BEARING IDENTITY:
A BIOCULTURAL ANALYSIS OF HUMAN REMAINS FROM OLD MISSION POINT (ClDq-1), NEW BRUNSWICK

by

KELLY-ANNE PIKE

A thesis submitted in conformity with the requirements

for the degree of Master of Arts

Department of Archaeology

Memorial University

BEARING IDENTITY:
A BIOCULTURAL ANALYSIS OF HUMAN REMAINS FROM OLD MISSION POINT (ClDq-1), NEW BRUNSWICK

Master of Arts 2014

Kelly-Anne Pike

Department of Archaeology

Memorial University

ABSTRACT

This thesis focuses on the biocultural analysis of human remains recovered from the site of Old Mission Point (C1Dq-1), located in northern New Brunswick. For centuries, the site of Old Mission Point was home to prehistoric northern Mi'gmaq peoples of the Maritimes region, and later, became an important seventeenth-century Récollect and Jesuit missionary settlement. The first research objective of this thesis was to explore the concept of identity, in both its biological and social forms, through the assessment of the skeletal assemblage. The second thesis research objective was, upon identifying the ancestry of the remains, to investigate those factors attributed to the maintenance and transformation of identity throughout the life course. This goal extended into understanding possible changes in identity for the dead, and whether burial environment, funerary rites, and afterlife beliefs affected or reflected the social standing of the deceased. Ethnohistorical accounts and oral traditions, archaeological data, and morphological and stable isotope analyses of the remains were all used to gather the information needed to fulfill these research objectives.

The human remains were identified as Native American in ancestry, and date to the Early Woodland period (BC 500 – AD 300), as well as the Late Woodland (AD 1000 – 1534) and Early Historic (AD 1534 – AD 1755) periods. The skeletal assemblage consisted of both male and female adults, and several young juvenile individuals. The social and biological statuses of these individuals, as conveyed by the ethnohistorical accounts, influenced the interpretation of the morphological assessment and carbon and nitrogen stable isotope analysis results. However, it was found that discrepancies existed between the osteological, archaeological and ethnohistorical evidence, promoting the use of multiple lines-of-evidence and the tenents of the biocultural approach. The biological versus social identity trade-offs experienced by these individuals over the life course is interpreted as affecting Mi'gmaq social status, health, diet, and juvenile weaning practices. Moreover, it was found that the living identity of the deceased ultimately affected the manner and space in which the dead were buried. This evidence supports the idea that the living identity of the dead remained intact even after crossing-over into the afterlife, with social roles and responsibilities continuing on in accordance with Mi'gmaq cosmological beliefs. It is concluded that the formation, maintenance, and metamorphosis of identity over the course of life was integral to the lifeways and deathways of the precontact and postcontact Mi'gmaq.

ACKNOWLEDGEMENTS

First, I would like to thank the Listuguj Mi'gmaq Band Council for generously granting me the rare opportunity to study the remains over the last two years. As well, I wish to express my gratitude to my co-supervisors Dr. Michael Deal and Dr. Vaughan Grimes for all of their guidance and encouragement throughout this process. I consider myself very lucky to have participated in this collaboration, and also, that my efforts and dedication to this project were allowed to flourish because of the funding I received from the Social Sciences and Humanities Research Council of Canada (SSHRC).

There are a number of people who I would like to thank for expressing interest in my work and who were kind enough to lend me their expertise and information on a variety of subjects, including: Kevin Leonard; Joleen Gordon; Katie Cottreau-Robins; and Albert Ferguson. I am grateful to Ben Fuller for processing the radiocarbon samples at the Keck AMS Lab at the University of California, Irvine and to Alison Pye of TERRA's stable isotope lab at Memorial University.

To all of my colleagues at the university within the MA and PhD cohorts, I could not have finished this thesis without your support and friendship. Special recognition goes to fellow archaeology students C. Young-Boyle, M. Davies, and A. Morrison, as well as my favourite folklorist B. Roberts. Last but not least, I would like to thank my family for all of their love and incessant pleas to hurry up and come home soon: the Pikes (Mom, Dad, Lea-Anne, Jamie and Danny), Kelly's (Nanny and Poppy), Pike-Cascagnettes (Aunt Linda and Uncle Ray), and Juneau's (Jacqueline, Bruce, Madison, Brooklyn, and Sierra).

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

CHAPTER 1: INTRODUCTION

The dead act as bearers of identity, communicating their personal experiences with the living through the assessment of their remains and burial environments. Moreover, the study of the dead also has the power to shed light on both biological and social aspects of identity for the living. To define identity one must strive to rectify the mutable biological and social aspects of self, variably influenced by the external environmental factors that subsequently shape human lives. Bioarchaeological connections involving identity and the lives of past peoples are most obviously relatable to living descendant communities. However, the value of such research lies in understanding the anthropological importance and applicability of biosocial identity formation in any given context.

The goal of exploring the formation, alteration, and perpetuation of identities in this thesis revolves around the site of Old Mission Point (ClDq-1), near Atholville, New Brunswick, where several sets of human burials were found on a spit of land extending into the Restigouche River in the spring of 1972. The remains were salvaged and relocated to Memorial University, where they have stayed unidentified and unanalyzed for over 40 years. The unintentional discovery of the human remains complicated the excavation of the site during the initial recovery phase, and has since proved problematic in terms of the analysis and research pertaining to the history of the site. At first glance, Old Mission Point represents a culmination of delicate issues prospective archaeologists are taught to be cautious of, if not entirely avoid, in their studies: broad-scale destruction of depositional contexts, a multi-layered but undefined prehistoric and historic site

landscape, and the ethics surrounding the excavation, analysis, repatriation and reburial of human remains, specifically those of possible Aboriginal ancestry. What the study of Old Mission Point actually represents is an ideal platform for archaeologists and the communities they work in to face these issues head-on together, whilst contributing original research and information to the discipline as a whole.

The Mi'gmaq people are identified as the preeminent eastern Algonkian language and culture group indigenous to the Canadian Maritimes (Bock 1966; Wallis and Wallis 1955; Whitehead 2006). The area surrounding Old Mission Point has been home to northern Mi'gmaq groups for many centuries, with oral narratives depicting the creation of the first Mi'gmaq man and woman as taking place on the banks of the Restigouche River (Wallis and Wallis 1955). Currently, the site is protected by the Listuguj Mi'gmaq community, the descendants of those Mi'gmaq persons who fled from the British forces, along with the Acadian settlers and French missionaries, at the end of the Seven Years War (1756-1763) (Proulx 1999). Through their permission to study the salvaged human remains, the Listiguj Mi'gmaq council has created a rare research opportunity. Interest in this project from several stakeholders denotes the ongoing interest in bioarchaeological studies of identity, given their propensity for answering the many questions focused on human remains and the context in which they were found, namely: Who were these people? What can the skeletal assemblage and burial context tell us about daily life and perspectives on death in the past? What does this study entail for the future in terms of linking identity to the assessment of human remains?

In order to answer these questions about identity a biocultural approach must be taken, incorporating interdisciplinary study to pull out and piece together those multiple

facets that contribute to the dynamic relationships between growth, health, biological and social roles, and status over the course of an individual's life. Furthermore, these factors influence mortuary rites and ideological belief systems, exposing their pertinence to investigations of changing identities upon the occurrence of death. Three over-arching forms of evidence will be used to identify, construct and define biological and social identities related to the skeletal assemblage from Old Mission Point. Osteologically, the morphological assessment of the remains will determine the minimum number of individuals (MNI) present in the collection, and where applicable ancestry, age, sex, height and pathology present on the bones for each individual represented. Adding to this will be carbon and nitrogen stable isotope analysis, performed on bone collagen sampled from each individual. This analysis will aid in interpreting diet, an important factor in determining health, linking status to the access of resources, and roles associated with food procurement and community survival. Radiocarbon dating samples were also taken directly from bone, with the results being able to attest to the age of the site and possible cemetery. Archaeologically, the context of the landscape and material culture collected from the site, including the burials, will be assessed in terms of their contributions to identity, and the potential social and spatial relationships between the living and the dead. The items discovered in the 1972 and 1973 excavations will also aid in the relative dating of the site and burials. Lastly, oral narratives and ethnohistorical accounts detailing aspects of Mi'gmaq culture will be consulted. These stories and observations will fill in the gaps that the osteological and archaeological data simply cannot provide when it comes to perceptions on building, transforming, and maintaining biosocial identities in both life and in death.

1.1. Research Objectives

1.1.1 Biological Identity

To determine the biological identity and health status of the deceased by performing standard morphological and biomolecular means of osteological assessment.

1.1.2 Social Identity

To determine the role and status of various members of Mi'gmaq society through ethnohistoric descriptions of , and archaeological evidence for, social divisions (based on age, sex, gender etc.), differential access to resources or activities (diet and nutrition, goods and materials, labour activities etc.), and the influence of such on health.

1.1.3 Identity in Death

To examine the relationship between biological and social identities in regards to afterlife beliefs and mortuary customs, and to determine whether notions of identity changed, or new identities were formed, upon the death of an individual.

1.2. Chapter and Appendix Outline

1.2.1 Chapter 2: Bioarchaeology and the Study of Identity

Chapter 2 will focus on the role of bioarchaeological investigations in the search and interpretation of identities within the archaeological record. Specifically, biocultural perspectives will be explained and advocated here in order to further the understanding of how identities are formed, maintained, or altered throughout the course of life and in death. Interpretative difficulties that deal with differential treatment of the deceased in connection with their identity and manner of death, as evidenced by certain modes of burial, will also be discussed in bioarchaeological context. Lastly, the ethical

considerations and implications of bioarchaeological study will be outlined in this chapter.

1.2.2 Chapter 3: Archaeology and Chronology of Old Mission Point

Chapter 3 outlines the physical environment surrounding and involving the site of Old Mission Point, as well as details the known history of the area through archaeological finds and historic documentation. The initial survey of the site done by Charles Martijn, the discovery of the burials, and salvage excavations carried out by Christopher J. Turnbull are detailed here. Relative dating of the site from the recovered finds will be presented by comparing artifact typologies and material origins with other archaeological research performed in the Maritimes. Lastly, the methodology used for calibrating radiocarbon dates is also explained in this chapter.

1.2.3. Chapter 4: Ethnohistorical Approaches

The context and timing of the collection of ethnohistories pertaining to the Mi'gmaq people is outlined in Chapter 4, focusing on not only the importance of such documentation but also the bias associated with observations from 'outsider' persons. Moreover, the theoretical complications that arise from solely subscribing to the direct historic approach in bioarchaeological study will be discussed, further promoting the application of biocultural perspectives and comparability between differing lines of evidence.

1.2.4 Chapter 5: Mi'gmaq Lifeways

Using ethnohistorical evidence, Chapter 5 outlines the social and biological transitions experienced by Mi'gmaq persons over the life course, affecting the cultural practices, diet and access to resources, and belief systems of the Mi'gmaq for the Late

Woodland and Early Historic periods. Individual and collective identities are examined within Mi'gmaq society along the lines of age, sex and gender in regards to social role and status. Discussion of the suggested changes to Mi'gmaq identities between the prehistoric and protohistoric periods, and upon European contact, are presented here.

1.2.5 Chapter 6: Mi'gmaq Deathways

Chapter 6 will investigate Mi'gmaq responses to poor health, trauma, and disease, as well as funerary ceremonialism and mourning customs. A closer look at ideological beliefs connected to the land of the dead and the connections between body and spirit will be examined to determine Mi'gmaq perceptions of the dead, and whether or not identity changed or carried on after the occurrence of death and subsequent burial. A summary will be provided of archaeological sites elsewhere in the Maritimes region where Mi'qmaq burials have been discovered, recovered and recorded and whether these corroborate with ethnohistorical accounts of Mi'gmaq mortuary patterns.

1.2.6 Chapter 7: Materials and Methods

In this section, the recovery efforts and state of preservation for the remains will be discussed in relation to implications for the osteological assessment. Biases inherent within bioarchaeological study, including sample and mortality biases and the Osteological Paradox are also discussed. Central questions pertaining to the skeletal assessment will be outlined, along with which methods aid in answering these queries, subsequently fulfilling the research objectives of this thesis. Lastly, the morphological and biomolecular methods used in this study are detailed, with any problems associated with these techniques being explained in regards to the Old Mission Point skeletal assemblage.

1.2.7 Chapter 8: Results

The results of the morphological and biomolecular assessments are provided in Chapter 8. The ancestry of the Old Mission Point individuals is confirmed as Native American. The minimum number of individuals within the skeletal sample is 14, comprised of 5 adults and 9 juveniles of varying ages. Of the adults, sex can only be identified for 3 individuals, with there being 1 female, 2 males, and the other two individuals being of unknown sex. Skeletal pathology of the bones and teeth is described, with lesions consistent with dental attrition, periodontal disease, joint degeneration and musculoskeletal stress markers all being present. The results of the carbon and nitrogen stable isotope analysis suggest that these individuals had a marine resource based diet. The $\delta^{13}C$ and $\delta^{15}N$ values for the male and female individuals within the sample differs greatly, possibly suggesting intrapopulation variation in dietary patterns based on sex and gender. Furthermore, the level of N- and C-enrichment of the juvenile bone collagen suggests that these children were breastfed, and had possibly begun to be weaned, shortly before death. Additional information on the analysis of the artifacts discovered alongside the remains during the course of this research is also presented here.

1.2.8 Chapter 9: Discussion

In Chapter 9, the results of Chapter 8 are contextualized using ethnohistorical and archaeological information pertaining to aspects of biosocial identity for the Mi'gmaq. Several inconsistencies are found between the osteological, archaeological, and ethnohistorical data collected. These discrepancies involve the subjects of a terrestrial versus marine based diet, infant weaning practices, and the location of burial areas among

the Mi'gmaq. At the same time, the results of the morphological and biomolecular assessments may give credence to other information pertaining to Mi'gmaq cultural norms, such as gendered variation in diet, skeletal pathology and labour activities, and mortuary practices.

1.2.9 Chapter 10: Conclusions

In chapter 10, it is concluded that a biocultural approach must be taken in bioarchaeological investigations in order to isolate the many factors that create, form, and change the identities of the living and dead. The discrepancies between the archaeological, osteological, and ethnohistorical information consulted and collected over the course of this research cautions against only taking a direct historical approach when interpreting the past. A summary of the information garnered by this study in relation to biological and social aspects of identity, as well as changing identity in death is provided. The importance of this study, namely in that it is the first of its kind in the Maritimes, is examined, along with work to be done in the future that will aid in building on our understanding of Mi'gmaq cultural practices in the past. Lastly, archaeological stewardship as a part bioarchaeological research is encouraged.

1.2.10 Appendices

Appendix A contains all data collected during the morphological assessment of the human remains. Appendix B contains all carbon and nitrogen stable isotope data for the Old Mission Point individuals, including the ultrafiltered stable isotope results associated with the uncalibrated radiocarbon dates. Appendix C includes all radiocarbon dating data and information on the calibration methodology used in this research.

