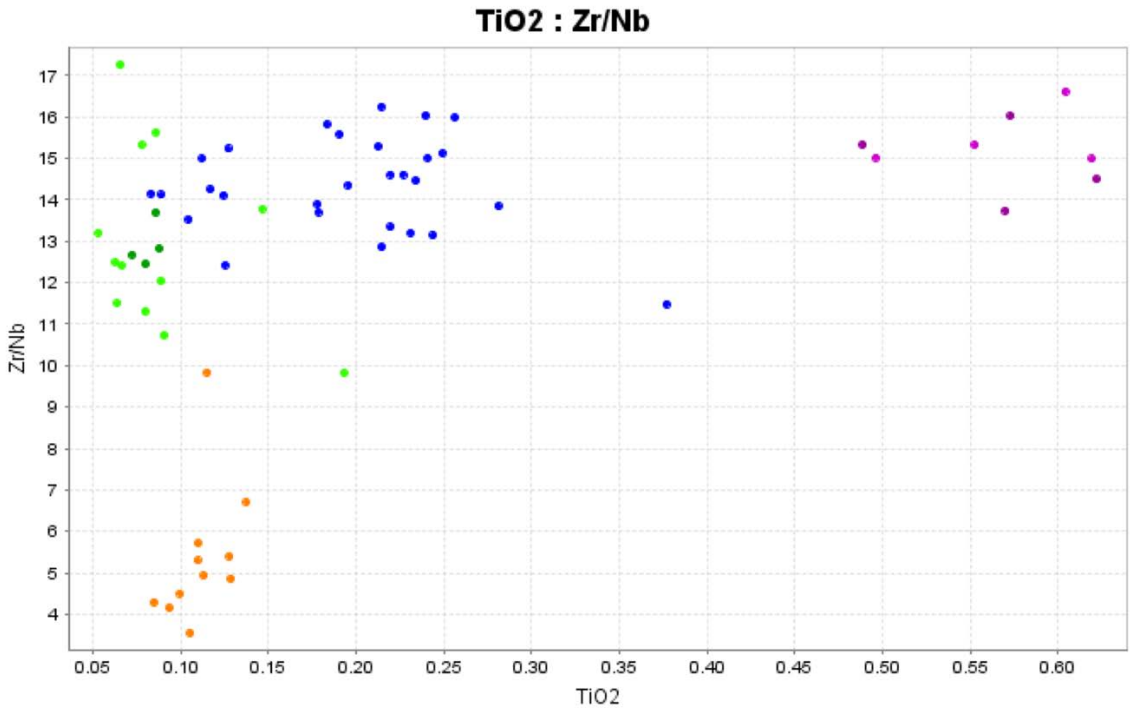

Figure 5-29: The concentration of Titantium dioxide (ppm) and the ratio of Zirconium to Niobium in artifacts and comparative source materials determined using portable x-ray fluorescence. The arifacts include: seven artifacts from the Boswell site (blue), a Group 5 base fragment BfDf-08:318/ Arifact U (light purple), and a Vinalhaven Utilized Flake BfDf-08:265 (dark green). The comparative source materials are: Vinalhaven Banded Spherulitic Rhyolite (light green), Kineo Traveller Porphyry (dark purple), Fales River Rhyolite (orange).

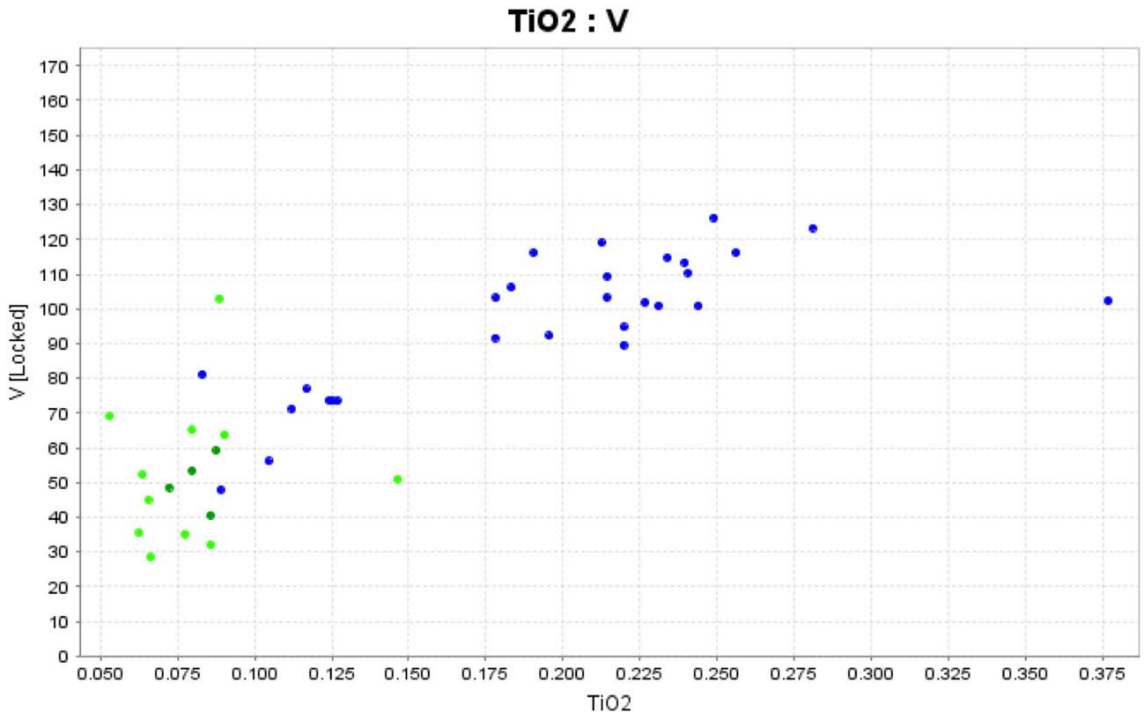

Figure 5-30: The concentration of Titantium dioxide (ppm) and Vanadium (ppm) in artifacts and a comparative source material determined using portable x-ray fluorescence. The arifacts include: seven artifacts from the Boswell site (blue) and a Vinalhaven Utilized Flake BfDf-08:265 (dark green). The comparative source materials is: Vinalhaven Banded Spherulitic Rhyolite (light green).

5.6 Paleoethnobotany

All paleoethnobotanical analysis was conducted in the Paleoethnobotany Laboratory of Memorial University of Newfoundland, under the supervision of Michael Deal. In 2014 seven control column sediment samples were collected (Table 5-1) ranging from the surface to depth of 2.5 meters, along with a sediment sample from the base of Feature 3 in Unit 5 and a sediment sample from the northwest wall of Unit 27. Paleoethnobotanical analysis including weighing, sieving, processing with IDOT flotation methodology, drying and microscopic examination was employed to all sediment samples. The controlled column sediment samples resulted in fungal sclerotia and entomological specimens, while the sediment sample from the Woodland Feature 3 produced a variety of botanical information (Deal et. al. 2015: 15-16). The sediment sample from Unit 27 provided similar data as the controlled column sample; fungal sclerotia and entomological specimens. This has been attributed to the acidity, pH 5.5, of the soil matrix where the sample was collected.

In 2015 nine additional sediment samples were collected for paleoethnobotanical analysis from those collected a single sediment sample was chosen to be analyzed by two students enrolled in the paleoethnobotanical course at Memorial University of Newfoundland. The students were given a bisected bulk sediment sample from Feature 11 at Level 6 in Unit 46, which was associated with six copper nodules, a complete biface (Figure 5-12: E), and a bifacial base (Figure 5-16: V). The first step of their approach was to investigate sediment acidity, which they determined to be pH 5.5 (Petty and Pitcher

2015: 3). They then placed the soil into a 5 tray geologic sieve where the entire sample was sieved into different trays for further analysis (Table 5-15).

From this point the samples were analyzed after sieving due to the dry and sandy composition of the soil. Individually each sieved sample was analyzed under a microscope. The results of the dry sieving concluded nothing substantial of botanical note, other than the fungal sclerotia (Petty and Pitcher 2015: 5). Flecks of charcoal amassing in excess of 350 individual fragments represents a high fire presence for Feature 11 as either a hearth or cooking feature. No anthracological investigations have been conducted on the charcoal fragments. Aside from paleoethnobotanical remains 34 chert and 16 quartzite micro debitage were recovered, along with 7 fragmented entomological remains. It has been assumed that the lack of preserved seeds and other paleoethnobotanical remains is in large part due to the acidity of the soil even though the Boswell site is located on one of the few areas of the Annapolis River that has very minimal lateral migration in the last 3,000 years (Deal et. al. 2015; Petty and Pitcher 2015: 1).