CHAPTER 2: BIOARCHAEOLOGY AND THE STUDY OF IDENTITY

This chapter examines bioarchaeological investigations of identity by first defining the terminology used within such research, as well as when interest in exploring the formation of identities began within the discipline. Biocultural factors that play a formative role in the construction of identity are then discussed in relation to past studies and their interactions with one another. Next, in viewing identity as being associated with materiality in the form of artifacts, bodies, and burial environments, problems and progress in the interpretation of identity through bioarchaeological means can be revealed. Lastly, ethics and archaeological stewardship in relation to working with human remains in North America, specifically Native American remains, are discussed in light of this study and the standards upheld by the multiple stakeholders involved in this project.

2.1 Terminology, Origins, and Meaning

In order to understand the relevance of bioarchaeological investigations of identity within a modern-day context it is integral to define what bioarchaeology entails from an anthropological perspective. *Bioarchaeology* is a field that evolved out of processualism or the 'New Archaeology' of the 1950's and 1960's, with North American bioarchaeology being dedicated to the contextualization of human skeletal remains recovered from archaeological sites (Buikstra 1977; Buikstra and Beck 2006; Forrest 2010; Larsen 2002). Elsewhere, the field of bioarchaeology further encompasses other forms of research such as faunal and palaeobotanical studies (Buikstra and Beck 2006; Forrest 2010). In Britain the exclusive study of human skeletal remains from

archaeological contexts is more commonly known as osteoarchaeology. Bioarchaeology necessarily involves taking a biocultural approach to the study of human remains, merging the results of osteological assessment with socio-ecological and behavioural research regarding a specific culture, place, and time. In this respect bioarchaeological research usually draws from a wide range of interdisciplinary studies to elucidate socio-biological matters of pertinence to skeletal assessment in the form of, "…health, demography, diet, activity patterns, physique and genetic aspects of earlier populations" (Mays and Cox 2000: 1). Bioarchaeology's prerogative of pulling such information from different sources, whether these are archaeological, historical, ethnographical, or medical studies, for example, makes it an ideal discipline for understanding the complexities in the formation and perseverance of identities for the living and the dead.

Personal or *individual identity* is often defined as involving a single person who is aware of the physical and social aspects of self, indicating that sense-of-self is built through the bodily and social actions or experiences of the individual (Hamilakis et al. 2002). On the other hand, *collective identity* is seen as being shared by a group of persons, indicating oneness or unity in regards to perceived physical, cultural, or social conditions despite variations in other aspects of identity among the group's individuals (Hamilakis et al. 2002; Insoll 2007). Age, sex, gender, ethnicity and religion, social roles and status, and their effect on health and diet, are all factors that contribute to the establishment of individual and collective identities via biological and social frameworks. Identities are therefore formed, maintained, and altered according to a variety of biological and social variables that dynamically interact and intersect over the life course (Agarwal 2012; Agarwal and Glencross 2011; Gilchrist 2004; Glencross 2011; Hamilakis

et al. 2002; Insoll 2007; Knudson and Stojanowski 2008; Meskell 2001). Furthermore, because variables such as social roles and behaviours change over time from culture to culture, identity is also said to be historically-situated (Meskell 2001; Thomas 2002).

There is a dialectical relationship between collective (shared) and individual (personal) identities, with the notion being that even within groups, individuals will perceive collective identity differently, along with how their own personal aspects of identity can collaborate and co-exist within a collective identity dynamic. Discovering what identity means and how it is formed is inherently linked to self and group perceptions and the juxtaposition between the two. It is through the perception of self on the part of the individual held up against the perceptions of others (society) that identities are created, with the socio-psychological terms for this phenomena being referred to as the 'looking-glass self' or 'social mirror' (Cooley 1902; Franks and Gecas 1992; Mead 1934; Robins 2008; Yeung and Martin 2003). However, because individuals are considered to invoke *agency,* the capability of making one's own choices and decisions, identities will change, evolve, and are constantly reconstituted based on the independent actions of persons in relation to their environmental circumstances (social and biological variables).

Affixed to the concept of agency is *consciousness*; awareness of the external world and self on the part of the individual, signifying a basis from which independent decisions and actions can be made (Robbins 2008). Understanding the role of agency and consciousness in processes of identity formation is essential given that persons can cloak aspects of identity, while promoting others, to adapt to certain social situations or circumstances. The question then arises as to whether actions advocating or shrouding

aspects of identity are performed consciously or unconsciously. Such a question is of inherent importance within bioarchaeological investigations of mortuary patterns and identity, as the dead may not have any choice in how they are buried and instead are laid to rest by their communities via established funerary rituals (Fahlander and Oestigaard 2008; Gillespie 2001). These concepts are what allow us to reconstruct individual and collective identities in the past.

Seeking out identity within the archaeological record has its roots within post-processualist theory, gender and queer theory, and feminist archaeology which arose in the 1970's and 1980's and criticized aspects of empirically-driven processual archaeology (Geller 2008; Insoll 2007). Specifically, the archaeology of identity was used to shift the focus to groups of persons who have been, and sometimes continue to be, marginalized and seemingly forgotten about within society; women, children, the disabled and disadvantaged, those who do not subscribe to heteronormative gender models, and Indigenous, slave, African-American and religious communities (Donald 1997; Geller 2008; Heilen 2012; Hollimon 1996, 1997, 2011; Hubert 2000; Insoll 2007; Knusdon and Stojanowki 2009; La Roche and Blakey 1997; Mack and Blakey 2004; Meskell 2001, 2002; Orser 1994; Sofaer 1997, 2011; Sofaer Derevenski 2000; Waldron 2000). Philosophical debate over the concepts of human consciousness, diversity and individuality, have also fueled interest in the complexity of identity and the roles of genetics, biology, social inequality, and conformism. Nowhere are these dimensions more easily accessible than within mortuary contexts which have long been of fascination to archaeologists and the public (Binford 1971; Gillespie 2001; Hertz 1970; Joyce 2001).

However, many researchers have become increasingly aware that is difficult to convey the importance of bioarchaeological identity studies within the modern-era (Agarwal and Glencross 2011; Heilen 2012; Meskell 2002). This is because the beginnings of mortuary archaeology and biological anthropology were decidedly not focused on celebrating diversity and what being human means, but instead focused on perceived differences used to distinguish, separate, and judge persons from one another (Zuckerman and Armelagos 2011). In its earliest forms, mortuary archaeology consisted of excavating and recording the finds within graves most often without any sort of consultation, permission, or even knowledge on the part of communities connected with the burials ancestrally or otherwise. Biological anthropology at the turn of the 20th century was primarily used to typologically classify individuals into racial categories based on metric measurements of the skeleton (Albanese and Saunders 2006; LaRoche and Blakey 1997; Zuckerman and Armelagos 2011). Used in combination, the purpose of mortuary studies at the time was to establish the social status, cultural practices and beliefs, based on the manner of bodily deposition and how many grave goods were associated with burial of the deceased (see Yarrow 1880). As the century progressed and the horrors of two World Wars were exposed it became apparent to practitioners that the motives and focus of the anthropological disciplines needed to change (Zuckerman and Armelagos 2011). Biological anthropology became bioculturally focused with emphasis being placed on links between lifestyle, health, and socio-ecological environments (Armelagos et al. 1992; Zuckerman and Armelagos 2011). Archaeologically, mortuary studies focused upon building an understanding of social complexity and organization,

borrowing largely from the sociological works of Durkheim, Mauss, and Hertz (Binford 1971; Saxe 1970).

Innovations in science, technology and excavation methods have dramatically changed how archaeologists interpret burials, grave goods, and funerary ritual in relation to health, social status, and identity in the last quarter century. Within bioarchaeology many researchers have become highly specialized in the archaeological sciences fixating on aspects of human skeletal biology, palaeopathology, bone chemistry and histology, and ancient DNA studies. These techniques coupled with interdisciplinary research and field methods such as *anthropologie de terrain* have increased the amount of information that can be garnered from studying human remains (Knudson and Stojanowki 2008; Nilsson-Stutz 2008). Yet, controversy surrounding the ethical, social, and emotional implications of disturbing burials has not decreased with these leaps in innovation but has in fact increasingly become a point of contestation between archaeologists and the communities they work in (Larsen and Walker 2005; La Roche and Blakey 1997; Mack and Blakey 2004; Meskell 2002; Turner and Andrushko 2011). Yet, it is within the ongoing debates and controversy surrounding the study of human remains that the bioarchaeology of identity finds it meaning (Mack and Blakey 2004).

Though bioarchaeological studies cannot nullify ethical controversy and are not without socio-political ramifications, they are adept at shedding light on deep-seeded issues pertaining to human societies. These issues include aspects of resource control and accessibility, social inequality, connections between nutrition, health, disease and lifestyle choices, religion and belief in the afterlife. All of these issues are directly linked to the formation of identities and all continue to be of contemporary importance. By

better understanding the complex biological and social web weaved in the creation of individual and collective identities then perhaps so too can life be made better for those living with these same issues within the modern era. This is the meaning in studying identity from a bioarchaeological perspective. A *bioarchaeology of identity* is therefore committed to preserving and assessing human remains for the purpose of exploring the relationships between socio-biological roles, cultural and historical perceptions, and those problems intrinsically facing all human societies to learn about the past and promote discussion in the future.

2.2. Biocultural Factors of Identity

It has been argued that individuality and the human essence is not inherent within human beings themselves but is grown out of a relationship among persons, things, and society (Fowler 2002; Thomas 2002). In keeping with this argument, recent bioarchaeological studies have singled out several factors that affect the formation, maintenance, and alteration of identities throughout the life course. Furthermore, these factors have been portrayed as lending to the configuration of burial rites and notions of identity for persons even after death, and are therefore of importance to the study of mortuary patterns. The following section will outline the biocultural factors to be examined in this study by defining them, discussing what they can tell us about identity, and how they have been approached in other bioarchaeological studies of this nature.

2.2.1. Ethnicity

The interpretation of ethnicity or ancestry in the archaeological record can be controversial given biological anthropology's earlier association with racial classification based on morphometrics (Albanese and Saunders 2006; LaRoche and Blakey 1997).

From an osteological perspective, however, establishing ethnicity or ancestry is an integral part of skeletal assessment that not only dictates methodologies used in building an osteobiography for the deceased, but also allows bioarchaeologists to delve into those socio-biological variables that cross-cut ethnic identity during the life course. In examining and discussing ethnicity beyond the often ill-used concept of race which is a social, not biological, construct, it is possible to discover how ethnic identities are formed and their connection to socio-economic conditions and health.

According to De Vos and Romanucci-Ross (1975) ethnicity dictates membership within a group that features traits associated with, "…territorial, economic, religious, cultural, aesthetic or linguistic uniqueness" (p. 3). Furthermore,

> *An ethnic group is a self-perceived group who hold in common a set of traditions not shared by others with whom they are in contact. Such traditions typically include 'folk' religious beliefs and practices, language, or sense of historical continuity, and common ancestry or place of origin. The group's actual history often trails off into legend or mythology which includes some concept of an unknown biological-genetic generated continuity, sometimes regarded as giving special characteristics to the group. (De Vos 1975: 9)*

Within anthropology two different views are commonly held in accordance with understanding the role of ethnicity in building individual identity; primordialist versus instrumentalist perspectives (Jones 1996; Nystrom 2009). Primordialists believe that ethnic identity is inherent and fixed in individuals, being connected to concepts of kinship, origins, and traditions (as described by De Vos 1975), whereas instrumentalists believe ethnic identity is fluidly built through interactions between self and the economic and political spheres of the world (Jones 1996; Nystrom 2009). Nystrom (2009: 86) points out that while the instrumentalists view ethnicity as being constructed contextually

through interactions with others, the primordialist view of ethnicity is constructed psychologically.

Primordialists and instrumentalists have criticized each other's theoretical mindsets over the concepts of essentialism and agency in the creation of ethnic identity. Jones (1996), however, argues that neither viewpoint incorporates a historic or social framework from which ethnic identity can be built and adapted. Instead of adhering to strictly primordialist or instrumentalist perspectives, both Nystrom (2009) and Jones (1996) promote the use of Bourdieu's (1977) theory of *habitus* in archaeological studies as it takes into account social and historic factors, specifically in the relationship between persons, identity, material environments and ethnicity. By correlating identity formation to individual and group experiences with material culture, questions pertaining to *ethnogenesis*, when and how ethnic identities are created, can be answered (De Vos and Romanucci-Ross 1975; Knudson and Stojanowki 2009).

There are numerous recent bioarchaeological studies where the role of ethnic identity has played a key part in the contextualization, and sometimes controversy, surrounding the interpretation of human remains. These include Heilen's (2012) excavations of a historic cemetery in Tucson, Arizona where several forms of reburial and repatriation were carried out according to requests from stakeholders with varying ethnic backgrounds, and Mack and Blakey's (2004) explanations of problems and progress working on the African Burial Ground in New York City. Other research has touched on the subject of ethnogenesis by examining changing identity during periods of contact with other ethnic groups, cultural syncretism, and the cloaking, but not

abandonment, of some aspects of identity under circumstances of assimilation (Klaus 2008; Stojanowki 2009; Torres-Rouff 2008; White et al. 2004).

2.2.2 Sex and Gender

Sex and gender are integral components in the formation of identity. Within anthropology, however, there is enormous debate as to how sex and gender are constructed, as societies differ in their definitions of gender and sex based on conflicts and congruities between biological and social roles. Such debates are important for understanding sexual and gender diversity, especially when the self-reflexivity required in taking a biocultural approach is incorporated into bioarchaeological research. If assumptions and personal biases are not acknowledged, the identity and beliefs of the researcher can easily muddle their interpretations of sex and gender in the past. It is the opinion of some researchers that insufficient self-assessment is what has led to ongoing debate surrounding the definitions of sex and gender in bioarchaeological study (Geller 2008; Hollimon 1996, 2011; Meskell 2001), with the former being, "…the biological distinction between bodies and the latter the cultural distinction between social roles" (Thomas 2002: 32). Nonetheless, not everyone within the discipline subscribes to these distinctions between sex and gender, believing instead that sex is not just biologically, but also socially- and historically-constructed and can be used interchangeably with gender in some instances (Claassen 2001; Geller 2008).

While estimating sex is an integral part of the osteobiographical process, many have argued that it is one thing to determine whether archaeological skeletal remains are biologically female or male and quite another to assume that individuals in the past adhered to Western perceptions of male/female binary gender models (Agarwal 2012;

Geller 2008; Hollimon 1996, 1997 2011; Meskell 2001; Sofaer 1997; Thomas 2002). Refusal to acknowledge non-binary genders can be detrimental to uncovering identity in the past, especially in the face of bioarchaeological and textual evidence of prehistoric and historic populations recognizing individuals of varying sexuality and gender (Aspin and Hutchings 2007; Hollimon 1996, 1997, 2011; Walters 1993). Moreover, the assumption of a heteronormative gender model within bioarchaeological research shrouds the process of identity negotiation in connection to personal versus social responses to sex and gender differences. If social responses are not taken into account then links between sex and gender, other biocultural variables such as age and ethnicity, and subjects like access to resources, healthcare, and social status, cannot be made (Agarwal 2012; Glencross 2011; Knudson and Stojanowki 2008; Meskell 2001).

Much of the anthropological literature that has examined sex and gender in the past has focused on the roles of women within society. Until feminist critiques of archaeological method and theory were firmly cemented and put forward in the 1980's, women were largely absent from the record with many studies only mentioning females in relation to the domestic sphere (see Conkey and Spector 1984; Geller 2008). Bioarchaeological studies that emphasize women's contributions to social, economic, and political environments, and that link them to specific activity patterns, violence, and disease have grown substantially since (Agarwal and Glencross 2010; Basgall 2008; Claasen 2001; Grauer and Stuart-Macadam 1998; Martin et al. 2010; Stone 2012). Importantly, such studies have viewed women's identity in relation to wider networks of cross-cutting socio-biological variables and circumstances, seeking to break away from heteronormative gender models or explain processes of engenderment for children

(Agarwal 2012; Baxter 2005; Claasen 2001; Joyce 2000; Sofaer 1997; Sofaer Derevenski 2000).

Children, like women, have been neglected until very recently in archaeological study, limiting our understanding of the part they have played in site formation processes, cultural activities, and socio-economic well-being. Perhaps this is because children, from a contemporary Western perspective, are generally seen as innocent and blissfully oblivious to the dangers and politics of the outside world (Sofaer Derevenski 2000). According to Sofaer (1997) children are viewed as an asexual form of human being and the epitome of *tabula rasa* in terms of identity. Yet, the very opposite is true, as children become socially engendered from the instant that biological sex is discovered (Sofaer 1997; Sofaer Derevenski 2000). Several authors have focused exclusively on the identity of children in the past in terms of engenderment (Baxter 2005; Joyce 2000; Sofaer 1997). These studies have also taken age and the life stage of childhood into heavy consideration when discussing children's social and biological development in the past.

2.2.3. Age

Bioarchaeological studies of identity where the factor of age is a focal point tend to try and rectify the differences between physiological, chronological, and social age in connection with defining social roles, disease processes, and funerary ritual (Agarwal 2012; Glencross 2011; Gowland 2006; Halcrow and Tayles 2008; Joyce 2000; Perry 2005). *Physiological age* is estimated by bioarchaeologists on account of the formative and degenerative changes to the skeleton over time (Agarwal 2012; Sofaer 2006, 2011). This differs from *chronological age* which is calculated for an individual using calendar years since birth (Agarwal 2012; Sofaer 2006, 2011). Oftentimes bioarchaeologists do not

have knowledge of the chronological ages of the deceased. In the rare circumstance that access to historical records or death certificates are available, such skeletal collections are used to test osteological-ageing methodologies in order to refine age estimation in the future. *Social age* refers to cultural-constructions of appropriate behaviours, roles and responsibilities for persons within a particular age threshold (i.e. childhood, young adulthood, old age etc.), and commonly intersects with other biocultural variables such as sex, gender, and ethnicity (Agarwal 2012; Sofaer 2006, 2011).

Age and its link with identity is best understood by viewing the life course as a constant transition through different thresholds, where in each stage the individual is confronted with new physical and social challenges (Gilchrist 2000; Perry 2005). Depending upon the reaction of the individual to these conditions, and the socio-biological variables at play within each stage, identities are continuously built and re-created as the person overcomes or is defeated by obstacles in the form of health risks, bodily development and degradation, social initiation rites, and other socio-economic, cultural, and political interactions. The social and historical perceptions that govern the value of those persons within each threshold differ from culture to culture. It is the responsibility of the bioarchaeologist to actively consult interdisciplinary sources, such as art and literature, to garner information on these perceptions in order to holistically interpret identity and its association with age.

2.2.4. Social Status

As one of the most asserted forms of identity interpreted through mortuary studies, social status is incorporated within all of the over-arching biocultural factors presented here, having a significant effect on health, bodily growth and maintenance, and

social acceptance (Adler and Ostrove 1999; Bogin 1999; Cardoso 2007). The development of status is often cyclical in nature, with social status affecting the opportunities afforded to individuals and groups, but also subsequently being affected by cultural perceptions of disability, health, and skill sets attributed to specialized labour.

Traditionally, social status within burial contexts was identified through the quantity and quality of grave goods associated with the deceased (Binford 1971; Saxe 1970). Current bioarchaeological research merges other lines of evidence to expand upon similar conclusions. These lines of evidence include examining dietary patterns through stable isotope analysis and the presence of musculoskeletal markers on bone to make inferences about nutritional status, differential access to food resources, and labour activities respectively (Ambrose et al. 2003; White et al. 2009). Many studies have been able to positively correlate low socio-economic status with poor skeletal growth during childhood resulting in stunted adult stature, heightened risk of degenerative disease, trauma, and early death (Cardoso 2007; Redfern and DeWitte 2011; Watkins 2005). Other studies have fixated on finding the disabled and disadvantaged in the archaeological record (Hubert 2000; Waldron 2000). The majority of research, however, involving the interpretation of social status from mortuary remnants has concentrated on tracking the evolution of egalitarian to complex socially stratified or ranked societies (Ames 2001; Gamble et al. 2001; Peebles and Kus 1977). In doing so, such studies have highlighted how the mutable aspects of identity have allowed for social systems with multi-tiered classes or castes to emerge.

2.2.5 Religion

Religion regulates social behaviours, exhibiting ties with all other biocultural factors in some aspect. Arguably, religion is also closely tied with important stages of the life course that are marked by biological awareness or phenomena, especially puberty, pregnancy and childbirth, menopause, and death. Therefore, religious identity, much like social status, shapes, promotes, or denounces certain types of interactions with food, sexuality, healthcare, and other persons, but is also shaped by these same matters (Hays-Gilpin 2000; Insoll 2004, 2007; White et al. 2009). Closely related to religion is the subject of superstition, with specific superstitions demonstrating affinity among distinct ethnic groups and in local folklore. Though it would seem counter-intuitive for religious persons to be superstitious to any degree, the roles of religion and superstition seem to be greatly entangled in many archaeological case studies of religion (Insoll 2004). Nowhere are religion and superstition more entwined then in mortuary practices and afterlife beliefs, making bioarchaeological research a prime place to explore this aspect of identity.

As with ethnic identity, defining mortuary patterns and religious identity is often problematic from a bioarchaeological perspective, not because evidence for it cannot be found, but due to socio-political strains associated with outsiders studying that which is considered sacred to specific cultural groups. These issues are further exacerbated by the fact that persons who are strongly identified by their religious identities have often faced an enormous amount of social upheaval and ostracism, persecution and assimilation. Hence, there is a tendency to shy away from discussing religious identity within archaeological research, especially when there is a risk of upsetting living communities connected to past populations. However, the very idea that religious identity is a topic

that society continues to be passionate about and seeks to protect makes it all the more important in bioarchaeological research from a contemporary perspective. The strong feelings related to mortuary and religious studies have actually molded how the analysis of human burials is approached, re-defining the roles, ethical obligations, and identities of archaeologists over the last twenty-five years. Given these changes in the discipline, research on religious identity has focused on the effects of colonization on indigenous spirituality and burial patterns, religious syncretism, ties to differential food consumption based on conversion, changes to funerary art, architecture and mortuary symbolism, reburial, repatriation, and the community of ancestors (Barrett and Richards 2004; Heilen 2012; LaRoche and Blakey 1997; Mack and Blakey 2004; Orser 1994; Riggs 2002, 2005; Webster 1997, 2001).

2.3 The Materiality of Identity: Artifacts, Bodies, and Burials

Identity is communicated through people's relationships with material culture and bodies (Fowler 2004; Hamilakis et al. 2002; Nystrom 2009; Sofaer 2006; Sofaer Derevenski 2000). As burials are composed of both material and bodily elements, the issue of consciously communicating identity extends beyond the initial discovery and interpretation of the grave in several respects. The first issue of interpreting identity in mortuary contexts is exploring the individual identity of the deceased through the material matter associated with the body and grave, as well as through skeletal analysis (Binford 1971; Heilen 2012; Nystrom 2009; Saxe 1970; Sofaer 2006). This latter exploration requires laboratory assessment of the remains, as discussed in Chapter 7 of this work. The second issue revolves around differentiating between the identity of the living individual and their subsequent identity in death. There is evidence to suggest that

transformations in identity continue to occur after death, corresponding with the multiple stages of bodily decomposition and of mortuary ritual (Fahlander and Oestigaard 2008; Hertz 1970; Nilsson-Stutz 2008). The third and last issue pertains to exposing the possible motivations of the community in burying the deceased in whichever manner their cultural, socio-political, economic and religious beliefs deem fit. While there is surely an emotional and sensory component to any funerary rite, the memorialization of the dead is not always connected to praising the deceased for their personal achievements in life, but can be used as a symbol for the continued longevity of collective identities (Gillespie 2001; Hamilakis et al. 2002; Mizoguchi 2000; Roth 2008; Tarlow 1999). Relevant to all of these issues are mind-body discourses linked to theories of embodiment and viewing the body as material culture (Fowler 2002; Hamilakis et al. 2002; Lesure 2005; Meskell 2001, 2002; Nystrom 2009; Sofaer 2006; Sofaer Derevenski 2000).

Embodiment is concerned with building a tangible sense of self through constructions of the body and mind in connection with material culture and actions. In thinking about and performing actions within material environments, persons and groups can consciously build a sense of identity (Bourdieu 1977). However, concerns have been raised over *when* persons become conscious of the fact that their interactions involving things, bodies, and selves serve to form certain aspects of identity (Fowler 2002, 2004; Hamilakis et al. 2002; Robbins 2008; Sofaer 2006; Sofaer Derevenski 2000). One such example of this is the engenderment of children through their contact with material culture. Specifically, researchers have begun to wonder at what time during the life course it occurs to individuals that the items provided by their parents or families have shaped and imposed upon them idealized social and gender roles that they are hoped to

embody in the future (Baxter 2005; Joyce 2000; Sofaer 1997; Sofaer Derevenski 2000) Moreover, these studies have raised the question as to whether parents realize such items represent the existence and perseverance of these roles in society (Sofaer Derevenski 2000).

Hairstyles, clothing and textiles, jewellery, and bodily modifications in the form of piercings, tattoos, and deformations of the skull or other appendages are all indications of the interplay between persons, material culture, and concepts of embodiment. Evidence of each can be found within certain burial contexts if preservation allows, with many being connected to rites of social initiation marking religious, ethnic, and gender identities (Aspin and Hutchings 2007; Joyce 2000; Nystrom 2009). Such stylized items and modifications can therefore code for aspects of individual identity, like social status, that can be used to address broader questions within the discipline of archaeology as a whole, such as the emergence of social hierarchies (Binford 1971; Saxe 1970). Yet, in creating specific forms of material culture, along with performing repeated actions and having experiences with such artifacts, collective identities can also be built that demarcate groups from one another (Jones 1996; Nystrom 2009). Items that characteristically express collective identity may include specialized burial artifacts in the form of grave goods, containers or items used to house the body of the deceased, and the architecture of the grave itself. Interpreting aspects of identity from mortuary artifacts can be problematic, however, as the dead do not bury themselves but instead are laid to rest by their communities. Consequently, the inclusion of grave goods within a burial may not necessarily signify a personal relationship with such items on the part of the deceased but

can be seen as the community claiming that the deceased is a member of their group, having shared in their perceptions of collective ethnic, religious, or social identity.

Grave goods are not the only tangible items that are employed in the negotiation of identities within mortuary contexts. The dead body is a powerful object that can be venerated as well as feared, being looked upon as an object of horror as it continues to decompose, physically altering the appearance and identity of an individual (Fahlander and Oestigaard 2008; Hertz 1970; Nilsson-Stutz 2008). Sofaer (2006: 31) elaborates on this point by making the distinction between the living and fleshed body, encompassed by culture, and the dead, un-fleshed or skeletonized body, encompassed by nature. Our perception is that because we recognize the living body, in whatever form, as living and a part of this world it is always possible to rectify the body with identity even though not all bodies may meet our social, religious, or cultural standards. As soon as the body dies, our perceptions, along with that individual's identity, shifts. The body is no longer of this world, it is dead, and that person is no longer there; that is to say the person no longer inhabits a form we as a society feel comfortable with (i.e. the living body).

While the overriding argument of the biocultural approach has been that bodies are not just biologically but also socially-constructed, Nilsson-Stutz (2008) has emphasized that the body is made of flesh and blood, organ systems and muscle tissues, and this becomes all the more apparent after death. Intrinsically, funerary practice and ritual is just as much about disposing of the decaying body, as it is about mourning, honoring life, and transitioning into the hereafter. The metamorphosis of identity is inherently bound to funerary practice and ritual, especially in regards to the period of time between death and actual burial. Though this length of time differs depending on

cultural and religious beliefs, those hours, days, or sometimes weeks before burial represent a state of limbo or liminal space in terms of identity for the deceased, as well as for the living (Hertz 1970). The deceased are no longer considered to be bodily present, although they may be spiritually so, but their body has not yet been put away or discarded. The identity of the deceased thereby changes, becoming bound to the process of putrefaction, bound to the time period before burial, with the dead not being able to regain or re-create their identities as they have not yet completed their transition into the afterlife or the community of ancestors. Additionally, because an individual's identity is formed and manipulated based on their interactions with other persons, the living subsequently undergo a loss and alteration of identity when a person dies. For example, if one's spouse dies the marriage bond is broken by death, and instead the living spouse takes on the identity of a widower. It is for these reasons that there are multiple mortuary rites and mourning processes that take place before and after the deceased is buried, in order that both the living and the dead can adjust to their new roles, identities, and sense of place (Fahlander and Oestigaard 2008; Hertz 1970).

Associated with mortuary ritual is an expanse of extreme emotions and sensory experiences, with the sights, smells, and sounds of funerary rites and mourning bound to make an impression on those in attendance (Fahlander and Oestigaard 2008; Hamilakis et al. 2002; Mizoguchi 2000; Tarlow 1999). Though these feelings and experiences connected with death and burial practice are of themselves intangible, when linked to material aspects of memorialization the result is that people remember such events, and consequently the identity of the deceased, for a long time (Fahlander and Oestigaard 2008; Hamilakis et al. 2002; Mizoguchi 2000; Tarlow 1999). Subsequently, manner of

death can play a crucial part in how and where the dead are memorialized. If the manner of death is frowned on socially or religiously, living persons connected with the deceased may choose not to have a funeral or conspicuous burial plot. Additionally, the dead may be refused burial in specific areas, like consecrated ground, due to death by suicide, murder, or even in the absence of baptism. In the past it is known that dependant on factors such as manner of death or age, persons could be buried in unmarked or unusual locations because of spiritual and superstitious beliefs. In cases such as this, the identity of the deceased would have been nullified, contributing to desired disassociation between the dead and their communities on the behalf of the living. On the other hand, those considered to have died a virtuous or tragic death, or who were recognized as paragons of their families or within society, may be accorded funerary rites that last several days, receiving visible and well-maintained graves. Under these circumstances, the dead become heroicized, and association on the part of kith and kin may enact social benevolence. Therefore, the motives behind burying the dead are not always purely about remembering the individual identity of the deceased, but may in fact have greater meaning for the collective identities of the living.