Table 5-15. Sieving records of the Feature 11 sediment sample

Sieve Number	Mesh Size (Inches)	Recovered Volume	Weight
Sieve 1	0.132	100 mL	148 g
Sieve 2	0.0661	2,375 mL	3342 g
Sieve 3	0.0197	5 mL	4 g
Sieve 4	0.0098	4 mL	4 g

5.7 Site Interpretation & Discussion

The Boswell site, along the Annapolis River, has served as a multifaceted place of occupation for over 3,500 years. Within this time many events, practices, and memories have been conducted, shaped, shared, and entertained at this site by ancestral Mi'kmaw, or the Mu Awsami Keji'kewe'k L'nuk. Based on the principal "it's not what you find, it's what you find out" (Thomas 1989: 31), we, as archaeologists, can see the past through the material remains and allow for the remains to tell their stories by providing them agency (Latour 2005). In turn the material culture recovered at the Boswell site illustrates not only intra-site activities, but speaks to its relation within the region.

Beginning with the setting, the environment along the Annapolis riverbanks can be deemed turbulent and altering when observing the paleoenvironmental record provided (Spooner et. al. 2014). The initial climatological change, rising interior water tables, flooding, and alluvial deposits display a slowly transforming landscape, which over time created a stratified site comparable to those found at sites in interior central Maine (Putnam 1994; Mack and Clark 2016). These stratified sites aid in interpreting the cultural sequence due to the abrupt alluvial deposits separating occupations. During the Transitional Archaic period (4,100-2,700 BP) the climate and forests of Nova Scotia were changing, resembling the environment in New England. The rising riverine and lacustrine water levels aided in aquatic travel, as well as, seasonal subsistence strategies. The choice of place has established a pattern in Maine and the Maritimes Peninsula for interior sites during this time frame.

Transitional Archaic period sites in Maine and the Maritime Peninsula all seem to be in close vicinity to riverine, lacustrine, or coastal environments. As a set up for a site function analysis (Binford 1980) it is important to investigate why people would occupy these sites during the Transitional Archaic period. At riverine and lacustrine sites there is 1) fresh water for consumption, 2) a means of aquatic transportation, and 3) subsistence in the form of fish, mammals (beaver etc.), and vegetation, which are abundant at certain times of the year. The placement of sites, as observed by William Francis Ganong, needs to have a level terrace for occupation, waterholes where fishing is abundant, and a commanding view of the waterways (Ganong 1899; Hamilton and Spray 1977). The Boswell site, as well as many other sites in the region fit within this description (Moorehead 1922; Smith 1926; Witthoft 1953; Ritchie 1965a; Robbins 1967; Dincauze 1968, 1972; Snow 1975; Turnbaugh 1975; Sanger et. al. 1977; Dumais 1978; Borstel 1982; Christianson 1985; Deal 1986; Ferguson 1986; Petersen 1991, 1995; Putnam 1994; Leveillee 1999; Robinson 2001a; Allen 2004; Bourque et. al. 2006; Sanders 2014).

The Boswell site assemblage displays a temporally extensive collection of chipped stone tools (Groups 1 through 10), establishing an impressive diagnostic timeline of site occupation. The assemblage shows all stages or phases of the use-life of chipped stone artifacts and the functionality of these tools, including groundstone implements (Callahan 1979; Shott 1996a). Chipped stone artifacts were utilized in various ways, for various reasons, and were shaped for functional purposes by multiple “authors” or knappers (Deetz 1967). Group 1 and Group 2 were functional implements and preforms that were later manufactured into smaller bifaces (Group 3, 4, 5, and 6). Within Groups 3

to 6 the bifaces could have served as knives, dart or spear points, or projectile points, and when the biface was broken the artifact was not discarded, but reused for another purpose. Typically, bifaces would be repurposed for scrapers, perforators, or fire-kit-starters. Perforators are the longitudal axial midline of a biface that has been reduced bifacially to a narrow point and can serve various purposes like: drill, awl, including spear or dart point. It appears that the people during the Transitional Archaic period were "thrifty" by reutilizing and repurposing the chipped stone tools to fit their needs (Brian Robinson 2014, pers. comm.).

Groundstone tools including celts, gouges, and whetstones establish that there was a presence of woodworking that occurred at the Boswell site. The production by means of woodworking range from creating stakes for a hybrid fishweir or poles for a fish smoking set up, in addition to possibly constructing or repairing dugout canoes. These groundstone tools would have needed resharpening after heavy usage where abraders, or more likely, whetstones facilitated this maintenance. All of these artifacts develop agency becoming actors in the environmental setting and interacting with the individuals who manufactured, produced, utilized, repaired, and reutilized the artifacts. These actors, either organic or inorganic, animate or inanimate, are placed within the environmental settings as a stage and tell their story.

The Boswell site, as determined by diagnostic artifacts and radiocarbon dating, displays habitation during all three temporal phases of the Transitional Archaic period. Focusing on lithic materiality determined that the majority of the lithic assemblage from the Transitional Archaic component is exotic to Nova Scotia, coming from either Maine

or eastern New Brunswick. This establishes two circumstances for how the lithic materials and artifacts ended up at the Boswell site: 1) by aquatic transportation across the Bay of Fundy, or 2) through regional trade networks. Both circumstances are applicable and practical in the case of the Boswell site since some exotic lithic materials were represented by a singular artifact while other exotic lithic materials were represented by numerous artifacts and chipping debitage. The dispersal of lithic material from its source, depending of quantity of material transported, can aid in understanding movement in relation to the lithic source (Shott 2015). This concept is based off the Field-Processing Model (FPM), stating "that people obtain goods at places distant to their residences, which occur in packages that require processing to separate useful from useless parts (Barton 2001; Garvey 2015; Shott 2015: 549).

Exotic lithic materials were transported across the Bay of Fundy where trade could have occurred on either coast (Ganong 1899; Speck 1922; Blair 2010). This lithic material was transported to the Boswell site via the aquatic highway of the Annapolis and Cornwallis rivers, where they were manufactured for various functions including fish procurement and processing. Although there is a lack of evidence of the fish remains in the archaeological record of the site due to the highly acidic soils, the generational migration for food and spawning, along with the potential fish weir (Lewis 2006a) leads archaeologists to believe that the site focused on fish exploitation.

This fishing taskscape incorporated other foods either hunted or gathered based on seasonality and opportunity. Gastronomically, the anadromous or catadromous fish would have been smoked for preservation based on the spatiality of the site, along with

features exhibiting high volumes of charcoal (Figure 5-31). The migration of anadromous and catadromous fish is seasonally precise and therefore a multi-year and possibly multi-generational occupation of the site could have occurred (Binford 1977, 1978, 1980; Nash et. al. 1991). The exotic lithics from Maine and southwestern New Brunswick recovered at the Boswell site speak to a regional stage concerning population density and network, associated sites in other provinces or states, and what other transported material could be recovered in Nova Scotia. Areas where the exotic lithic material is sourced, like the Saint John River in New Brunswick, or the Kennebec and Penobscot rivers in Maine, add perspective on settlement patterns on a regional scale (Binford 1977, 1978, 1980). Generational usage of the Boswell site explains why all three temporal phases of the Transitional Archaic were recovered and lays the foundation for further hypotheses and investigations. The Boswell site has established a lasting imprint upon the archaeological record not only in Nova Scotia, or just the Canadian Maritime Provinces, but the cultural history of the Northeast.