How and where the dead are buried can have an enormous amount of impact on the perseverance of collective identities. This is particularly true for culture groups, such as those of the Canadian Pacific Northwest Coast, that view wealth and social status as being essentially joined to concepts of names and titles that were once associated with, but not solely possessed by, their ancestors (Levi-Strauss 1982; Roth 2008). In the case of the northern Northwest Coast, this is because ancestors were seen as purveyors of a more mighty entity, known as the House, which was inextricably linked to notions of kinship,

lineage, and identity (Levi-Strauss 1982; Roth 2008). To reinforce the status of the House and all those connected with it, the dead were buried close to their communities, sometimes even behind and attached to the cedar-plank domestic structure, that literally and metaphorically represented the House, in shell middens (Halpin and Seguin 1990). The proximity of the dead to these structures would have purposefully redirected the memories of the funerary rites back to the collective identity of the House and to the status of those still living within it, not the deceased individual. Hence, the spatial significance between burial features and the House would not have been lost on the community.

Likewise, the Iroquoian Feast of the Dead also promoted collective identity over that of individual personhood. The Iroquoian Feast of the Dead was carried out approximately every ten to fifteen years, believed to coincide with the relocation of a major longhouse village due to soil and crop depletion (Biggar 1922: 161; Forrest 2010:65; Thwaites 1896-1901 JRX: 281). Before the site was abandoned, messengers were sent out to smaller surrounding villages that the time had come to collect the bodies of those who had died since the previous feast and that an ossuary would be constructed at a location close to the hosting village (Biggar 1922:161; Forrest 2010: 65; Thwaites 1896-1901 JRX: 281. Each village would then exhume their dead, clean and dress them in furs, and accumulate the necessary grave goods and provisions needed for the ceremony (Forrest 2010: 66; Thwaites 1896-1901 JRX: 281-287). Once all of the preparations had been made, the villagers would begin to trickle into the hosting village over a period of about a week (Forrest 2010: 66). Two days before they were to be interred in constructed ossuary, the bodies and bone bundles were stored within one of

the village's longhouses, with the living feasting on behalf of the dead into the night (Forrest 2010: 66; Thwaites 1896-1901 JRX: 289-293). The next day the remains would be transported to the mass grave, where the bone bundles would be suspended from wooden scaffolding erected over the pit, and the recently dead placed at the bottom of the mass grave (Forrest 2010:67; Thwaites 1896-1901 JRX: 293-297). Later on, the large pit was lined with various animal skins, furs, and grave goods. At dawn on the third day, the bone bundles would be cut down, thrown, possibly even stirred, from atop the scaffolding, with the remains disarticulating and commingling in the process (Forrest 2010:67; Thwaites 1896-1901 JRX: 299). The living would then cover the mass grave with more furs, wood bark, and even remnants of corn, leaving the site behind for good (Forrest 2010: 67; Thwaites 1896-1901 JRX: 299-301). By burying their dead together in such a way, mixing skeletal remains within a mass grave, Iroquoian culture groups stripped away the individual identity of the deceased and instead unified themselves, if only for a little while, under the guise of friendship and collective identity (Biggar 1922: 162; Forrest 2010: 68).

It is the living that ultimately choose how the dead are to be remembered. In large part, the identities of the dead are conveyed, imposed, or hidden within mortuary contexts by those that buried them. Even bodies, though they are believed to belong to an independent individual capable of making their way through the life course, are socially-constructed by material and psychological means. It is therefore necessary to be critical in the examination of materials associated with death, as each artifact, body, or burial exposes several facets of identity for the deceased as well as the living. It is the awareness of such that has sparked contestation between academic and descendant communities in

relation to issues surrounding the repatriation and reburial of mortuary materials, including human remains.

2.4. Bioarchaeological Ethics

The removal of burials and the skeletal assessment of human remains is a delicate and controversial subject within many societies. In North America, the focus of discussions surrounding the analysis of human remains has centered on the conflict between scientists and Native American groups, specifically in regards to repatriation. The effects of such discussions have obvious implications on the analysis of the human skeletal remains from Old Mission Point, having been found on land that can be directly tied to ancestral and present-day Mi'gmaq communities.

Though differences in opinion as to the repatriation of Aboriginal skeletal remains came to the forefront shortly before the implementation of the United States *Native American Graves Protection and Repatriation Act* (NAGPRA) in 1990, the ethics of bioarchaeological work had long been debated within Aboriginal and archaeological communities (Mayes 2010; Turner and Andrushko 2011; Ubelaker and Grant 1989; Watkins 2005). NAGPRA legislation, however, solidified the reburial and repatriation movement, affecting laws and concepts of stewardship in other countries, including Canada. Unlike in the United States, the analysis of Aboriginal human remains and their subsequent repatriation in Canada is not federally-governed, but instead administered on a provincial and municipal basis (Watkins 2005). Moreover, the acknowledgement of stakeholders within archaeological research has become mandatory on these levels of government, regardless of the work being carried out (Watkins 2005). The relationship between archaeologists and First Nations communities in Canada is generally considered

to be strong, although this does not mean that differences do not exist or that ongoing debates and discussion have ceased over the repatriation issue (Julien et al. 2008; Watkins 2005)

The integration of First Nations communities within archaeological research is vital in Canada, so much so that it is virtually impossible to gain permits for archaeological work without first consulting the local band tied to the land (Watkins 2005). This has not only promoted discussion and community involvement, enriching archaeological research, but also the experiences of archaeologists and First Nations persons alike. Since the implementation of NAGPRA over twenty years ago, an entire generation of bioarchaeologists have never worked without the knowledge that Aboriginal skeletal collections are to be repatriated, guiding our research and forcing us to strive in making the results of our studies more accessible to the communities we work in and with (Mayes 2010; Turner and Andrushko 2011). Yet, even with this understanding, confronting the reasons and strong emotions behind the push for repatriation and reburial can be difficult for all persons involved, as it requires acknowledgment of how the dead are perceived, and notions of the afterlife, within our own respective cultures. Incidentally, investigating identity from a bioarchaeological perspective can make this process all the more complicated, but also that much more poignant, as it directly involves looking to the past to add to the present and affect the future.

The protection and survival of identity can become paramount in the lives of those who have experienced assimilation and attempts on the behalf of others to strip identity from them. In turn, marginalized groups often look to those that came before them, with

the dead serving as bearers of identity for those that are living now, creating a powerful sense of self and cultural continuity. Such experiences have been shared by Native American communities in North America, as well as other Indigenous groups throughout the world. In some Indigenous communities, bioarchaeological study is welcomed as another avenue for exploring the lives and experiences of those who lived in the past, the same view held by bioarchaeologists (Mayes 2010; Turner and Andrushko 2011). However, there is variation in how and what kind of osteological assessments are performed, with some Indigenous groups consenting to a wide spectrum of skeletal analyses, and others only to less invasive procedures (Mayes 2010; Turner and Andrushko 2011). Alternatively, other Indigenous communities believe that any form of bioarchaeological analysis performed on human remains undermines the very last bastion of their identity by disturbing their dead (Harris 2005; Mayes 2010; Ubelaker and Grant 1989). In many cases, the relationship between Indigenous peoples and the dead is strong and on-going; the dead are never far from the world of the living. According to Harris (2005: 36),

> *The concept of a spiral conveys the idea of regular movement in one direction, while in the Indigenous view, one can move through time in any direction if one is powerful enough. The dead seem to able to do thus, maintaining ongoing contact between themselves and the living. In such a belief system, it is important not to offend the dead just as it is important not to offend the living. The dead must be treated with respect because they remain a vital part of the living world. Whether an ancestor died recently or long ago, in the Indigenous perspective, they are relatives, and relatives are loved and must be cared for, even though they are quite feared in some societies. They can never be thought of as specimens.*

Disturbing the physical remains of the deceased may only serve to corrupt ancestor-descendant relationships from some viewpoints, putting the spiritual well-being of the

living and dead in jeopardy and sometimes culminating in the somatic illness of living Indigenous communities (Harris 2005; Julien et al. 2008; Mayes 2010).

Other problems have complicated the exploration of identity in the past through bioarchaeological analysis, consequently affecting the relationship between archaeologists and Indigenous communities. These include the transgressions surrounding the collection of skeletal remains during the early history of biological anthropology, as well as the fact that Indigenous ways of knowing, such as oral traditions, stories, and concepts of kinship, have generally failed to be incorporated in processes of repatriation and archaeological study (Echo-Hawk 2000; Harris 2005; James 2006; Julien et al. 2008; Lacourt et al. 2005; Mayes 2010; Watkins 2005). Mayes (2010: 28) best-describes the situation revolving around the first aforementioned problem,

In contrast to the past, the scientific community's current philosophy toward working with human subjects of any kind is a conservative one. Undoubtedly, some of our predecessors in anthropology acted inappropriately by today's standards; you cannot take people out of their time, but you do not have to excuse previous actions either… Anthropologists are all too often blamed for the actions of others—guilt by association. At the same time, Native Americans' perception of our denial of any wrongdoing in the past is possibly how we arrived at this contentious point in our histories.

In acknowledging that archaeological practices in the past were in many instances unethical, it is the hope of both the bioarchaeological and Indigenous communities that such circumstances will never be repeated. The second problem of ineffectively incorporating Indigenous ways of knowing in the study of identity, self, and society should not be an issue if a biocultural approach is taken within anthropological research. Considering the multiple biocultural factors that affect the formation of identity, a lack of engaging various lines of evidence would appear to be counterproductive to such studies.

Pulling from sources outside of the narrow scope of archaeology can only benefit our ability to interpret life in the past.

If skeletal analysis and subsequent repatriation efforts are to proceed in a respectful and compassionate manner, the strong emotions elicited by discussing identity, and the very real connections between the living and dead, must be recognized within bioarchaeological study. In acknowledging stakeholders, as well as potential points of disagreement, communication can proceed between all parties interested in a project or research opportunity. In terms of this project, full permission from the Listiguj Mi'gmaq Band Council has been given to perform several sets of analyses, invasive and non-invasive, on the skeletal remains discovered at Old Mission Point. Upon the completion of this thesis the human remains will be repatriated to any and all culturally affiliated parties. The research involved in this work also complies with New Brunswick's *Heritage Conservation Act*. Lastly, the role of archaeological stewardship is taken seriously, and is highly promoted, by Memorial University's archaeology department. Consequently, this project encompasses the department's same goals and ethical standards in accordance with Memorial University's Code of Ethics.

CHAPTER 3: ARCHAELOGY AND CHRONOLOGY OF OLD MISSION POINT

This chapter will outline the surrounding environment and history of Old Mission Point, beginning with a description of the site's physical geography. Next, the initial survey, salvage, and excavations that occurred at the site will be discussed in order to introduce the archaeological and osteological materials. By connecting the archaeological evidence with ethnohistorical accounts and the oral narratives of the Mi'gmaq people, the importance of Old Mission Point in prehistoric and historic times will be relayed. Finally, efforts taken to narrow down a date sequence for the timing of the burials via radiocarbon dating will be described.

3.1 Physical Geography, Climate, and Environment

Surrounding Old Mission Point is the Restigouche River, which flows in a north-easterly direction into the Baie des Chaleurs, subsequently draining into the Atlantic Ocean's Gulf of St. Lawrence (Figure 3.1). The site itself is located within the town of Atholville in northern New Brunswick, close to the border of Québec's Gaspé Peninsula, on a multi-terraced spit of land comprised of alluvial sand and gravel that extends into the Restigouche River (Figure 3.2). The Restigouche River itself is fed by water run–off from Québec's Notre Dame Mountains, the Appalachian Mountains of northeastern New Brunswick, and many streams and smaller rivers, five of which are of primary importance: the Matapédia, Patapédia, Kedgwick, Little Main Restigouche, and Upsalquitch rivers (Pickard et al. 1983; Restigouche River Watershed Management Council Fact Sheet (RRWMC) 2011; Turnbull 1974) (Figure 3.3). The meaning of the

Mi'gmaq word *Listuguj*, from which the Restigouche takes its name, refers to these 'five fingers' of the river (RRWMC 2011).

Figure 3.1 Map of Atlantic Canada –Gulf of St. Lawrence, Baie des Chaleurs Area

The Restigouche River region experiences mild summers, with the average summer temperature being around 15°C, and very cold winters, that reach well below 0°C (Brookes 1972; RRWMC Fact Sheet 2011; Turnbull 1974). Furthermore, the area receives approximately 1000mm of precipitation annually (RRWMC Fact Sheet 2011). This cool temperate climate supports a variety of plant and wildlife. Dense forests of hemlock, spruce, birch, sugar maple, pine and wild berry bushes characterize the majority of the region, and are home to large terrestrial game such as moose (*Alces alces*), white-tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*), and at one time, woodland caribou (*Rangifer tarandus)* (Brookes 1972; Hosie 1969; RRWMC Fact Sheet

2011). The forest is also home to smaller terrestrial mammals, like porcupines (*Erethizon dorsatum*) and red foxes (*Vulpes vulpes*) (RRWMC Fact Sheet 2011). Before the historic fur trade sent their populations into a severe decline, beaver (*Castor canadensis*) flourished along the Restigouche's small tributaries and river systems.

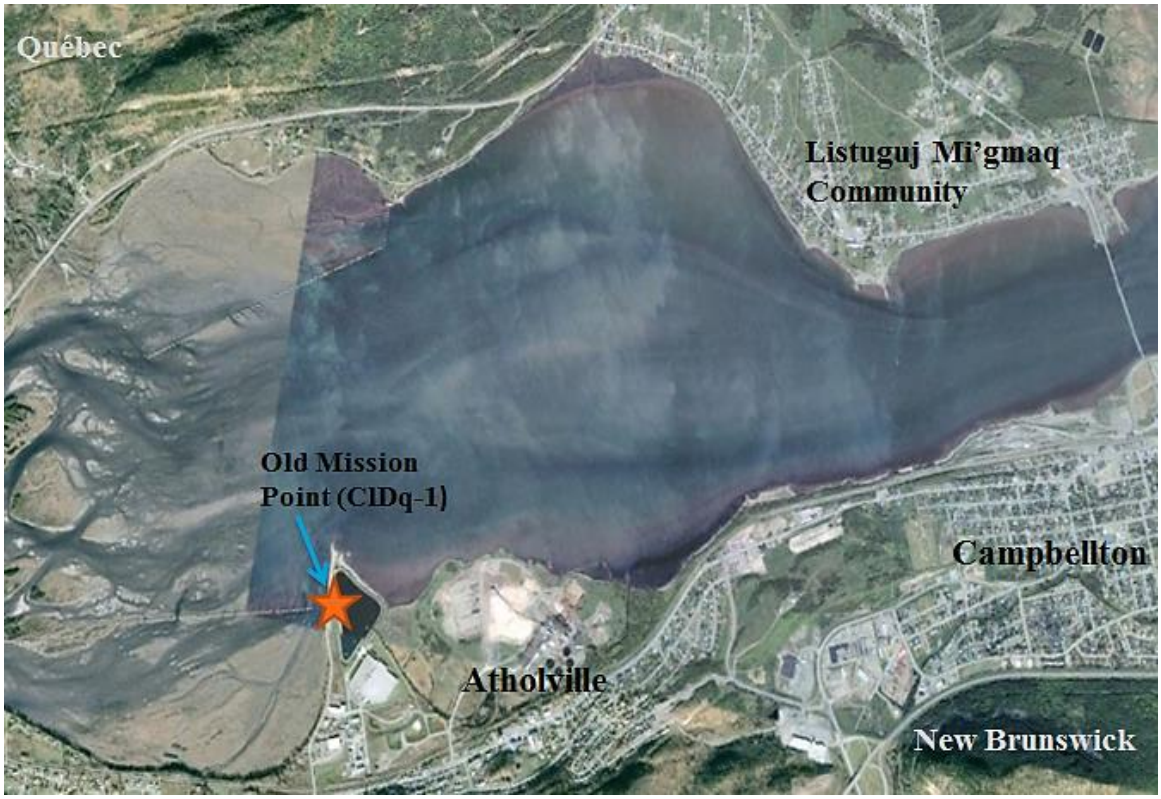

Figure 3.2 Location of Old Mission Point

The Restigouche River is one the Maritimes' prime Atlantic salmon (*Salmo salar*) spawning and fishing grounds. Sturgeon (*Acipenser oxyrinchus*), various species of trout, mackerel (*Scomber scombrus*), and herring (*Clupea harengus*) are abundant in the estuarine environment encircling Old Mission Point, with harbour seals (*Phoca vitulina*) and porpoises (*Phocoena phocoena*) also making their way in the mouth of the river from the Baie des Chaleurs (Pickard et al. 1983; Turnbull 1974). American eels (*Anguilla*

rostrata) are commonly caught in these waters. Directly to the west of the site, as described by Turnbull (1974), are a series of broad mudflats that are easily accessible by foot, providing an ideal location for harvesting different kinds of shellfish, such as soft-shell clam (*Mya arenaria*), blue mussel (*Mytilus edulis*), and even lobster (*Homarus americanus*) (Figure 3.2). To the east of the site is a small expanse of marsh frequented by waterfowl, where varieties of rushes and leaf vegetables like fiddleheads thrive (Turnbull 1974) (Figure 3.2). The area was, and continues to be, plentiful in a diverse array of food and material resources. However, the river's shoreline and the encompassing landscape have undergone some changes over the last few centuries due to urbanization, industry, and wind and water erosion.

As the Euro-Canadian population continued to grow in the region from the late 1750's onwards, the nearby towns of Atholville and Campbellton became more and more developed, changing the area's original landscape (Clarke 1999, 2000). Atholville, specifically, likely rests on top of several prehistoric as well as historic cultural components pertaining to the site of Old Mission Point (Leonard 2002a, 2002b; Turnbull 1974). Coinciding with the town's development, several commercial industries arose in the area, directly involving the land around the site. These commercial activities ranged from early historic farming and plowing, to timber logging in the 19th century, and finally to the creation of a gravel quarry on-site in the early 20th century (Martijn 1968; Turnbull 1974). These multiple undertakings physically scarred the land and destroyed much of the site itself (Martijn 1968; Turnbull 1974). Additionally, natural wind and water erosion also seems to have played a small part in the alteration of the site's physical composition.

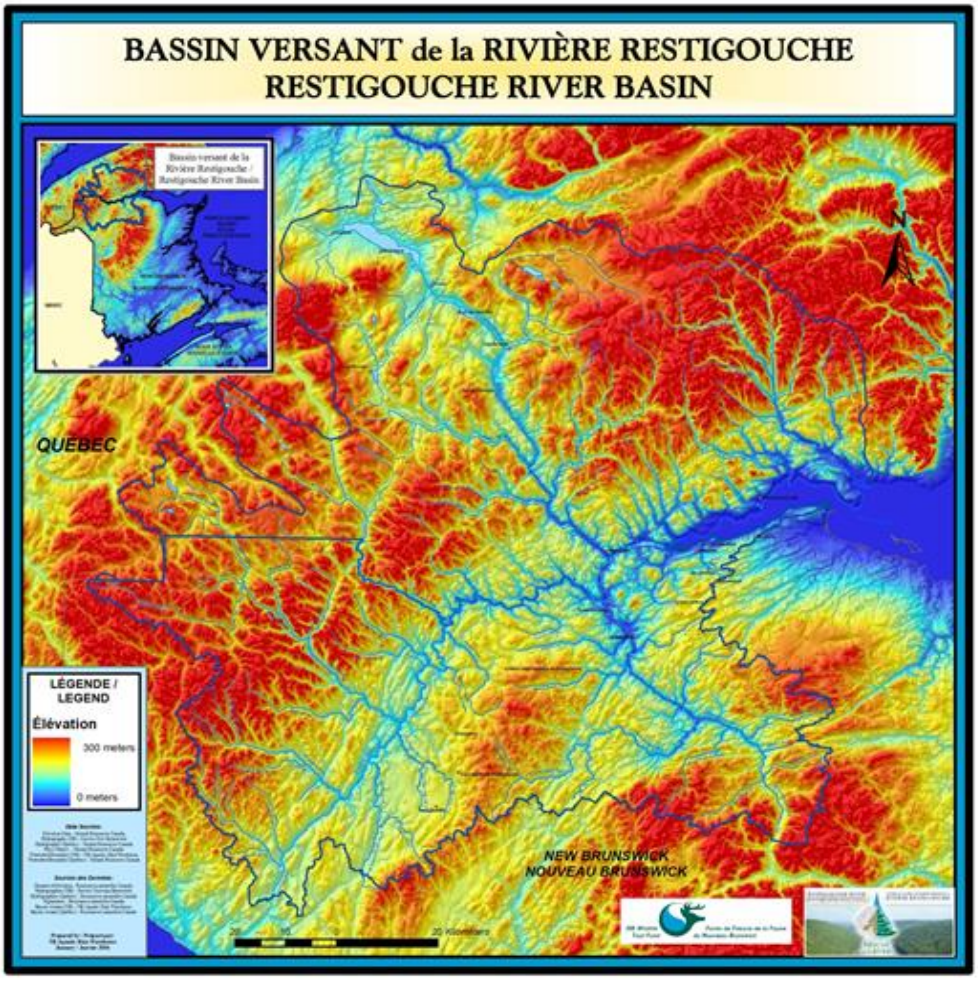

Figure 3.3 Restigouche River Basin, from RRWMC Fact Sheet (2011:1)

Though the southern part of the Restigouche River, which includes Old Mission Point, tends to suffer less from the strong winter winds blown in from the Baie des Chaleurs than the northern side, flooding of this area is common during periods of snow melt in the late winter and early spring (Martijn 1968). Both Martijn (1968:31) and Turnbull (1974:6) mention that this flooding of the bottom-most area of the site caused several cultural components from the top-most terraces (including portions of other burials) to wash out along the shoreline for many years. Geological surveys interested in the rate of the erosion for the shorelines and cliffs in the Baie des Chaleurs area have

noted that the region is partial to significant erosion in some areas due to a variety of variables, such as rock physical properties, snow and rain run-off, and subjectivity to sea ice conditions (Daigneault et al. 2004). Though the shoreline encompassing Old Mission Point has not been directly surveyed, the overall global retreat for the Baie des Chaleurs area for the years 1990 to 2000 was reported as between 3 - 40cm per year, indicating that the area is indeed suffering from high rates of erosion and subsequently has endured changes to the landscape over time (Daigneault et al. 2004).

3.2 Survey, Salvage and Excavations

Up and until Charles Martijn's (1968) archaeological survey of Gloucester and Restigouche counties in New Brunswick, the true location of Old Mission Point had been lost, having been confused with Pointe-de-la-Mission on the north shore of the Restigouche River since the late historic era. Upon finding flakes, a few plain ceramic body sherds, and several small lenses of ash within his shallow test trenches, Martijn's curiousity became peaked. After consulting old maps and historical descriptions pertaining the area, as well as by talking to members of the local Listuguj and Eel River communities, Martijn concluded that the area was in fact the site of Old Mission Point. Moreover, Martijn had found evidence of not only historic cultural components, but also prehistoric occupation layers. In 1968, however, no provincial archaeology unit existed and this information was not investigated further until the discovery of the burials close to where Martijn had initially surveyed (Turnbull 1974).

In the spring of 1972 a front-end loader digging in Atholville's commercial gravel pit uncovered several sets of human remains. Construction on site immediately ceased and the local Royal Canadian Mounted Police (RCMP) were called in to

investigate. After they had determined that the burials were not of forensic importance, the matter was passed on to New Brunswick's recently established Archaeological Services Unit. Dr. Christopher Turnbull was assigned to the recovery of any uncollected skeletal fragments, and documented in photographs the remaining burial features and gravel stratigraphy (Figures 3.4 and 3.5).

Figure 3.4 Old Mission Point Gravel Pit 1972, taken from Turnbull (1974)

At first glance, the burials were considered to be copper kettle graves, often seen during the terminal end of the Late Woodland period (AD 1000 – 1534) and in the beginning of the Early Historic era (AD 1534 – 1755) (Harper 1957; Leonard 1996). This specific type of Mi'gmaq mortuary practice (i.e. copper kettle burials) refers to lavish protohistoric grave deposits discovered in the Canadian Maritimes that emphasize the placement of large copper cauldrons over the remains of the deceased, usually with

purposeful damage being inflicted upon these goods before burial (Harper 1957; Martin 1975). Yet, no copper kettles were ever found in relation to the Old Mission Point burials.

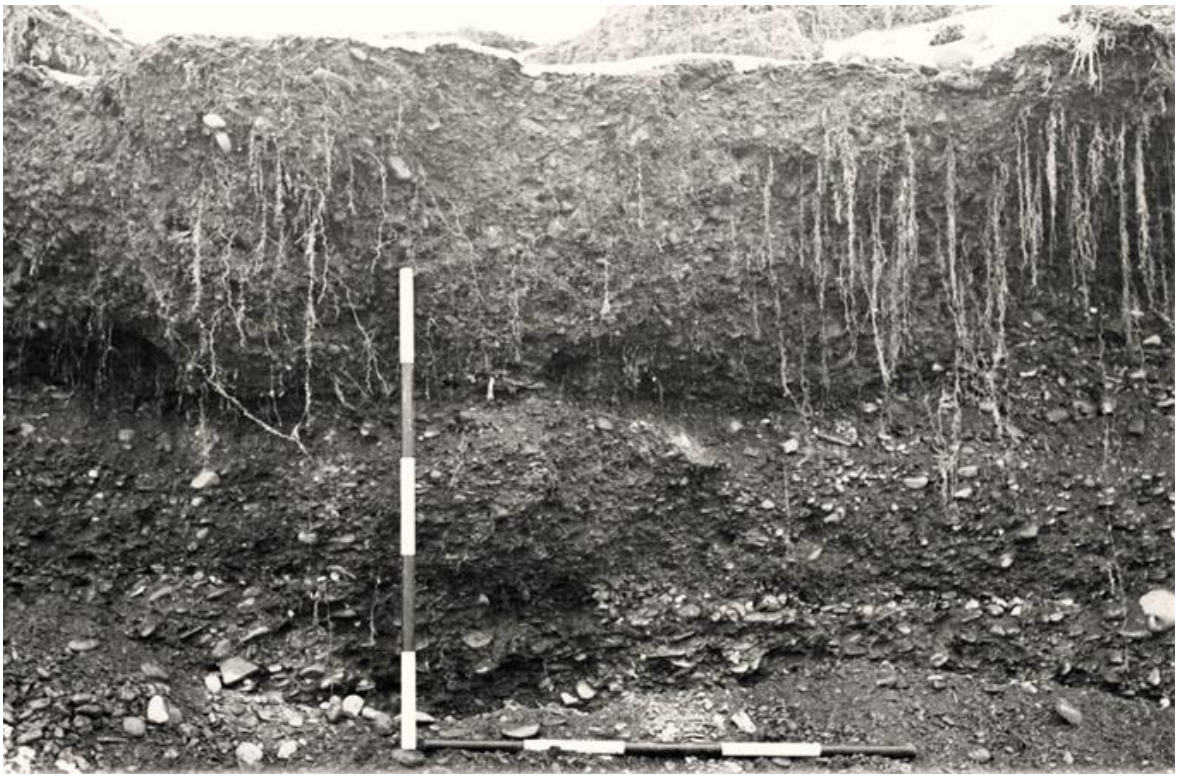

Figure 3.5 Old Mission Point Gravel Pit with Burial Features, from Turnbull (1974)

Associated with the skeletal remains were several other kinds of artifacts such as, "…copper tube beads, shell disc beads, organic (hide) material, an iron axe, a bone toggling harpoon head (with an end slot blade) and two rectangular pieces of bone decorated with gouged holes" (Turnbull 1981: 19) . The human bones and artifacts were bagged and first sent to the Archaeological Services office in Fredericton. While most of the items linked with the burials were kept in Fredericton, the human skeletal remains eventually made their way into Memorial University's osteological collection. When an initial inventory of the remains was performed as a part of this research, several artifacts seemingly missed during archival activities in New Brunswick were found entangled with

the bones, including more copper tube and shell beads, pieces of fur and bark, seeds, and even potential remnants of textile. Each artifact was examined microscopically alongside comparative materials held at Memorial University. Important items, such as the textile and copper artifacts, were later examined by other experts in the field to verify the original findings (for a more detailed account of the items found in association with the remains refer to Chapter 8, Section 8.3). How and when exactly the remains and artifacts were relocated to St. John's is still a mystery as no documentation pertaining to this move has yet surfaced.

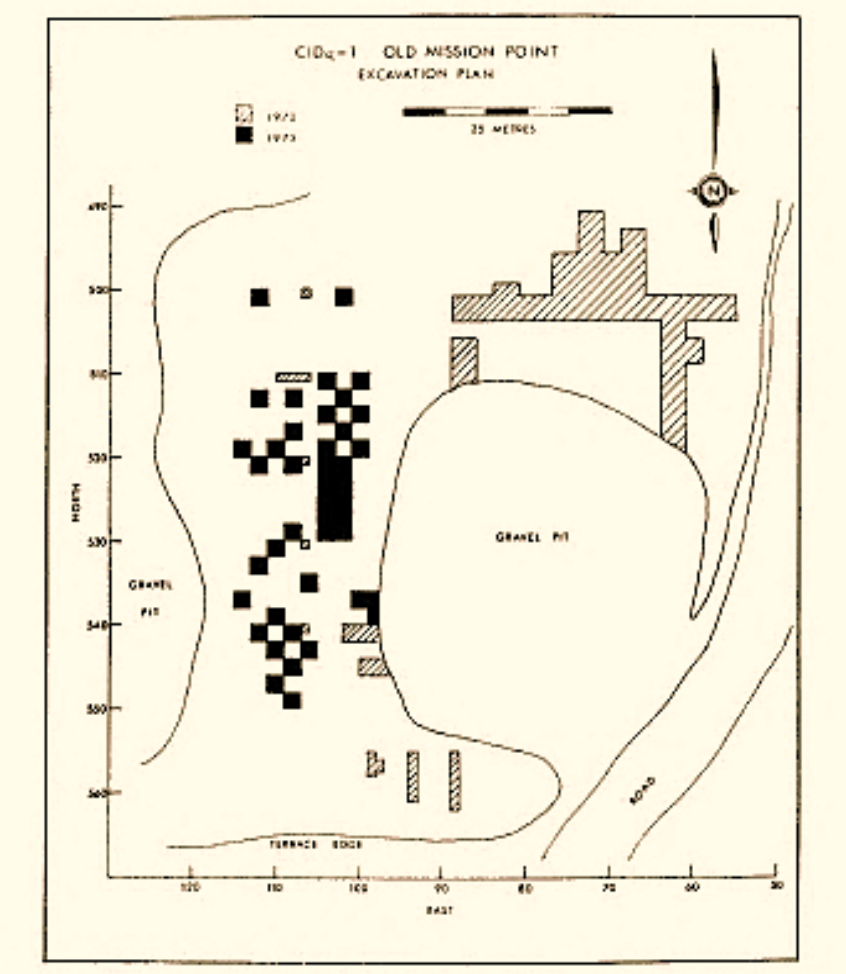

Figure 3.6 Site Map for 1972 and 1973 Excavations, in Turnbull and Turnbull (1973:158)

Salvage excavations continued at the site in the summers of 1972 and 1973, a short distance from the where the human remains were recovered, under the supervision of Turnbull (Figure 3.6). Though European goods were salvaged during excavations, the majority of artifacts recovered by Turnbull and his team were Native American in origin, indicating the prolonged presence of the Mi'gmaq people at the site. The dates of Turnbull's finds range the expanse of the Woodland Period (BC 500 – AD 1534) in the Maritimes, through the historic period, and up until the 20th century in the form of rusted machinery parts and ceramics. In order to better relate the excavation's finds to what is known about Old Mission Point from Mi'gmaq oral narratives and ethnohistorical descriptions, artifacts and features will be discussed in regards to their association with the prehistoric and early historic eras of the site in the following section.