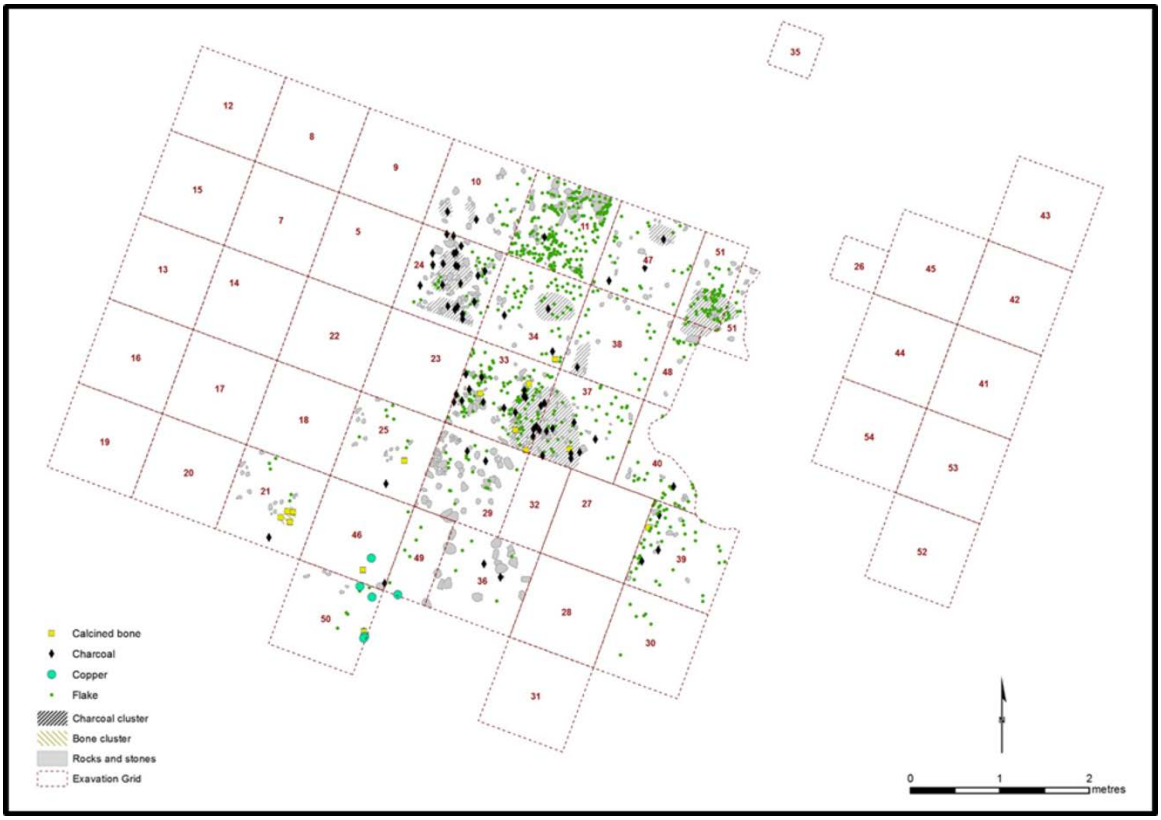

Figure 5-31: A map showing the dispersal of cultural material associated with the Transitional Archaic component of the Boswell site. (Courtesy of Bryn Perry-Tapper).

6 DISCUSSION & CONCLUSION

"*American Indians hold their lands – places – as having the highest possible meaning, and all their statements are made with this reference point in mind*."
-Vine Deloria, Jr. (2003: 61) God is Red

The primary goal of this thesis is to assess the current debate concerning the northern limit of the Transitional Archaic occupation in the Northeast. In particular, this study looks at lithic procurement, transportation, and subsistence in the Maritime Provinces through the theoretical lenses of migration theory and landscape ethnoecology. This is followed by concluding remarks and discussion of future research on the Transitional Archaic in the Maritime Provinces.

6.1 Lithic Assemblage

One avenue of inquiry for this project was whether or not a common lithic tool-kit that was utilized during the Transitional Archaic period in Maine and the Maritime Peninsula. Based on the evidence provided in Chapters 4 and 5, there is a clear relation between the chipped stone tools recovered from all temporal phases of the Transitional Archaic component at the Boswell site and archaeological collections within the Northeast. The chipped stone bifaces recovered from the Boswell site, along with those collections analyzed by the author, share similarities in manufacture, form, function, and raw materials.

By studying the manufacture process of chipped stone bifaces from the Transitional Archaic period it becomes evident that the individuals who produced bifacial preforms (Groups 1 and 2) were different than those who shaped the haft elements (Groups 3 through 6) (Dincauze 1968; Cross 1990). The concept of multiple "authors" reshaping and reworking the chipped stone biface in multiple locations, with similar attributes over a regional expanse establishes the notion of a "blueprint" or "mode" (Rouse 1960; Deetz 1967; Borstel 1982). This "blueprint" institutes a shared metaphysical understanding of technology production, which leads for examination towards functionality. The bifaces being defined as "thrifty" (Brian Robinson 2014, pers. comm.) are created to be reformed and reworked towards the practices acted by the secondary "author". The function of the chipped stone bifaces through practice is evident to the asymmetrical blade shape.

Focusing on the Boswell site, it can be observed that asymmetrical biface blades are present, similar to the regionally analyzed specimens. This lithic attribute has been a cornerstone in the identification and classification of chipped stone bifaces within the Transitional Archaic period tool kit assemblage. The bifacial asymmetry encapsulates a singular function during one phase of the artifact use life (Andrefsky 2005: 31). Mi'kmaw ontologies express that even lithic tools were viewed as animate and possessed life (Rand 1902: xvi-xvii). After the initial production of a preform chipped stone biface (Group 1 and 2) the use life of the artifact was premeditated, with various avenues of alteration based on numerous conditions, which is easily observed at the Boswell site.

The lithic assemblage recovered from the Boswell site is representative of a regional lithic tool kit within Maine and the Maritime Peninsula. All chipped stone biface groups, with the exception of Group 3, were recovered at the Boswell and Wilkins sites. Aside from the chipped stone bifaces, other facets of the Transitional Archaic lithic tool kit include groundstone implements, bone tools, copper usage, and steatite vessel technology. Due to the highly acidic soils of the northeast the utilization of wooden implements or vessels should not be disregarded, whereas future regional investigations may provide further evidence (Dodge 1967; Robbins 1980; Hoffman 1991: 81-82).

Groundstone implements manufactured during the Transitional Archaic period include, but are not limited to: lipped groove axes, pecked groove axes, adzes, celts, gouges, and whetstones. Grooved axes were placed in two categories, lipped and pecked, not for aesthetic purposes, but based on functionality. The lipped groove axes are relatively longer that the pecked groove axes, in addition to the former being used secondarily as mauls with its conical poll end. This secondary maul function is used in activities such as “pounding stakes in the ground, drving wedges through wood, procuring or early-stage processing of some food resources” (Adams 2002: 173-174). As previously discussed Axe Style A: Lipped Grooved appears to have been used for downward, or gravitational inclined, movements, as opposite to the utilization of Axe Style B: Pecked Grooved, which is observed to be used for horizontal motions and activities.

Adzes come in two forms during this period defined as; pecked-and ground, and flaked-and ground stylizations (Dincauze 1968: 33-34). Although none were recovered

from the Boswell site, those studied in the regional analysis displayed similarities to those from New England. Two celts were recovered at the Boswell site and each of these artifacts exhibits differing functionality. Artifact AG possesses excessive battering along the poll margin establishing that it was handheld and struck with hammerstone or other implement (Hoffman 1991: 48). Artifact AH exhibits perpendicular shallow grooves three-fourths the length from the bit edge, which would facilitate being lashed to a wooden handle (Figure 6-1). A gouge preform discovered in the riparian zone of the Boswell site, along with other regional specimens, displays further woodworking capabilities as it too would be lashed to a wooden handle. Whetstones, like the specimen recovered at the Boswell site, have been associated with the Transitional Archaic period tool kit, especially at sites like Turner Farm (Bourque 1995: 120). Additional groundstone implements that have been previously included in Transitional Archaic period tool kits that was not factored into this project include: beveled or grooved cobbles (Dincauze 1968: 36-37; Bourque 1995: 121) and pestles (Dincauze 1968: 35-36).

Organic materials, specifically bone and antler tools, are present in Transitional Archaic period contexts, but are rarely found due to the acidicity of northeastern soils. In southern New England antler points have been recovered in cemetery contexts, while at Turner Farm barbed antler and bone toggling harpoons, beaver incisor tools, bone gouges, antler awls, rattle parts, bone pins, bone combs, and bone gaming pieces have been discovered within Occupation 3 (Dincauze 1968: 40; Bourque 1995: 121-132). Antler fragments have also been found and associated to knapping practices (Dincauze 1968: 39-40; Bourque 1995: 132).