3.3 History of Old Mission Point

According to Mi'gmaq oral narratives, the landscape of the Baie des Chaleurs area was first created or altered by the culture hero Kluskap who often rode his beaver-pulled sled along the waterway, traversing from the northern New Brunswick coastline to the Gaspé Peninsula by upheaving rock and mud to form islands between the two shores (Clarke 2000; Wallis and Wallis 1955). Ever since Kluskap's alterations, northern Mi'gmaq peoples have inhabited the land in this region. The Mi'gmaq alternatively became known as the Souriquois, with the northern groups being referred to as the Gaspesians, in the writings of the French. The largest wigwam village of the northern Mi'gmaq also received a variety of new names in the historic period, such as Indian Point and Village des Sauvages (Clarke 2000). Its current name of Old Mission Point derives from the two missions, first Récollect and then later Jesuit, built close to the village site

between 1620 and 1760 (Bock 1966; Leonard 2002a, 2002b; Turnbull 1974) (Figure 3.7). Yet, before it was known by any other name it was called *Tjigog,* the centuries-old place of summer aggregation for the prehistoric northern Mi'gmaq (Clarke 1999, 2000; Herdman 1883; Leonard 2002a, 2002b; Turnbull 1974).

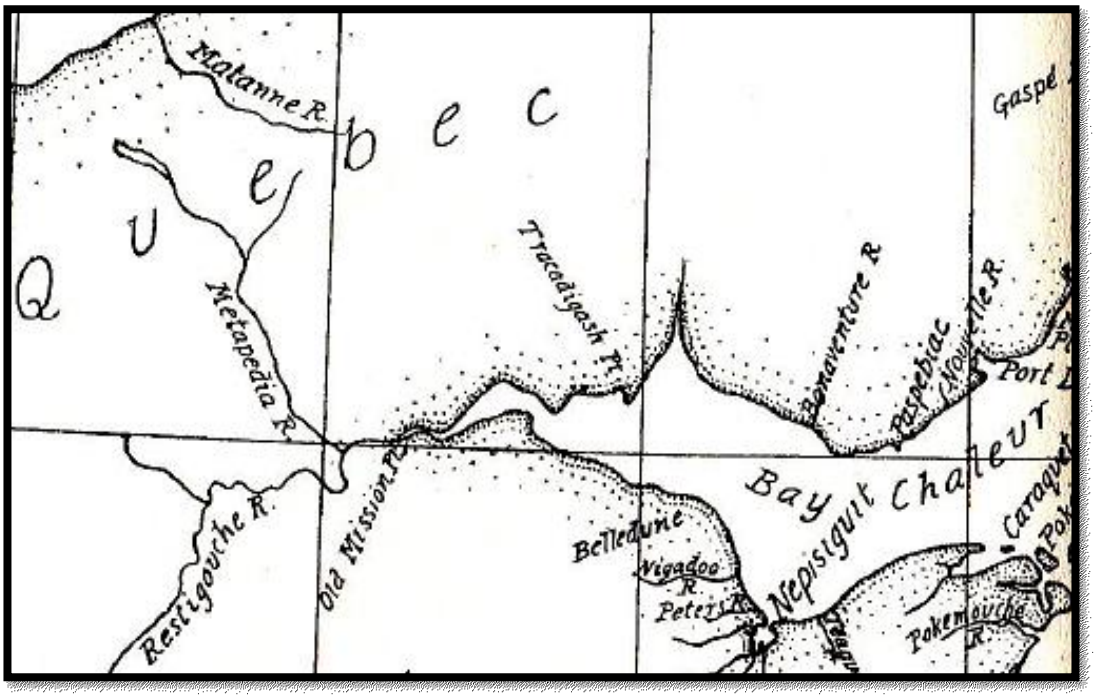

Figure 3.7 Ganong's (1908:86) ***Map of the Country described by Nicolas Denys***

Archaeologically, the antiquity of *Tjigog* is attested to by evidence found during Turnbull's excavations, the earliest of which dates to the Early Woodland period (BC 500 – AD 300). This evidence presents itself in the form of over 1000 ceramic body sherds and 52 rim sherds, most of which feature a punctate design (Leonard 2002b:13; Turnbull 1974:8). Also associated with other ceramic finds were possible hearth features that still contained charcoal. The uncalibrated radiocarbon date received by Turnbull (1973) from one such charcoal sample was 2030 +/- 130 BP. When calibrated using the methodology described below in Section 3.4, this date equivocates to AD 214 – 532 at the 1-sigma

range, putting it at the end of the Early Woodland and into the Middle Woodland period (AD 300 – 1000). Middle Woodland ceramic finds from Old Mission Point include a variety of motifs such as dentate-stamped and pseudo-scallop shell designs, likely created by some kind of toothed wood or bone implement (Leonard 2002b:14; Turnbull 1974:22).

Other prehistoric artifacts recovered from the site include numerous flakes, wedges, felsite, chert and quartz stemmed and unstemmed bifaces, projectile points (Figure 3.8), an adze, a pair of soft-stone hammerstones, and a worked bone point (Turnbull 1974:8-18). No faunal remains are documented as having been found. Late Woodland (AD 1000 – 1534) occupation layers were designated through the discovery of cord-stamped pottery fragments (Leonard 2002b:16; Turnbull 1974:8). The only mention of any architectural features discovered preserved on-site were a series of possible post moulds that were later destroyed when construction resumed at the gravel quarry in late spring 1972 (Turnbull 1974:7). These post moulds, which were never documented photographically, were eventually interpreted as the potential remnants of the timber palisade constructed around *Tjigog* when it became established as a permanent settlement.

Around the time of first European contact, oral histories say that many Mi'gmaq moved to *Tjigog* from the west, abandoning their winter villages close to present-day Dalhousie, New Brunswick in the process (Clarke 2000; Herdman 1883; LeClercq 1910: 302). After several fatal disputes involving the Mi'gmaq and Mohawk, or alternatively the Mi'gmaq and early European settlers, *Tjigog* became a permanent home to several hundred Mi'gmaq persons in order to protect the resource-rich land and establish sole

control over the river (Clarke 2000; Herdman 1883). Controlling the Restigouche waterway would have been considered essential as it linked and promoted trade with the St. Lawrence River area via the smaller Matapédia and Matanne river portage route. In fact, Denys (1908: 214) relays that the trip from the St. Lawrence River to *Nepisiguit* (Bathurst) at the heart of the Baie des Chaleurs could be completed in as little as 3 days using that same route. Already within the area were a few trading outposts, run under the governance of Denys, where items, mainly furs, were being traded for European goods like copper cooking pots and iron tools. Shortly after *Tjigog* became a permanent village site, French missionaries were sent to the village to learn about and convert the Mi'gmaq, with the first Récollect missionary arriving at *Tjigog* in 1620 (Bock 1966:9; Pacifique 1934). Over the next 140 years, both the Récollect and Jesuit orders would share the mission's grounds built within close proximity to the village. However, increasing hostilities among the French and English, and their respective allies the Mi'gmaq and Iroquois, would eventually lead to the abandonment of Old Mission Point.

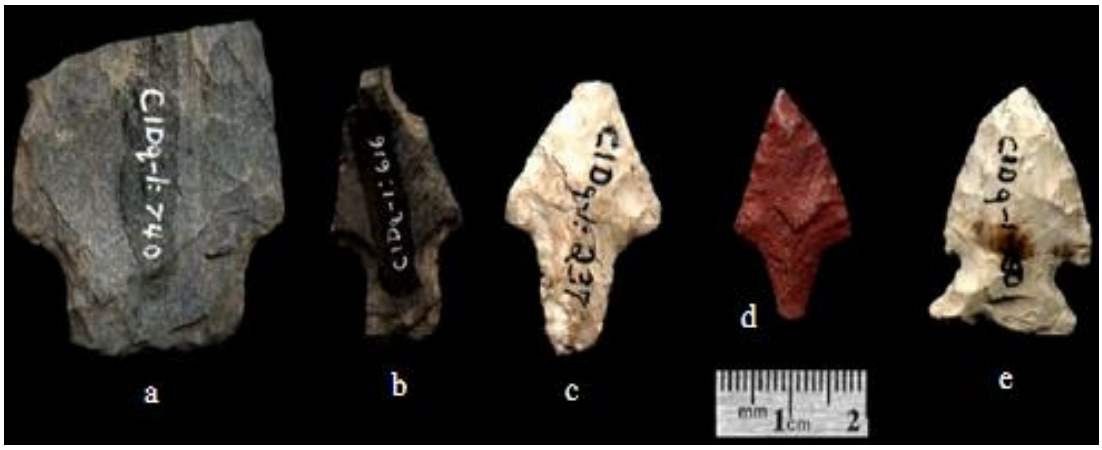

Figure 3.8 Late Archaic to Late Woodland Projectile Points from Old Mission Point, (a) flat-stemmed point, (b) square-stemmed point, (c) and (d) bipoints, and (e) corner-notched point (Leonard 2002b:47).

On July 8th 1760 the French forces suffered a terrible loss when 3 of their ships were destroyed by the British Royal Navy in the midst of the Restigouche River, directly adjacent to the site of Old Mission Point. The conflict between the two forces' ships had begun two weeks earlier in the river's natural harbour, when the British ships sailing from Louisbourg cornered the French vessels and automatically laid siege (Proulx 1999:2). This naval event later became known as the Battle of Restigouche. The scuttling of the *SS Machault* and burning of two other French ships, the *SS Bienfaisant* and *SS Marquis-de-Maulause*, at the hands of the British would prove to be a decisive moment within the context of the Seven Years War (1756 - 1763) (Proulx 1999:2). Moreover, it had an immediate effect on the population living in the area, forcing Acadian settlers and merchants, missionaries, and several hundred Mi'gmaq from *Tjigog* to abandon their homes and seek refuge on the north shore of the Restigouche River, closer to French protection and resources. A new mission was built at the site of Pointe-á-la-Croix with Restigouche, the home of the dispersed Mi'gmaq, located nearby. Restigouche is now the home of the present-day Listuguj Mi'gmaq community, who are the direct descendants of those Mi'gmaq persons that fled *Tjigog* in fear of British captivity and violence in 1760.

3.4 Radiocarbon Dating and Calibration Methodology

In an effort to make original contributions to the interpretation of Old Mission Point's history, bone samples were taken for radiocarbon dating (^{14}C) from several individuals represented within the skeletal assemblage (Table 3.1). Furthermore, directly dating the human remains from the site is an important aspect in confirming the ancestry of the deceased in combination with the osteological analysis performed.

Table 3.1 Bone samples taken for radiocarbon dating

Sample #	UCIAMS#	Individual	Sample Site (Element & Side)
1	125912	2	Right Femur
2	107245	3	Right Femur
3	107246	4	Right Femur
4	107247	5	Right Femur
5	125908	6	Right Femur
6	125909	7	Right Tibia
7	125910	10	Left Tibia
8	125911	11	Left Tibia
9	125913	12	Right Humerus

After completing a necessary inventory of all skeletal elements and establishing the minimum number of individuals (MNI) within the sample, care was taken in parsing out skeletal elements that qualified for radiocarbon sampling in order that no overlap occurred amongst individuals. Hence, the majority of samples were taken from the right femur unless age and individualization were positively known. A small portion of bone was cut from each element using a hand-held drill equip with a cut-wheel within Memorial University's bioarchaeology laboratory. Each bone sample was then bagged separately, labeled, and sent off to the W.M. Keck Carbon Cycle Accelerator Mass Spectrometry Laboratory at the University of California, Irvine (UCIAMS). There bone collagen was extracted from the samples and the ^{14}C content analyzed using an accelerated mass spectrometer to establish an uncalibrated radiocarbon date for each bone sample provided.

The ageing of archaeological materials by measuring the decay of ^{14}C has become a standard within the discipline ever since Willard Libby first discovered the half-life of carbon-14 in the mid-20th century (Bowman 1990). Libby believed that the rate of decay for ^{14}C was constant. However, it is now known that atmospheric ^{14}C fluctuates over time

and is also influenced by the locality of archaeological sites and their materials (De Vries 1958). More troubling, is the fact that some organisms, such as marine organisms, live in different reservoirs where the rate of exchange of carbon-14 with the atmosphere can vary drastically. Therefore, when marine organisms are radiocarbon dated they can provide inaccurate age results prompted by the marine reservoir effect, as these organisms may have been feeding off of 'old' carbon within their ocean environment (Bowman 1990; Stuiver and Braziunas 1993).

To counteract this, marine calibration curves (ΔR) must be applied to any material being radiocarbon dated that has had some dependence on marine organisms or a marine environment (Stuiver and Braziunas 1993). When compared with other calibration techniques, such as tree-ring dating (dendrochronology), these curves can become much more refined allowing for accurate age results from marine organisms or materials (Bowman 1990; Stuiver and Braziunas 1993). A relative reliance on marine resources within the diet of humans, and subsequently human skeletal remains, can be detected through carbon and nitrogen stable isotope results derived from bone collagen. Alternatively, but arguably less accurately, a reliance on marine resources can be examined through ethnohistorical accounts and information on cultural adaptations in certain populations. Marine calibrations are region specific, and although there is a global standard (400 years) it is thought best if researchers take the time to find marine calibration results closest to the area in which they work (Stuiver and Braziunas 1993).