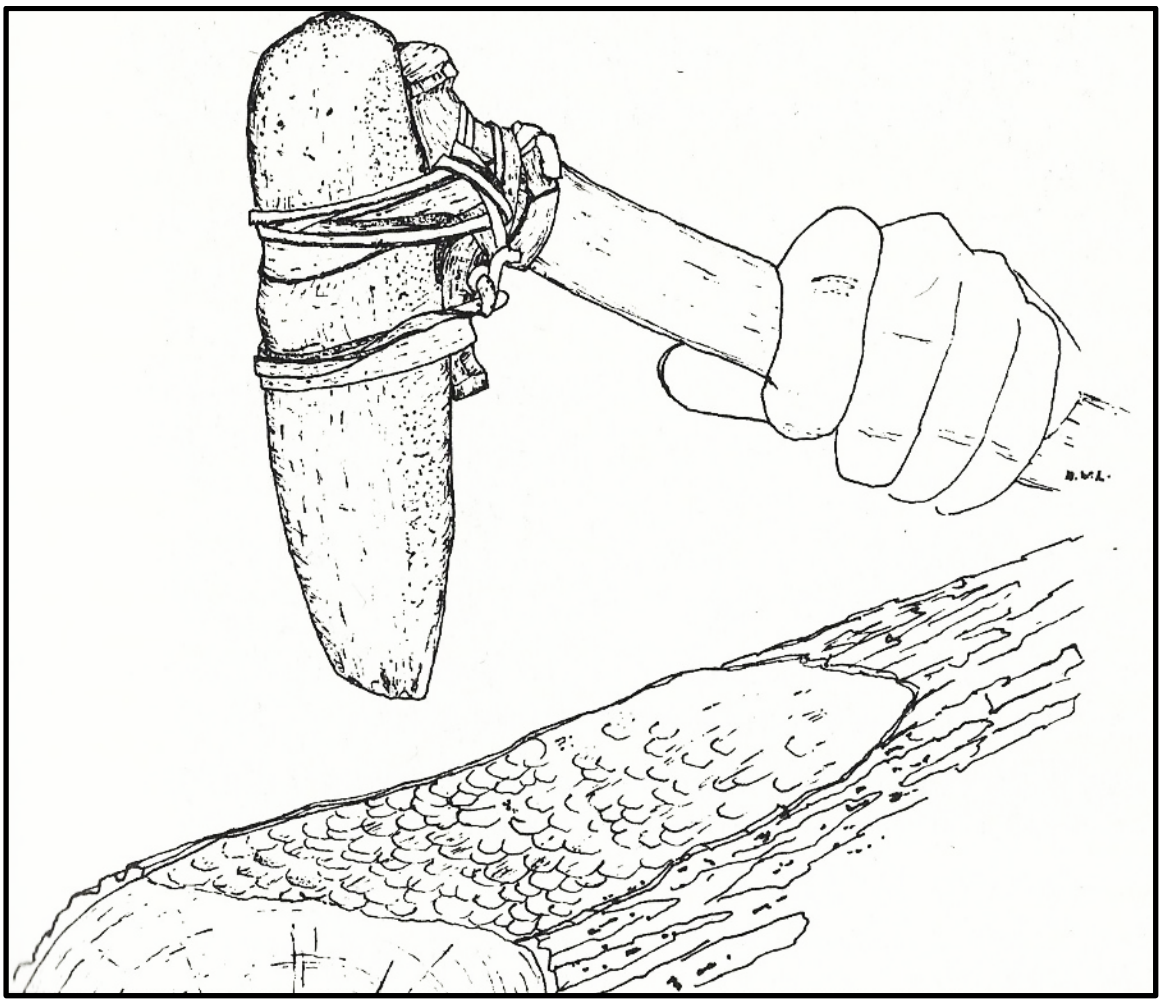

Figure 6-1: “Reconstructed method of using a celt lashed to a wooden handle” (Sanger 1979b: 81).

Although there has been copper discovered in Transitional Archaic contexts in past excavations, they are seldom referred to a part of the Transitional Archaic tool kit. Six copper nodules were found in association with Feature 11 at the Boswell site radiocarbon dating to 3,211 ± 38 BP (UOC-1207), which is the earliest known use of copper in the Maritime Provinces (Deal 2015: 78). Copper was long thought to be imported from the Great Lakes region, but recently archaeologists have looked at coastal

outcrops lining the Bay of Fundy and coastal Maine. Previous excavations have yielded copper implements such as: a copper adze from the Mansion Inn site (Dincauze 1968: 35), twelve copper rolled beads from Feature 12-1975 at Turner Farm (Bourque 1995: 133), and two tiny fragments from a pit feature at the Cobbosseeconte Dam South site in Manchester, Maine (Bourque 1992c: 18).

Steatite vessel technology is a diagnostic facet of the Transitional Archaic period tool kit, becoming synonymous with broadpoint technology and cremation burials. Steatite deposits are distributed along the Altantic Slope of North America in talcaceous rock extending from eastern Alabama to Labrador and these quarries have been of longstanding interest in archaeological investigations (Holmes 1890, Bushnell 1939; Chidester et. al. 1964; Sassaman 2010: 131). Functionally, lugged steatite vessels, such as bowls and kettles, possess modern comparisons to cast iron Dutch ovens in usage, shape, durability, and thermal resistance (Gibson and Melacon 2010: 180; Sassaman 2010: 130). Alternative vessel technology existed during this period, such as the earlier noted wooden vessels, in addition to early steatite tempered pottery, and birchbark containers and basketry (Smith 1986; Sassaman 1999: 93).

The usage of steatite for the manufacture of cooking vessels has been well documented in the region, especially in southern New England, where a high density of steatite quarries provided easy availability to this lithic material (Fowler and Welt 1955; Lord 1962; Dincauze 1968; Simmons 1970; Truncer 2004; Sassaman 2010: 131). A stark contrast can be established in the Maritime Provinces where only a single quarry was located at the mouth of the Saint John River in New Brunswick. Although steatite

manufacturing was on a smaller scale than southern New England, it seems that the Saint John quarry could facilitate manufacturing for the Bay of Fundy. If the steatite source was exposed in Saint John prior to modern industrial development, it is possible that steatite could have been manufactured at that quarry and transported across the Bay of Fundy (Speck 1922). While there have yet to be steatite vessels found in Nova Scoia from the Transitional Archaic period, it is probable that such vessels will be found over time with further archaeological investigtions.

The "blueprint" of the common tool kit is not only expressed by the form of the artifacts, but also in their use of lithic raw materials. The dominate material represented in the regional analysis is felsite and rhyolite which accounted for 85.6% of artifacts from Maine, 59.3% of artifacts from New Brunswick, and 62.3% of artifacts from Nova Scotia. When observing the temporal phases of the Transitional Archaic period it is evident that during the Lehigh/Snook Kill/Atlantic phase (4,100-3,600 BP) and the Susquehanna/ Wayland Notched phase (3,600-3,200) felisite and rhyolite was a highly preferred material in comparison to the Orient phase (3,200-2,700 BP) (Ritchie 1959: 31, 1965a: 164-170). Felsitic sources identitified at the Boswell site via pXRF such as Kineo-Traveller Porphyry and Vinalhaven Banded Spherulitic Rhyolite are commonly identified sources in the region (Dincauze 1968; Borstel 1982; Bourque 1994, 1995), and hopefully with further geochemical research Mount Pleasant Caldera sources will be positively idenitifed and added to this list. Transitional Archaic peoples, possessing this felsitic material blueprint, were able to adapt their knapping and manufacturing techniques to different lithic materials as evidenced by the Ross Creek Jasper biface

recovered at the Boswell site. Acquisition and usage of lithic materials aid in our attempts at understanding the subsistence strategies during this period.

6.2 Transportation & Subsistence

This section concerns how lithic resources, site distribution, river systems, and animal movement are interconnected and related to subsistence strategies during this period. One avenue to approach this topic would be to examine the lithic resources exploited and how traveling to these quarries may aid in food acquisition. Another consideration would be to study site distribution and their connection to lithic resources. As observed in prior archaeological investigations, the importance of river systems for travel and subsistence should be revisited and analyzed. Animal movement and migration within the established preferred ecotopes should be reviewed in order to postulate on the seasonal movements of the Transitional Archaic people.

By observing the lithic distribution of aforemtioned sources, through the lens of the Field-Processing Model (Barton 2001; Garvey 2015; Shott 2015), we can elaborate on acquisition, movement, possible contact and trade, and final destination by means of recovery from the archaeological record. The Field-Processing Model is used to determine the processing of lithic materials, acquired at a distance from the residence into useful packages, in order to transported for the return trip (Shott 2015: 549-550). Through pXRF analysis, Kineo-Traveller Porphyry and Vinalhaven Banded Spherulitic Rhyolite, have been identified and only account for a few artifacts within the collection. By applying the Field-Processing Model an interpretation of distance either travelled, or rate of artifact trade is inferred, while plausible macroscopic identification of Mount

Pleasant Caldera lithic materials not only represents a larger number of artifacts from the Boswell site. In establishing that sources closer to the Boswell site have a higher artifact count there is also the question of how these lithics were acquired and transported. One noticeable pattern that connects all of these lithic quarry sources with subsistence strategies is their proximity to rivers.

William Francis Ganong (1899) illustrated that rivers were used for transportation, including portage routes, and by locating these lithic sources along river routes it can be postulated that while travelling along the river lithic materials were acquired (Blair 2010). Additionally, ethnographic records and observations illustrate that aquatic travel from Saint John, New Brunswick to Digby, Nova Scotia was possible and frequently achieved (Speck 1922). The distribution of sites in Maine and the Maritime Peninsula can be seen as either coastal or interior, yet in both areas these sites are generally associated with rivers. Ganong illustrated that sites at the ends of portage routes were focused more on rest than subsistence, whereas sites located along the portage route tend to be placed in relation to geographic points that benefit subsistence strategies (Sanger et. al. 1977; Hamilton and Spray 1977; Borstel 1982; Deal et. al 2015).

The distribution of sites in Maine and the Maritime Peninsula during the Transitional Archaic period can be characterized by a few defining factors: located along river systems that are within range of lithic materials, are a good resting place along a river system or portage route, and the "site catchment" has a strong inclination for riverine and lacturstrine, fauna and flora (Nash et. al. 1991). A common attribute of all occupied river systems is that they drain into the Atlantic Ocean, which has been deemed

an important aspect to the subsistence strategy during this time (Turnbaugh 1975). River systems where sites have been located include, but are not restricted to; the Androscoggin, Damariscotta, Kennebec, Penboscot, and St. George rivers of Maine, the St. Croix, the Magaguadavic, Saint John, and Miramachi rivers of New Brunswick, in addition to the Annapolis, Cornwallis, Mersey-Allains, Schubenacadie, and Tusket rivers of Nova Scotia. There is currently not enough evidence to define seasonal settlement patterns throughout this region.

Previous observations in the archaeological literature concerning subsistence patterns during the Transitional Archaic period express a diversified diet compared to other Archaic occupations (Deal 2015: 75). Turnbaugh (1975: 60-61) suggests that andramous fish, like the American Shad (*Alosa sapidissima*), are a staple of the Transitional Archaic diet along with wild game such as turkey, deer, and bear. He also alludes to nut bearing trees as a facet of the diet (Turnbuagh 1975: 60). Tuck (1978b) suggests a focus on deer, bear, and moose during this time. At the Young site and Mud Lake Stream calcined fish bones were recovered, which supports the idea of anadromous fish exploitation (Borstel 1982; Deal 1986). After the discovery of Turner Farm, Tuck (1991:53) suggests that the abundance of resources on North Haven and Vinalhaven islands might not be applicable to other Transitional Archaic sites along the Gulf of Maine coast.

The Boyleston Fish Weir site in Boston, Massachusetts, demonstrates early coastal fishing technology while similar technology has been employed in interior locations like the Sebasticook Fish Weir Complex site in Newport, Maine (Robinson

1985; Wright 1995: 53; Décima and Dincauze 1998; Miller 2006). Dietary evidence from the Turner Farm site illustrates that coastal groups had a diverse subsistence strategy consisting of: deer, seals, waterfowl, cod, and shellfish (Spiess and Lewis 2001: 155). Additionally archaeologists have tied hardwood forests and nut-bearing trees into the Transitional Archaic subsistence strategy as evidenced by beech nuts recovered at Turner Farm and acorns at sites along the Kennebec River and Merrymeeting Bay (Spiess and Hedden 2000; Bourque et. al. 2006; Sanger 2006: 243).

The Boswell site like other interior riverine and lacustrine sites, appears to be a good location for exploiting anadromous and catadromous fish (Borstel 1982; Robinson 1985; Deal 1986). As previously addressed in Chapter 5, hybrid fish weir technology may have been employed at the Boswell site, since the riverbed in the vicinity of the site, is exposed bedrock (Banks 1990: 77; Goodby et. al. 2014: 8). The Boswell site is perfectly positioned for spring to early summer fish expoiltation of species like: American Shad (*Alosa sapidissima*) [May-June], Alewife -Gasperau (*Alosa pseudolaregnus*) [April-May], and Atlantic salmon (*Salmo salar*) [May-June], in addition to early fall into winter subsisting on; Atlantic Sturgeon (*Scomber scombrus*) [September-October], American eel (*Anguilla rostrata*) [September-October], and tomcod (*Microgadus tomcod*) [December] to name a few (Christianson 1979; Pentz 2008; Munkittrick et. al. 2011).

Aside from fish species, terrestrial and aquatic fauna were most likely hunted or trapped by those occupying the Boswell site during the Transitional Archaic period. The only evidence of such subsistence is through unidentified calcined bone recovered in

Feature 13 in Unit 21 at the Boswell site. Due to its structure the calcined bone possibly came from a small fur bearing mammal, which was also common in the Woodland component of the site (Deal et. al. 2015). This may have to do with the Boswell site location downstream from Aylesford and the Aylesford Bog, which in Mi'kmaq is Kopitek (Kōbētek), meaning "a beaver home" or "from little beaver island" (Rand 1919: 37). Trapping seems to be an adequate method of acquiring smaller game with less work, but due to acidic soils and trapping being an ephemeral practice it would be difficult to find in the archaeological record. Although there is a lack of faunal remains of larger game at the Boswell site, other sites in the region have recovered such remains establishing a diverse and seasonaly opportunistic susbsistence strategy (Bourque 1995; Spiess and Hedden 2000; Spiess and Lewis 2001; Styles 2011).

In the spring to early summer people at the Boswell site would eat local rivierine and lacstrine flora such as Indian cucumber-root (*Medola virginiana*), and blueberries (*Vaccinium sp*.). In the late summer to early fall nuts such as acorns and beech-nut would have been foraged. Transitional Archaic peoples likely would not have occupied the Boswell site during the summer season, instead focused on a coastal seasonal subsistence.

Lithic acquisition and possible trade would peak during the spring and summer seasons allowing for transportation at seasonal meeting sites, which were either coastal bay regions or islands. This dispersal of lithics from central and coastal Maine, and possibly from southwestern New Brunswick recovered at the Boswell site suggests a summer seasonal trade network. Regional lithic acquisition and trade may be seen as a seasonal practice through examined lithic chipped stone tools recovered at the Boswell

site, as well as steatite or chlorite materials which may have been traded or transported within the Bay of Fundy area. Steatite vessel technology may have had an integral part of the nut forgaging process in which certain nuts, like acorns, have to be leached of tannic acid multiple times through boiling.

Site locations across the region, entwined with primarily felsitic lithic acquisition, subsistence strategies relating to interior riverine or lactursine and coastal locations, and aquatic travel along rivers with portage routes establishes a "cultural pattern" (Benedict 2005 [1934]: 237). Subsistence strategies may vary over the region due to location of the site (i.e. coastal versus interior riverine), but similar notable hunting and gathering practices are observed in the practice of gathering anadromous and catadromous fish, along with the focus of utilizing hardwood and nut-bearing trees. The observed regional "cultural pattern", with the inclusion of the Boswell site, calls for a reexamination of migratory movements into the Maritime Provinces.

6.3 Theoretical Applications

6.3.1 Migration

Previous archaeological literature has pointed to migration as an explanation of the broadpoint tradition dispersal across the Northeast, and a reexamination of migration theory will be applied here with the newly proposed broadpoint and cremation co-tradition (Bourque 1975: 43, 1995: 247, 2013: 49; Dincauze 1975: 27; Sanger 1975: 73, 2006: 242; Turnbaugh 1975: 57; Deal and Rutherford 2001; Deal et. al. 2006). To make an adequate assessment, the usage of Rouse's (1958) migration critertia, in addition to

Sanger's (1975) sixth criterion, along with Anthony's (1990) insights into migration studies will help in defining the plausibility of migration during the Transitional Archaic period. After an initial assessment of criteria used in previous research, a synopsis concerning the mechanisms and extent of migration, including archaeolinguistic implications will be addressed.

The criteria established by Rouse, with the inclusion of Sanger's criterion, are as follows: 1) identify the migrating people as an intrusive unit in the region it has penetrated, 2) trace this unit back to its homeland, 3) determine that all occurrences of the unit are contemporaneous, 4) establish the existence of favorable conditions for migration, 5) demonstrate that some other hypothesis, such as independent invention or diffusion of traits, does not better fit the facts of the situation, and 6) establish the presence of all cultural subsystems and not an isolated one such as mortuary systems (Rouse 1958: 63-68; Sanger 1975: 73). The succeeding paragraphs will establish that all of these criteria are met for the Transitional Archaic period in Maine and the Maritime Provinces.

In answering the first two criteria, the migrating people, those who possess a broadpoint and cremation co-tradition, also known as the Susquehanna or broadspear traditions, are identified in southern New England with ties to archaeological cultures of the southeast (Dincauze 1975; Bourque 1975, 1995, 2013; Sanger 1975, 2006; Turnbaugh 1975; Borstel 1982: 78-79; Deal et. al. 2006). The preceeding Maritime Archaic tradition (Tuck 1971: 350-357), including the Moorehead phase, in the Maine and the Maritime Provinces had a subsistence focus of swordfish. After 5,000 BP the tidal amplitude, along

with overfishing, decreased the population of swordfish and large cod, allowing an abundance in marine meso-predators and soft shell calms (Sanger 1975:61, 2006: 242; Bourque 2012: 49). This impact on subsistence strategies, along with a warming climatological change, created an environment that was not favorable for the Maritime Archaic peoples.

In addressing Rouse's third criteria, the extent of a broadpoint and cremation co-tradition ranges from 4,100 to 2,700 BP with three separate temporally defined phases establishing that the known occurance of the migrating unit are contemporaneous (Ritchie 1969b: 54-55; Dincauze 1968, 1972, 1975; Deal 1986; Petersen 1995: 220; Black 2000). One reason for this intrusive migration into Maine and the Maritime Provinces from southern New England has been observed as climatic change resembling an environment similar to southern New England. To answer Rouse's fourth criterion, the people of the Transitional Archaic period would have found the northern half of the Gulf of Maine favorable due to climatic change.

Rouse's fifth and Sanger's sixth criteria can be addressed similatensously. The presence of all cultural subsystems are present and not just an isolated system according to regional analysis, including the Boswell site. Transitional Archaic lithic manufacture of bifacial chipped stone implements is different from the preceding cultures based upon a blueprint. This blueprint does not appear to be a cross-cultural learned trait, nor is there evidence of a hybrid technology consisting of Maritime Archaic and Transitional Archaic technologies. Cremation burials are also a cultural trait of the Transitional Archaic that is not present in Maritime Archaic related sites, yet cremation burials have been found

intrusively in “Red Paint” burials, like the Walter B. Smith site (Moorehead 1922: 140). Additionaly, the placement of sites and the focus of subsistence appears to be consistant in the region and are not expressed with preceeding cultures.