The CALib online database, created by the University of Washington's Quaternary Isotope Lab under the theoretical and methodological paradigms published in Stuiver and Reimer (1993), was used to calibrate the dates received from the W.M. Keck

AMS Laboratory. Recent stable isotope studies have established endpoint $\delta^{13}C$ (-21±1‰) and $\delta^{15}N$ (-12 ±1‰) values associated with terrestrial versus marine diets respectively (Barrett and Richards 2004: 258). Depending upon a study's stable isotope analysis results, the $\delta^{13}C$ and $\delta^{15}N$ values of human or faunal bone collagen can be compared to the range of values delimited by these same endpoints, allowing for the percentage of marine carbon affecting the samples to be determined (Barrett and Richards 2004). Therefore, a mixed northern hemisphere terrestrial and marine calibration curve was chosen in connection with the percentage of marine carbon thought to have affected the samples, as derived from the ultrafiltered carbon and nitrogen stable isotope results also provided by the lab. In connection with these variables, it was essential that a local marine calibration curve (ΔR) be found to correct for problems associated with the marine reservoir effect previously described. For transparency's sake, the dataset variables used in the calibration of the dates from the Old Mission Point skeletal remains are outlined in Appendix C (p.264). All dates were converted to calibrated calendar years at both the 1-sigma and 2-sigma range according to the relative probability distribution for each (please refer to Chapter 8, Section 8.1).

CHAPTER 4: ETHNOHISTORICAL APPROACHES

This chapter will begin by outlining the history of the authors and accounts referred to throughout the following sections of this study that will detail aspects of Mi'gmaq culture and identity in life as well as death. The benefits and biases of using ethnohistorical accounts as primary lines-of-evidence in bioarchaeological investigations of identity will be relayed, along with the applicability of both etic and emic perspectives on culture. Specifically, discussion will focus on the comparability and collaboration of archaeological data, oral narratives and ethnohistorical observations. Lastly, problems associated with solely relying on the direct historic approach in anthropological research will be broached, furthering the promotion of biocultural study.

4.1 Authors and Accounts

The earliest recorded ethnohistorical accounts of Mi`gmaq cultural practices began with the 16th century arrival of the French in Acadia, the large expanse of land that included southern portions of Québec, the Maritime provinces of New Brunswick, Nova Scotia, Prince Edward Island, and north-eastern Maine. However, it was not until the early 17th century in Acadia`s largest colony of Port-Royal, established in 1605, that the French writers Marc Lescarbot, a poet and lawyer, and Father Pierre Biard, a Jesuit missionary, began to elaborately detail and describe the activities and beliefs of the Mi`gmaq people (Binasco 2007:149; Wallis and Wallis 1955: 10). From 1606, the year of Lescarbot`s first written accounts, throughout the 17th and into the 18th century, ethnohistorical descriptions of Mi`gmaq practices concerning daily life expanded

(Binasco 2007; Wallis and Wallis 1955: 12-13). Yet, descriptions of Mi`gmaq culture came to a standstill shortly after the death of Abbé Pierre Maillard in 1762 (Wallis and Wallis 1955: 13). Interest in the collection of Mi`gmaq stories and cultural beliefs would not resume until the end of 19th century, having since continued sporadically. There are three accounts used frequently throughout this study and therefore deserve special attention in regards to the context in which they were written.

Nicolas Denys was a French aristocrat, merchant, and expert within the French fishery of Acadia in the 17th century. Denys and his family first landed in the New World in 1632, quickly establishing fishing and trading ventures in what is now Liverpool and La Have, Nova Scotia (Ganong 1908: 5). Over the next fifty years, the Denys family would play a prominent role in Acadian, and therefore Canadian, history continually setting-up both trade and fishing posts throughout the region, with the family eventually settling in St. Peter's on Cape Breton (Ganong 1908:6). Subsequently, Denys came into contact with Mi'gmaq traders and communities frequently. His early business ventures were a success, and in 1653, "…Denys bought from the Company of New France all the great territory comprising the coasts and islands of the Gulf of St. Lawrence from Canso to Gaspé, and was made Governor and Lieutenant-General thereof by the King" (Ganong 1908: 7). In 1669, fighting between the English and French over Acadia eventually forced Denys and his family to move from St. Peter's to *Nepisiguit* (Bathurst) in present-day northern New Brunswick (Ganong 1908: 7). It is at this time that Denys is believed to have started writing his observations about Acadia and the Mi'gmaq people (Ganong 1908: 14). While he started a few trading posts in northern Nova Scotia and New Brunswick, Denys was unable to relive his earlier business success and settle the region,

losing his governorship in 1687 and dying one year later at his home in *Nepisiguit* (Ganong 1908: 8, 17). However, Denys' legacy in the area continued to live on not only through his writings but also through his offspring. It is through the actions of his son, Richard Denys, that the Denys family established a direct connection to the site of Old Mission Point. For in 1685, using his elderly father's authority, Richard granted the Récollects land to establish missions in Cape Breton, the Miramichi, and Restigouche regions (Ganong 1908: 16).

The Récollect order had already established a history in the Baie des Chaleurs region of New Brunswick and Québec as early as 1620. However, their presence was replaced by clergymen of the Jesuit order, who coincidentally fell out of favour with Acadian settlers and Mi'gmaq persons alike soon after their arrival (Ganong 1910: 4). Beginning again in the 1660's, the Récollects resumed their active services, spreading the gospel, promoting conversion and performing baptisms among Mi'gmaq communities (Ganong 1910: 4). Chréstien LeClercq was one of those Récollect missionaries to settle among the northern Mi'gmaq, whom he affectionately refers to as the Gaspesians throughout his writings, in the Restigouche area beginning shortly after his initial voyage to the New World in 1675 (Ganong 1910: 5). Between 1676 and 1687, when he eventually sailed back to France, LeClercq stayed among the Mi'gmaq people of the Miramichi and within very close proximity of *Tjigog* or Old Mission Point in the Restigouche area (Ganong 1910: 5-9). Interestingly, LeClercq himself tells the reader that while the Mi'gmaq communities of the Miramichi were enthusiastic towards learning and openly practicing the Christian beliefs he sought to spread, consequently becoming known as the 'Cross-bearer' nation, he experienced much resistance in regards to the

conversion of the Restigouche Mi'gmaq (LeClercq 1910: 151, 160, 192). LeClercq is perhaps best known for his series of hieroglyphics which he created, "…as an aid to the memories of his Indians in repeating their prayers" (Ganong 1910: 6). His accounts of the customs of the Mi'gmaq people are the most detailed of all the French writers.

The ethnographic study of the Mi'gmaq people completed by Wilson Wallis and Ruth Wallis in 1955 is one of the more recent works repeatedly used within this research. However, the collection and commentary on Mi'gmaq stories published by Ruth Holmes Whitehead (2006) and the oral narratives recorded by Reverend Silas Rand (1894) are referred to as well. Wilson Wallis was an anthropologist who first visited the Maritimes region between 1911 and 1912, collecting stories and asking questions about various Mi'gmaq cultural practices in each community he visited (Wallis and Wallis 1955: 5). Wallis found that the Mi'gmaq were initially wary of speaking to a white outsider, stating that they, "…lived in a world psychologically far removed from the Canadian life that encompassed all sides of their small reserves, and felt the impossibility of explaining their beliefs and fears to intruding whites. Within the constricted boundaries they wanted to be let alone to pursue the old culture to the limit of that narrow scope" (Wallis and Wallis 1955:5). The majority of his informants were older Mi'gmaq men, as he found the women to be quite shy and more suspicious of his presence on the reserves (Wallis and Wallis 1955: 8).Yet, even the men would not answer direct questions about their lifeways and instead Wallis found his informants were much more comfortable speaking about their culture through the relation of stories, folklore, and adventures they had heard about or experienced themselves (Wallis and Wallis 1955: 6). It was not until 40 years later in 1953 when Wallis, now an older man himself, returned with his wife Ruth that he was

able to interview both Mi`gmaq men and women, solidifying his earlier studies and allowing them to jointly publish the research two years later through the University of Minnesota (Wallis and Wallis 1955: 8-9).

Despite the differing time periods in which these accounts of Mi'gmaq culture were accumulated and published, there is an enormous amount of similarity between all of the descriptions, promoting the verifiability and validity of the writing. Moreover, the corresponding accounts detail information on a wide-range of topics that allow for the reconstruction of social and biological identities for the Mi'gmaq over the life course. While these similarities amongst the accounts bodes well for this study, there are still several concerns that must be confronted when dealing with ethnographic and ethnohistorical records, as well as the inclusion of oral narratives, in bioarchaeological projects like this one. The first concern involves defining etic and emic categories of communication.

4.2 Communicating Histories and Culture: Emic and Etic Perspectives

There are different definitions pertaining to etic and emic perspectives within the anthropological disciplines (Headlund 1990; Fetterman 2008; Keating 2001). Originally, the terms were coined by Kenneth Pike (1954), a linguist who wished to define the complexity and significance of narratives through specific language use. However, definitions of etic and emic perspectives have shifted away from solely the field of linguistics, and instead the use of these terms implies "…an investigation into social meaning, diversity of practices, and actual language in context. Emphasis on exchanges of talk between speakers…or the structural analysis of myth" (Keating 2001: 286). Generally-speaking, emic and etic approaches taken in ethnographic studies are

metaphors for insider and outsider perspectives on culture respectively, with Keating (2001) elaborating on their use in such research by stating that, "An emic account is the ultimate goal, that is, the identification of the categories which are meaningful to members of the community. The etic perspective, categories meaningful to the analyst, is considered useful for initial data gathering as well as for cross-cultural comparisons" (p.288).

These terms carry weight in this project, given the analysis and steady use of the ethnohistorical accounts written by the aforementioned French authors in the 17th and 18th centuries. Ideally, ethnographers are supposed to come into their studies with as little bias and as few preconceptions as possible in order to truly portray as well as accurately record the lifeways of those under study (Fetterman 2008). Additionally, in keeping true to cultural forms, ethnographies that use authentic expressions and language to convey the significance of social actions are believed to represent such groups more genuinely (Fetterman 2008). It can be argued that while the works of Wallis and Wallis (1955), Whitehead (2006), and Rand (1889) tried to demonstrate as much in most cases, the accounts of the French writers cannot be considered true ethnographic recordings on Mi'gmaq culture. The accounts of Lescarbot, Biard, Denys and LeClercq are ethnohistories, for while they may have tried to separate out meaningful categories of practice for the Mi'gmaq, no attempt was made on their behalf to understand Mi'gmaq culture from the (emic) perspective of a Mi'gmaq individual. They only wished to observe, record, and comment, sometimes quite harshly, upon the behaviour and composition of Mi'gmaq society and how it differed from their own. In order to check biases within ethnographic studies, researchers undoubtedly have to relinquish certain

aspects of their own identities to experience histories and culture from the perspective of an insider.

A strict adherence to the direct historical approach within archaeological research can exacerbate the dichotomy between emic and etic expressions of culture. The direct historical approach relies exclusively on ethnohistoric accounts to affiliate archaeological components with specific cultural groups. Material culture is thereby interpreted within a historical analogical framework, also known as analogical reasoning, in order to interpret activities and behaviours in the past (Lyman and O'Brien 2001). In this way, ethnohistoric accounts account act as 'ethnic identifiers' that proclaim the continuity of culture and ancestor-descendant relationships along an evolutionary scale (Lyman and O'Brien 2001: 334). While the biases inherent within ethnohistorical documentation can lead to problems of interpretation if not assessed accordingly, they are a particularly valuable tool within archaeological study and are therefore widely used as a source of evidence for inquiries into sociocultural activities and behaviour in the past. Additonally, ethnohistoric accounts often include legends and oral stories written down by early historic writers.

Traditional oral narratives, however, are not incorporated into archaeological research enough (Echo-Hawk 2000; Rubertone 2000; Watkins 2005; Whitely 2002). Moreover, the apparent lack of information garnered from oral narratives within North American bioarchaeological research fails to uphold legislation associated with NAGPRA and other repatriation and reburial legislation. To designate cultural affiliation in regards to human remains of potential Native American ancestry, NAGPRA legislation requires that oral narratives be consulted alongside applicable archaeological,

osteological, and ethnohistorical resources (Echo-Hawk 2000; Watkins 2005). The perception of some members of the archaeological community towards oral narratives has been one of doubt, suggesting that such sources cannot be relied upon as evidence because there is no amount of scientific rigour or testing that can be performed to establish the validity and accuracy of the events they describe (Mason 2000). The discrepancies between scientific (archaeological and osteological) and anthropological (ethnographic, ethnohistorical, and oral narrative) lines-of-evidence that come to light during the course of such studies are also often cited as further reason to doubt the importance and commensurability of such resources (Mason 2000; Whitely 2002). However, without comparing differing lines-of-evidence these discrepancies and gaps in knowledge could not be identified, and hence serve to promote the inclusion of multiple resources in archaeological research as well as uphold the tenents of biocultural studies within a variety of disciplines.

CHAPTER 5: MI'GMAQ LIFEWAYS

This chapter will elucidate the differing identities, roles and responsibilities of Mi'gmaq individuals over the life course based on ethnohistorical and ethnographic information. Differences in social status and practice will be examined by focusing on biocultural variables such as age, sex and gender. First, the social roles of children will be investigated in connection with actions and superstitions surrounding birth, processes of engenderment, and possible food resource and material contributions. Second, a brief discussion of transitions linked to adulthood will be put forward in relation to age-of-maturity, ornamentation and clothing, and marriage practices. Third, the responsibilities of men will be examined by looking at their roles within their communities, as well as activities surrounding hunting and fishing and tool-making. Fourth, women's identities will be analyzed in regards to their roles within and outside of the household, and through bodily stigmatization, procurement and access to resources, and crafting. Next, Mi'gmaq attitudes towards old age, and the specialized roles of elderly individuals, will be detailed. Lastly, the influence of cultural contact with European populations and its effects on identity and social status within Mi'gmaq society will be critically examined.

5.1 Children and Childhood

The birth of a child within Mi'gmaq communities was an anticipated occasion. Soon-to-be mothers spent time preparing for the arrival of their children by creating elaborately-adorned cradleboards made of wood and padded with the softest of furs (LeClercq 1910:88-89; Wallis and Wallis 1955:283). Bird plumage, shell beads, and

porcupine quills were attached to the cradleboard, with the quills further being used to paint intricate designs in red, yellow, white, black, and blue (LeClercq 1910: 89) (Figure 5.1). These colours would have been produced by mixing water with different coloured ochres, ash, charcoal and soot, and powdered shell or mussel respectively (LeClercq 1910: 95). Babies' garments were fashioned out of animal skins that were painted and decorated with trinkets as well (LeClercq 1910: 89).