Anthony (1990: 898) states that Rouse has “explicitly rejected the findings of sociocultural anthropologists and geographers as irrelevant to the archaeological study of migration”. Anthony finds the lack of complexity with Rouse’s criteria of precontact migrations unsettling and proposes that “migration is likely to occur when there are negative (push) stresses in the home region and positive (pull) attractions in the destination region, and the transportation costs between the two are acceptable” (Lee 1966: Anthony 1990: 899). Around 5,000 BP a rapid climate change toward a cooler and moister environment occurred and shortly afterward the broadpoint and cremation co-tradition make a significant appearance in southern New England with smaller groups moving toward the Bay of Fundy (Sanger 1975; Spooner et. al. 2014; Deal et. al. 2015). Due to this favorable climatic change a rapid increase in population likely occurred which became unfavorable to the people of the Transitional Archaic since they were inclined to be in small sized communities along with possible loose bonds with fewer than a hundred people (Beardsley et. al. 1956: 136-138; Ritchie 1965a; Ritchie and Funk 1973: 71-73).

The favorable settlement patterns of the Transitional Archaic period revolved around these loose-knit community structures that seem to balance with environmental resources without overexploitation. To prevent overexploitation, short-distance migration as described through the “wave-of-advance” model (Ammerman and Cavalli-Sforza

1973, 1979, 1984; Martin 1973) “posits that locally high birthrates” among people along the “wave front would result in movement toward less settled locations”, which “might accurately account for the idealized results of diverse population movements averaged over great spans of time (millennia)” (Anthony 1990: 901-902). This wave-of-advance model seems most plausible since people could keep relations with others that were not part of the “wave front” or are located at the perceived homeland. Additionally, the models lack in defining how and by what means people moved during migration.

The mode in which migration was conducted during the Transitional Archaic period has not been specified in previous archaeological literature. Evidence from the Boswell site exhibits long distance exotic lithic acquisition and trade via aquatic mobility, which establishes that Transitional Archaic people were martime inclined. This sort of mobility would have been “acceptable” since it would not be as energy demanding as terrestrial mobility. Ethnohistorical accounts, along with archaeological investigations, state that both birch bark and dugout canoes were utilized during early contact, but that the birch bark canoe was largely favored by the Europeans for fur trading (Hodgins and Poirier 2005: 312-313; Laroque 2013: 47-54). Dugout canoes seem to have been the optimal vessel technology for long distance travel (over 50 kilometers), and would be versatile for riverine and lacustrine mobility. The Transitional Archaic tool kit provides the equipment necessary to create a dugout canoe, yet according to some archaeologists the same tools could be used to create birch bark canoe technology (Sanger 2009b).

The destination of those migrating during the Transitional Archaic period was to be a favorable and attractive environment that was largely unsettled (Anthony 1990:

899). A perspective from the Boswell site invites further investigation into why people chose this particular location. Paleoenvironmental analysis of southwestern Nova Scotia shows an environment similar to southern New England at the time, along with an abundance of river systems, which suited their subsistence strategies (Spooner et. al. 2014). The Boswell site is perfectly positioned in the middle of the Annapolis and Cornwallis river valleys, and is easily accessable via McNeily and Wiswal brooks, which runs through a ravine perpendicular to the North Mounatin ridge. These brooks, with additional portage routes, provide the most direct route from the Bay of Fundy to the Boswell site. Observing the Boswell site as a crossroads destination in the middle of the Annapolis Valley provides evidence of a multi-generation seasonal occupation site and is a favorable location with good site catchment (Nash et. al. 1991). The Boswell site provides adequate evidence of long term occupation, but the question remains; how far north is the migratory extent of the Transitional Archaic people?

Migratory aquatic mobility allows for the postulation that people during the Transitional Archaic period had the ability to travel vast distances. Recently, an archaeological reexamination of collections from Prince Edward Island indicate a possible Transitional Archaic presence (Deal et. al. 2006). Additionally, the discovery of a single cremation burial at Ruisseau-des-Caps, in the Gaspé area of Québec, radiocarbon dated to 3,720 ± 90 BP, establishes a boundry further north than previously reported (Dumais 1978). When investigating the Transitional Archaic manifestation in the Quoddy region, Sanger (1975: 69-72) suggests that the “Susquehanna tradition” may be the basis

for later Algonquian speaking cultures. This proto-Algonquian language may have been regionally similar and that over time became separately distinct Algonquian languages.

The author proposes that if Transitional Archaic sites are found within all Maritime Provinces, including the Gaspé area of Québec, that archaeolinguistic and ancestral boundaries are more plausible than arbitrary geographical locations. Sanger (1979b: 12) suggests that the slow growth of archaeological research in the region is due to economic conditions where it has been challenging to justify archaeological fieldwork. Since the ecomony of the region can determine the archaeological fieldwork, or lack thereof, then less developed areas of the Maritime Provinces will receive less attention, which creates an absence of evidence. Therefore, the author suggests that the ancestral homeland of the Mi'kmaq, known as the Mi'kmak'i, with the exception of Newfoundland (Ktaqmkuk) be seen as the new northern boundary of the Transitional Archaic people, until further evidence proves otherwise.

6.3.2 Landscape Ethnoecology

An ontological examination through the theoretical lens of landscape ethnoecology can bring anthropologists and archaeologists in rhythm with the perspectives of Indigenous peoples, in this case Mi'kmaw, which is not only displayed in their oral traditions, but is embedded in words and place. Landscape ethnoecology is the multivocal and animistic perspective of the environment, where the people entangled with their environment express topophilia, or love of place, through oral traditions, place

names, and place-making, along with their ancestral and kinship relations to place (Johnson and Hunn 2010; Tuan 1977, 1979, 1990).

The ethnobiological intersection of classification concerning both plants and animals (Berlin 1992), in addition to understanding ecotopes, provides a third semantic realm "of geographic place names that [are] recognized in every society" (Hunn and Meilleur 2010). The conception of place naming confirms the idea that "such focal points of the landscape preserve critically important information in memory needed to locate and acquire resources" (Hunn and Meilleur 2010). These focal points in the perceived environment are entwined with social and emotional ties that establish a foundation of identity (Basso 1996, 2000) and represent cosmological rooting and "legal claims to the land" (Thornton 1995, 1997). When observing place names and the act of naming places the focus on linguistics, and in this case archaeolinguistics, is necessary in the field of toponymy.

Edward Sapir's (1912) observations concerning toponymy examines language as interactive and reflexive of a group's culture and that the role of grammar "might play in setting at least some of the parameters for naming" (Fowler 2010). Franz Boas (1934) in his research of Indigenous languages of North America depicted the different "feel" and "look" of place naming among various languages based on peoples' significance in what was being named, along with the grammatical differences between the languages. Keith Basso (1996) intricately illustrated his observations of the place naming system and how these places are deeply attached to the people and maintain a sense of identity, in addition to witnessing how these places are utilized in teaching moral and social lessons.

This section focuses on how the theoretical use of landscape ethnoecology can be utilized to reveal such relations in the temporal depths of the archaeological record. Trudy Sable (2011) and Bernie Francis (2012) showed how meaningful information could be deposited into landscape when they displayed that Mi'kmaw oral tradition served as maps in southwestern Nova Scotia and that this knowledge was encapsulated in the Woodland periods of the archaeological record. The verbal based, animate and inanimate gendered Mi'kmaq language holds clues into relationships with place, and how place was used and perceived over time. This research will focus on linguistic and archaeological evidence from the Boswell site in an attempt to push the temporal envelope to further understand the important ties between people and place.

To better comprehend *nogamuk*, or relation to all things, contemporary archaeologists must look back to late 19th and early 20th century ethnohistorical and ethnographic accounts in order to assess Wabanaki relation to place. Three individuals whose research and knowledge of Atlantic Canada greatly improved the western understanding of Indigenous relations to place are William Francis Ganong, Frank Gouldsmith Speck, and Mi'kmaw medicine man, Jerry Lonecloud (Whitehead 2002). Ganong "included the first detailed inventory of prehistoric sites in the province, along with observations on why specific sites were chosen" (Deal 2015). He noted that habitation sites are often found at the ends of portages and that the reasons for camping at these places are more related to rest from travel than to subsistence strategies (Ganong 1899; Hamilton and Spray 1977). His impression of these places, or ecotopes (Tansley 1939; Troll 1971), including minor influences for habitation such as: "a level place near

the water, for their wigwams", "a good gravel beach for their canoes", "a spring", and a "commanding view of the waterways" which were factored into sites placed for a favorable outcome (Ganong 1899, Hamilton and Spray 1977).

Similar observations were noted by Frank Gouldsmith Speck at Red Indian Point along Red Indian Lake in Millertown, Newfoundland, where a "look out tree" was utilized not only for a view of the waterways, but potentially as a look out point for caribou seasonal mobility (Speck 1922) . Speck who held a professorship at the University of Pennsylvania focused the majority of his research on Algonquian and Iroquoian cultures in the eastern United States and Canada (Speck: 1922, 1940). Among his ethnographies he recorded early accounts of Mi'kmaw people crossing the Bay of Fundy from Yarmouth, Nova Scotia to Grand Manan Island, New Brunswick in a canoe, in addition to an account where a family "is said to have crossed from Digby [Nova Scotia] to St. Johns [Saint John], N.B." (Speck 1922: 154). Speck later records chanting in the rhythmic pattern with the waves while traversing in a canoe among a group of Penobscot men. In this account he states "the boat rode the waves much more easily while the old man was singing" (Speck 1940: 167). This small, yet astute note reveals the attachment the Wabanaki had with their environment, even when confronting differing situational conditions.

The memoirs of Mi'kmaw medicine man Jerry Lonecloud were originally collected by Clara Dennis and Harry Piers, and later assembled by ethnologist Ruth Holmes Whitehead of the Nova Scotia Museum. One of the stories entitled *We Then Started for St. Margaret's Bay* (Whitehead 2002: 55), elaborates on the travel embarked

from Grand Manan Island, New Brunswick, to Brier Island in Digby County, Nova Scotia. Lonecloud was invited by a Mi'kmaw woman to join her family and stay with them in Nova Scotia, while living at Cape Elizabeth, Maine. The next summer a little sailboat, along with two canoes built by "old Indians", were the vessels for transportation (Whitehead 2002: 55). Lonecloud and one of the "old Indians" occupied one of the canoes, in order to go ahead and select campgrounds, while the rest of the party occupied the other vessels. They reached Grand Manan stayed there for two or three weeks, and then canoed forty miles across the Bay of Fundy, landing at Brier Island. As Lonecloud recalls, "We could not see across. Me and the old man in the canoe, we got to Brier Island, but the others – in the boat – stopped at Yarmouth." (Whitehead 2002: 55). He would later meet the rest of the party in Yarmouth the following fall.

These ethnohistoric and ethnographic accounts provide insight and imagery into the Wabanaki as recorded by Ganong, Speck, and Lonecloud, which suggests continuity of memory, practice, and place (Sable and Francis 2012; Silliman 2009). Recently, archaeologists have begun to investigate social memory, or memory incorporated with daily practice, and its utilization in the past (Cipolla 2008; Silliman 2009). It is this line of thought that begs the question: Can social memory, practice, and usage of place be used to reveal related activities in the past from an ethnographic standpoint? How far back in the past can we observe these activities through archaeological investigations? A consideration of interconnections between lithic resource acquisition at the Boswell site, ethnohistoric accounts of location, and Mi'kmaw oral traditions conserning place, provides insight into these matters.

The diagnostic artifacts recovered from the Transitional Archaic period component of the Boswell site exhibited an interesting array of stylizations and lithic materials. Two artifacts were positively identified using pXRF: a broadpoint base made of Kineo-Traveller porphyry, and a utilized flake made of banded spherulitic rhyolite from Penobscot Bay, Maine. Portable x-ray fluorescence analysis aided in comprehending location, distance from source to site, and possibly how lithic production and acquisition aligns with seasonal movement and subsistence strategies (Blair 2010; Pollock et. al. 2008; Sable and Francis 2012). David Sanger observes a broadpoint tradition connection between Maine and Nova Scotia as evidenced by the rhyolitic materials from coastal Maine recovered at Tusket Falls in Yarmouth, Nova Scotia (Sanger 2009b; Sanger and Davis 1991). This is not surprising to Sanger, as he has postulated canoe trips over 16 kilometers from the central Maine coast to southern Nova Scotia, building off of Speck's and Lonecloud's ethnographic accounts. Following Ganong's assessment of portage routes in New Brunswick, it is evident that the Annapolis-Cornwallis Rivers are, together, an aquatic highway with a portage route between the two river heads.

Following Ganong's advice on examining the deeper meaning entwined with place names an examination of the furthest lithic material identified at the Boswell site may reveal why this lithic resource and the site were deemed important. Kineo-Traveller porphyry is found at a number of Transitional Archaic sites along the coast of the Gulf of Maine and the stylization of the base found at the Boswell site is similar to projectile points recovered at the Young site in Alton, Maine (Borstel 1982) and Occupation 2 at

the Turner Farm site on North Haven Island, Maine (Bourque 1995). Mount Kineo is located on Moosehead Lake, the largest mountain lake in the eastern United States, in northwestern Piscataquis County, Maine. Henry David Thoreau, while exploring the Maine wilderness to write his publication The Maine Woods (1909 [1864]), recorded folklore surrounding Mount Kineo from his Penobscot guide Joe Polis. Thoreau recalls:

> While we were crossing this bay where Mount Kineo rose dark before us within two or three miles the Indian repeated the tradition respecting this mountain's having anciently being a cow moose how a mighty Indian hunter, whose name I forget, succeeding in killing this queen of the moose tribe with great difficulty while her calf was killed somewhere among the islands in Penobscot Bay and to his eyes this mountain had still the form of a moose in a reclining posture its precipitous side presenting the outline of her head…(Thoreau 1909 [1864]).

When Samuel de Champlain was exploring the coast of New England and the Bay of Fundy in the early 17th century he came across two islands: one in Penobscot Bay which he called Isle au Haut, and the other off the Chenbucto peninsula of Nova Scotia which he also called Isle Haute; both meaning "high island" (Bourne 1906). Although Champlain saw the topographic distinction of both islands, he did not see the Wabanaki significance of both islands formerly being moose in their cosmology. Isle au Haut in Penobscot Bay, Maine, is the moose calf recorded in the story conveyed to Thoreau, while Isle Haute in Nova Scotia in Mi'kmaw cosmology is a moose that when swimming away from the Chenbucto peninsula was turned into stone by Kluskap (Hornborg 2008; Thoreau 1909 [1864]). The symbolic relationship between the Wabanaki, especially the Mi'kmaq, and moose seems to express ecological conservation, as addressed in the story of Tiam's Promise, or Moose's Promise (Unama'ki Institute of Natural Resources 2014).

Tiam's Promise is a story that takes place in Unama'ki, or Cape Breton, where the Mi'kmaw headed into the interior for the winter and upon setting up their camp a huge winter storm fell upon them before they could forage and hunt for food during the winter months. As winter had immediately set in the Mi'kmaw prayed to the creator for help and soon the next morning the first moose, Tiam, appeared to them. Tiam told the Mi'kmaw that he was a gift from the creator and had the L'nuk promise that "you have to treat me with respect, to use every part of me, and to not waste anything", Tiam continued "never harvest more than you need of me…and if you live this way I will never leave you" (Unama'ki Institute of Natural Resources 2014). This story embraces netukulimk, or "the culturally rooted concept of responsible co-existence and interdependence with Earth's resources and each other" (Lefort et. al. 2014).

Places associated with moose are not only in namesake, but convey to the Wabanaki through landscape and worldview lessons and in this case ecological conservation; take what you need and do not waste. The lesson with Mount Kineo, Isle au Haut, and Isle Haute is to use these resources accordingly due to their importance and to not exploit these resources as they may have seen such places containing finiteness. Keith Basso expresses in his observations of the Western Apache that places deeply attached to people and their identity, while being utilized in teaching moral and social lessons (Basso 1996). Concerning the places aforementioned, it appears that these places are visible from a great distance and are strategic locations for habitation, acquiring resources and subsistence, along with trade and rekindling relations. In addition, these places fit well

into Ganong's observations concerning perfect conditions for habitation (Ganong 1899; Hamilton and Spray 1977).

The Boswell site not only fits well into Ganong's assessment of perfect conditions for habitation, but also is a good meeting place. The site is located in the middle of the Annapolis Valley along the Annapolis River, and a portage route away from the Cornwallis River. Accessability to the Boswell site from the Bay of Fundy is available via the McNeily and Wiswal brooks, which flow in a ravine perpendicular to the North Mounatin ridge. This establishes the site as a multifaceted place for rest, meeting, travel, and subsistence (Ingold 1993). The discovery of Mount Kineo-Traveller Porphyry at the Boswell site serves as a source of memory, identifier, and reminder of ecological stewardship embedded in things reflecting places experienced first-hand or never at all (Basso 1996, 2000; Van Dyke and Alcock 2008; Russell 2012).

Along with acquisition of material, or artifacts, comes the aspect of animism that the artifact possesses which is evident in two ways: through the use-life of the artifact and the ultimate "killing" of the artifact (Adams 2002, 2008). The thriftiness of the people during the Transitional Archaic period is often displayed by the repurposing and reworking of flaked lithic tools by either a singular or multiple "authors" (Deetz 1967). This process of reutilization establishes stages in the artifact's use-life which reflect the usage or "age" of the artifact and potentially exposes other life lessons through its animistic properties.

The action of "killing" an artifact during the Transitional Archaic period has been tied to ceremonial and funerary contexts (Borstel 1982; Dincauze 1968; Leveillee 1999;

Ritchie 1965a; Simmons 1970; Suttie 2005). Within these contexts artifacts are either ritualistically manufactured or were in use during the period of interment causing an array of use-life stages. Killed artifacts such as the Oromocto steatite vessel from French Lake, New Brunswick, along with a killed and reused biface from the Young site in Alton, Maine, are prime examples of such practice. This practice was conducted during the Contact period as reported by Nicholas Denys, a 17th century French merchant, who bared witness to a Mi'kmaw Copper Kettle burial. He addresses the exchange between himself and one of the Mi'kmaw, stating:

> "'Do you not indeed see?' said he, rapping again upon the kettle, 'that it has no longer any sound, and it no longer says a word, because its spirit has abandoned it to be of use in the other world to the dead man to whom we have given it?'" (Denys 1968 [1672])

This exchange expresses how animism is perceived through the action of the senses, while the aforementioned artifacts seem to have been animistically killed by utilitarian means. The acts of killing artifacts reveals intricate and complex aspects in determining animism through individual perception and collective cultural experience.

This research at the Boswell site reveals an interesting and complex piece to the overwhelmingly large puzzle archaeologists have encountered in attempting to understand the past. This particular puzzle piece reveals that two-dimensional interpretations of lithic resource acquisition and utilization should be seen in a multidimensional view whereas the object one is using is not only an extension of self, but also of place, memory, identity, and practice. To understand this we look at the killing of the "queen" moose that turned to stone, becoming a material used to make

tools, like the meat harvested from a moose. The animism incorporated stems from the material connection of place and is reinvigorated when the artifact transforms from one shape to the next by one or more “authors”, and “grows older” with each stage of use-life reduction. Encapsulated in this research is the need to incorporate not only ontological viewpoints with a landscape ethnoecology theoretical lens, but to hear the tales of the Mi’kmaq, and the greater Wabanaki Confederacy, and it is with this perspective that we have a better understanding of place.

6.4 Conclusion & Future Research

This thesis explored the Transitional Archaic period of the Northeast with a specifc focus on Maine, New Brunswick, and Nova Scotia. The case study of the Boswell site in southwestern Nova Scotia has reshaped our understanding of the Transitional Archaic period and people (Mu Awsami Keji’kewe’k L’nuk), in addition to revising the policies of archaeological surveys in the province. Findings at the Boswell site, particularly the chipped stone tool artifacts, provided a unique insight into lithic transportation within the Gulf of Maine during the Transitional Archaic period. Portable X-Ray Fluorescence aided in sourcing the lithic materials recovered at the Boswell site, and this methodology helped to not only understand lithic transportation, but also revealed the maritime oriented cultural networks established during this period. Additionally, the research objectives in this thesis focused on a tool kit for lithic technology, regional subsistence patterns, and a new northern boundry based on migration during the Transitional Archaic period.

A regional examination of over 400 artifacts, including those recovered at the Boswell site, provided an opportunity to investigate the parameters of a Transitional Archaic period tool kit. This examination did not only focus on the spatial analysis of occupation by the means of artifact presence, but also observed similar behavorial patterns of artifact utilization across the region. The defined tool kit contains chipped stone bifaces that are ontologically manufactured as part of an animate use life, reshaped based on use or practical application, wood working groundstone tools for producing weirs, aquatic vessels, and habitation construction, organic tools made of antler, bone, and wood, along with copper utilization. Additionally vessel technology, predominately steatite vessel technology, as well as early ceramic, wood, and basketry should be incorporated into the tool kit. Functionality of the Transitional Archaic period tool kit demonstrates a diverse and seasonally opportunistic subsistence strategy in Maine and the Maritime Provinces.

Subsistence strategies during the Transitional Archaic period appear in a regional pattern based around seasonal focuses between interior riverine and lactustrine ecotopes, and coastal locales. Early spring into summer would be the optimal time for lithic acquisition aimed at interior subsistence strategies consisting of; anadromous and catadromous fish species during their migration, aquatic and terrestrial animals, and new-growth vegetation. From summer into early fall people during the Transitional Archaic period would move their settlement and occupy coastal sites for a focus on aquatic fish and mammals, along with the opportunity of acquiring terrestrial game. During coastal

occupation trade networks and kinship visitations would be highly active as conditions allowed people to travel the Bay of Fundy.

It was most likely at this time that lithics from Maine and New Brunswick were acquired through kinship interactions by those who would later occupy the Boswell site. During the early fall into winter, people during the Transitional Archaic period would either return toward the interior riverine or lacustrine sites to forage for nuts such as acorns and beech nuts, along with exploiting catadromous fish, smoking them for preservation, and hunting terrestrial and aquatic animals. The Boswell site occupation most likely occurred during the fall and spring seasons, with fish exploitation occurring in the spring for anadromous fish, and catadromous in the fall.

Some archaeologists have long held migration as the mechanism of Transitional Archaic people expansion into the region. In this thesis both Rouse's (1958) and Sanger's (1975) criteria, along with Anthony's (1990) critiques, have indicated that migration is the most plausible explanation for expansion in the region. Migration durng this period was made possible due to climatic change that began around 5,000 BP toward a cooler and moister environment in Maine and the Maritime Provinces. Transitional Archaic people headed north from southern New England for favorable and less settled conditions through the wave-of-advance short distance migration model (Ammerman and Cavalli-Sforza 1973, 1979, 1984; Martin 1973). This migratory model observes locally high birthrates among those along the "wave front", causing movement to less settled locations, within the paramters of social organization centered on nuclear families and loose connections of up to a hundred people (Ritchie 1965a; Anthony 1990: 901).

Anthony claims that this type of short distance migration model “might accurately account for the idealized results of diverse population movments averaged over great spans of time" (Anthony 1990: 902).

Additionally, the Gulf of Maine served as a means for marine migration along the New England coast and then traversing the Bay of Fundy. This migration is evident from exotic lithics found at the Boswell site, which can be seen as a site on the geophysical crossroads of the Annapolis Valley in Nova Scotia. Through archaeolinguistic examination entwined with landscape ethnoecology the new northern boundary for the Transitional Archaic people is indicative of the ethnohistorical and contemporary Mi’kmaw homeland (Mi’kma’ki) excluding Newfoundland (Ktaqmkuk).

New prespectives from the Boswell site have been valuable in analyzing the Transitional Archaic period in Maine and the Maritime Provinces. Lithic artifacts recovered from the Boswell site reveal regional lithic trade networks, through the utilization of portable x-ray fluorescence, which rasies further questions surrounding kinship relations, martime mobility, and the hypothesis that cultural values can be conveyed through stone. Radiocarbon dating of the Transitional Archaic component of the Boswell site provides evidence that the area was continually inhabited during all three temporal phases.

This examination of the Transitional Archaic period in Maine and the Maritime Provinces has provided valuable insight and contributes to the foundation of future investigations focused on a better understanding the past. One avenue where future research could expand is through new provincial policies concerning depth of test pitting,

especially in riverine and lacustrine settings, in order to recover possible Archaic compnents. At the Boswell site it was found that sterile alluvial sediment between the Woodland and Archaic components could be misinterpreted as an absence of occupation, especially in the early stages of archaeologcical surveys.

Archaeological surveys should be conducted with depth in mind, especially within the newly defined boundary of the Transitional Archaic people, in areas like Cape Breton, Prince Edward Island, and the Gaspé Peninsula. Northern exploration could provide further interesting insights, but endangered sites within the province should first be examined before they are gone due to either environmental or industrial factors. At these endangered sites, like the Boswell site, there is the possibility of steatite vessel technology being found since a chlorite quarry in Saint John, New Brunswick is on one end of an aquatic path across the Bay of Fundy.

On a larger scale, further regional comparisons of the Transitional Archaic period in New England and the Maritime Provinces are needed. Materials like copper could be analyzed and sourced in order to observe its importance during this period, and if accessablity factors into its rarity. Sourcing lithic materials via portable x-ray fluorescence has been advantageous, and in doing so a regional database is slowly accumulating. An extension of this type of database should be undertaken by sourcing all appilicable artifacts allowing instant artifact source data to varying sectors of archaeology, like cultural resource management (CRM), which would be able to provide better information.

Archaeological investigations at the Boswell site have brought about new perspectives and information to the discussion of the Transitional Archaic period, yet it has not given up all of its secrets. Since the 2015 field season, artifacts have been collected by the landowner, Terry Wilkins, while the water level was at its lowest in years. He recovered artifacts along the boulders in the riparian zone (Figure 5-4), including: one felsitic Group 1 ovate base biface found in two fragments, one Group 5 felsitic base fragment and a complete felsitic Group 5 biface, two felsitic Group 7 peroforator tip fragments, the groundstone bit edge of an adze, and three biface tip fragments made of felsite and Scots Bay chalcedony. These new finds warrant further archaeological investigations at the Boswell site.

There is more research to conduct in the region, especially in underdeveloped areas with endangered sites, which could fly under the radar, allowing potentially vital information to be lost from the archaeological record. Explorations into the past, including the Transitional Archaic period in the Maritime Provinces, is necessary in further preserving the heritage of the *L'nuk*.

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