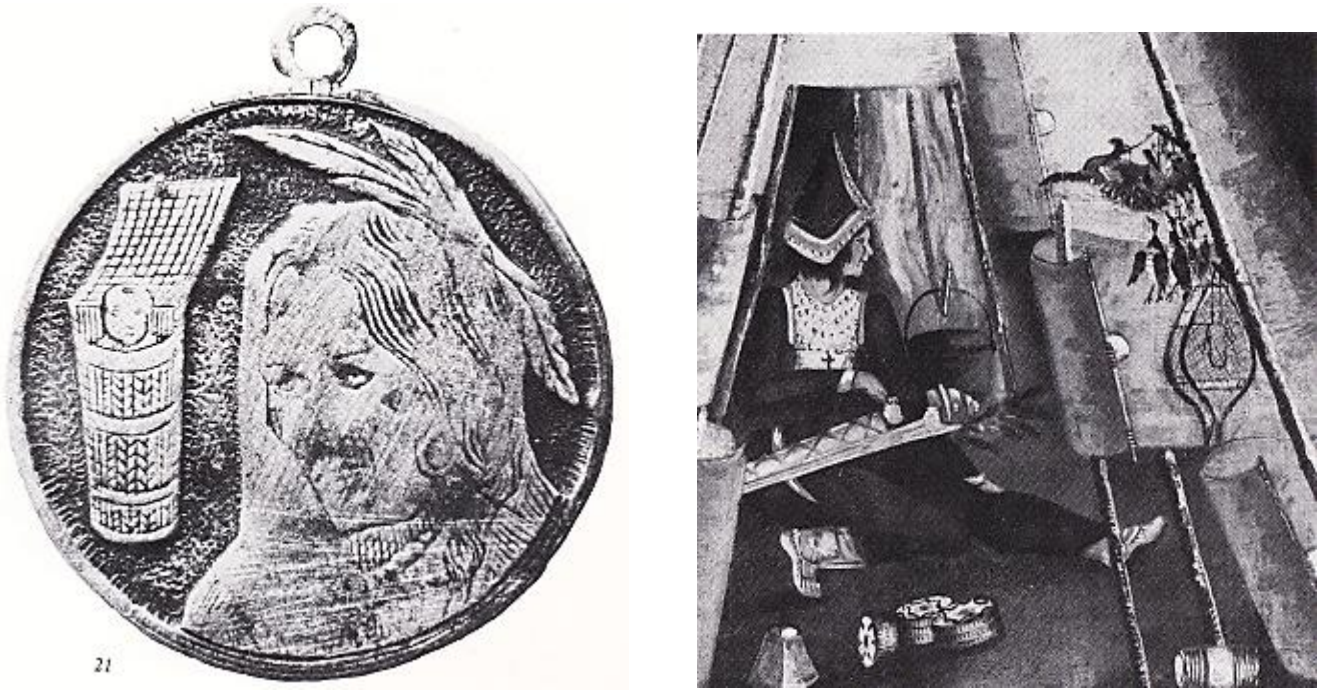

Figure 5.1 (Left) 19th C. Engraved Silver Model showing Mi'gmaq cradleboard design, Nova Scotia Museum, (Right) Anonymous 19th C. Oil Painting of Mi'gmaq woman with various craft items, including cradleboard in lap, National Gallery of Canada, taken from Whitehead (1982: 21, 65).

Immediately after birth, babies were washed and made to swallow bear or seal oil, in order to improve their chances of survival by receiving fatty nutrition along with their mother's breastmilk (LeClercq 1910:88; Lescarbot 1914:80). The birth of twins was considered to be an oddity in Mi'gmaq society, due to their connotations with good-twin,

bad-twin creation stories and supernatural abilities (Wallis and Wallis 1955: 248). A baby born with a caul also signified a child born with a propensity for magic (*ginap*), with the idea being that in adulthood such persons were likely to assume the roles of a shaman or sorcerer, known as *buoin* (*bouhinne, booöin*) or *autmoin* within Mi'gmaq culture (LeClercq 1910: 216-217; Lescarbot 1914:186; Wallis and Wallis 1955: 248-249). Healthy babies were integrated into family and social life quickly, "Soon after birth the infant became a social being. The father entered the wigwam and gave the child a temporary name. When it was two days old, the chief came to the wigwam, and in the presence of the mother and father, gave it a name" (Wallis and Wallis 1955: 253). However, if a baby was thought to be sickly or disabled they could be abandoned without judgement or penalty (LeClercq 1910: 92).

From the perspective of European writers, Mi'gmaq children were doted upon, even spoiled by their parents, detailing parental attentiveness to the needs and wills of offspring in their memoirs,

Our poor Indian women have so much affection for their children that they do not rate the quality of nurse any lower than that of mother. They even suckle the children up to the age of four or five years, and, when these begin to eat, the mothers chew the meat in order to induce children to swallow it. One cannot express the tenderness and affection which the fathers and mothers have for their children. (LeClercq 1910: 91)

Their children are not obstinate, since they give them everything they ask for, without ever letting them cry for that which they want. The greatest persons give way to the little ones. The father and mother draw the morsel from the mouth if the child asks for it. They love their children greatly. (Denys 1908: 404)

Furthermore, as successful marriages produced many children, and several families could live within one wigwam, children were also raised and tended to by a network of family and friends. If tragedy struck and one or both parents died, children were rarely truly

orphaned and instead adopted by other members of their community, whether extended family members or simply neighbours (LeClercq 1910: 117; Speck 1918: 144).

Wallis and Wallis (1955: 222, 254) detail the childhood age categories or phases that were recognized by the Mi'gmaq, with distinctions being made between newborn babes and infants (approximately 1 year of age) but no subsequent differentiation in regards to early or late childhood. Children of both sexes remained 'children' up until the age of 10 (Wallis and Wallis 1955: 233). All the same, processes of engenderment for children in the form of distinctive adornment and learned activities, which continued into adulthood, are said to have occurred at an early age. Denys (1908: 414) noted that hairstyles differed among girls and boys, with girls having a single long plait or ponytail whereas boys' hair was parted on either side of the head and then bound. Pierced ears were standard among either sex, though the location and number of piercings for each ear may have further served as a designation of gender role (Denys 1908: 414; LeClercq 1910: 97). The materials used to pierce and create earrings included porcupine quills, moose sinew, and white and purple shell beads in the form of discs or tubes (LeClercq 1910: 97). Small children were put to work early by their families, with girls participating in activities performed in connection with the upkeep of the household, such as chopping wood, cooking, and cleaning and dressing skins, and boys learning to make tiny bows, arrows, and hooks to catch small birds, squirrels, and fish (Denys 1908: 404,423-424, 434; LeClercq 1910: 92). In doing so, children actively contributed to the social life of their communities by creating and engaging material culture, as well as providing food resources. Moreover, they were learning and defining the social roles and responsibilities to come with the transition into adulthood.

5.2 Adulthood

The transition into adulthood began around the ages of 11 or 12, when persons were expected to start attending feasts, take on adult responsibilities, and behave in mature manner (Wallis and Wallis 1955:233, 254). It was at this time that the adult way of dressing would have been adopted. Many of the French writers makes some mention of clothing, with Denys (1908) stating that Mi'gmaq men and women dressed similar to one another over the 40 years or so he spent in Acadia. In the summer, they both wore a long robe that covered the body from shoulder to knee, open at the neck and on the sides that were tied shut with sinew cords (Denys 1908: 412; LeClercq 1910: 94). Men let the robe falls loose, while women attached a girdle or beaded belt to the waist over the robe to secure it in place, as well as adding leather sleeves tied together and to the robe to cover their arms (Denys 1908: 412; LeClercq 1910: 94). Men wore a girdle of leather, essentially a loincloth, under their robes (Denys 1908:412). Lastly, footless leather stockings were drawn over the legs, and ornamented moccasins were worn on the feet (Denys 1908: 412; LeClercq 1910: 94). Winter clothing differed in the use of beaver 'coats', and presumably warmer waterproof footwear made from deer and seal-skin for both sexes (Lescarbot 1914: 131-133). From a practical viewpoint, such clothing would have kept the body warm and protected. The simplicity and modesty of the clothing also added to French perceptions of Mi'gmaq behaviour, specifically Mi'gmaq women's inherent purity and chasteness compared to that of French ladies (Denys 1908: 415).

Though it took several years to become a full adult within Mi'gmaq society, the period of young adulthood spanned several decades after this initial transition, up until the age of 40 years (Wallis and Wallis 1955: 233). The age category that best describes

the years between the ages of 40 and 50 is middle adulthood, with persons over the age of 60 being considered old adults or elders (Wallis and Wallis 1955: 233).

From a bodily perspective, the transitory phase into adulthood for the Mi'gmaq correlates with adolescence. Characteristically, adolescence is marked by the onset of puberty; physical changes that occur within the body that denote sexual and reproductive maturity. These changes to the body, as well as the timing of these changes, are different for males and females. This difference in the timing of physical maturity for males and females was taken into account by Mi'gmaq social practice, allowing for alternative initiations into adulthood based on sex and gender roles (Wallis and Wallis 1955: 233). For instance, young boys were not considered men until they had killed their first moose,

> *...young men who have not yet killed any moose, the death of which opens the portal to the honours of the Gaspesian nation, and gives to the young men the right to assist at public and private assemblies. One is always a young man, that is to say, one has no more rights than the children, the women, and the girls, as long as he has not killed a moose.* (LeClercq 1910: 239)

Such a belief not only reflects that men's dominant role within Mi'gmaq society was that of a hunter, but also reflects that adult status for males was not directly tied to the onset of puberty. Moreover, LeClercq's passage suggests that adult males enjoyed a higher social status than that of adult females from the perspective of the Europeans. Young girls became young women when they experienced menses for the first time, signifying that they had reached reproductive maturity (Wallis and Wallis 1955: 233, 237). Unlike their male counterparts, female adult status within Mi'gmaq culture **does** seem to hinge on the biological changes that occur with adolescence and the importance placed on their newfound ability to bear children. The one rite of passage that marked full adulthood for both men and women was marriage, with young women (generally around the ages of 16

or 17) being married to older men (between 20 and 30) given timing differences in the attainment of adult status (Wallis and Wallis 1955: 237).

The Mi'gmaq are said to have largely practiced exogamous marriages, and in some cases, also polygyny (Denys 1908: 404, 410-411; LeClercq 1910: 259-260: Lescarbot 1914:166; Maillard 1863; Speck 1918: 144). Descent and inheritance were associated with patrilineal affinities (Speck 1918: 144). When a young man chose a would-be wife he would have to seek consent from her father, who would consult his daughter and make sure there were no objections to the proposed union (Denys 1908: 407-408; LeClercq 1910: 259-260; Maillard 1758: 53; Wallis and Wallis 1955: 236). For one year afterwards, the couple would live in the same wigwam as the girl's parents, practicing the duties they would need to fulfill on a daily basis to organize their own household in the future (LeClercq 1910: 262). The groom would hunt and fish, contributing all he had acquired to the girl's family, while the girl would show off her capabilities in cooking, crafting, and household labour (Denys 1908: 408; LeClercq 1910: 262). After one year had passed, if feelings had not changed, a great ceremony and feast took place in the name of the newlyweds (Denys 1908; 408; LeClercq 1910: 262; Maillard 1758: 55-60). At any time, a marriage could be dissolved, with infertility supposedly the leading reason for a failed marriage (LeClercq 1910: 262; Wallis and Wallis 1955: 237). At the end of the marriage rites, the couple cut their hair, having been allowed to grow it long since childhood, as a symbol of change connected to achieving full adult status (Denys 1908: 414). After the marriage ceremony and feast, the couple would reside in a new wigwam to establish their own family unit, where the perpetuation

of social roles formed through processes of engenderment and age categorization would continue into the next generation.

5.2.1 Men's Roles and Responsibilities

Mi'gmaq men were the leaders of their communities, fulfilling the role of chief, warrior, and provider through hunting and fishing (Denys 1908; LeClercq 1910; Lescarbot 1914; Wallis and Wallis 1955). Men were also gifted crafters, creating stone implements and wooden materials to aid them in their activities, a skill set that would have been honed from the time they were small children. Men also proceeded over trade transactions with their Mi'gmaq neighbours, as well as other culture groups, within and outside of the Maritimes region. With European contact and the rise of the fur trade, Mi'gmaq men's roles as tradespersons only grew, although knowledge of traditional skill sets, as well as power and control over their communities, diminished slowly over time.

Mi'gmaq chiefs, known as *sagamores* in the ethnohistorical accounts, acted as mediators and guardians for their communities. Chieftainship, however, was not considered hereditary, although chiefly families were held in high-regard, allowing for many leaders to be connected with specific lineages (Wallis and Wallis 1955: 171). The chief of all the Gaspesians is described as living in the village of *Tjigog* during the time LeClercq (1910: 235) was in the region and wrote his accounts. The chief was responsible for designating hunting and fishing territories to the outlying villages of the area in the spring and autumn, though how well these designations would have been adhered to by other parties has been contested by several researchers given the seasonal mobility patterns of wild game and different fish species (Burley 1981:205; LeClercq 1910: 235, 237; Leonard 2002a: 2; Wallis and Wallis 1955: 171). Certain privileges came

along with being chief in terms of access to prestige items and plentiful food resources. Yet, LeClercq (1910: 235) relays in his writings that notions of dominance and personal gain did not seem to plague the thoughts of Mi'gmaq leaders. Instead, he says that the well-being and good-will of the people was of primary concern for Mi'gmaq chiefs, for their position-of-power could be removed if they were found to be lacking in their duties as such (LeClercq 1910:235).

Another such duty of the chief was to administer justice if a crime or insult was committed, with acts of murder and 'wife-stealing' being treated harshly and punishable by death (Wallis and Wallis 1955:173). In times of war, justice was presumably also mitigated by chiefs, whose retinue of young unmarried men not only hunted and provided for him, but also fought for or alongside him (Wallis and Wallis 1955: 1973). All men in the village were expected to go to war as well, with victories lauded and losses mourned by the whole of the community. Additionally, slaves and captives, usually women and children, were taken by the men from their defeated foes and arbitrarily integrated into their societies,

They also show humanity and mercy towards their enemies' wives and little children, whose lives they spare, but who remain their prisoners to serve them, according to the ancient right of servitude, introduced among all the nations of their own world, against natural liberty. But as for the warriors they spare none, but kill as many as they can catch. (Lescarbot 1914: 215)

The Maliseet and Iroquois, specifically the Mohawk, were considered the greatest enemies of the Mi'gmaq, although alternating times of peace and war existed among these groups (Wallis and Wallis 1955: 202,208). After periods of war the men would resume their roles as hunters and fishermen.

All of the French writers confirm that the preferred food of the Mi'gmaq was large terrestrial game, especially moose meat (Denys 1908: 428-430; LeClercq 1910: 274). Beaver meat was also a favourite, with its consumption said to increase with the demand for furs by the Europeans (Denys 1908:429; LeClercq 1910: 274, 279). The missionaries in the region also liked beaver meat as they considered it a riverine or water resource, and therefore were able to eat it during Lent (LeClercq 1910: 279). Moose was hunted year-round, with winter being the easiest time to catch the large animal (Denys 1808:428; LeClercq 1910: 274-276). With the use of snow shoes and domesticated dogs, hunters were able to the track moose, seizing the animal from multiple directions, spearing it to promote blood loss, and letting it run in the dense snows where it would eventually slow down and succumb to weariness (Denys 1908:428; LeClercq 1910: 274-276; Lescarbot 1914: 220-221). The hunters would then produce the fatal blows. In spring, moose were hunted at night in canoes along waterways (Denys 1908: 427; LeClercq 1910: 276). Hunters imitated the female moose by moose-calling and releasing small amounts of water from satchels to recreate the animal relieving itself (Denys 1908:427; LeClercq 1910: 276). When the moose approached it was shot down with arrows, speared, and clubbed to death.

Beaver was also caught in the summer and winter. Hunting beaver in the summer was more effective, as hunters strategically plugged up the small river or tributary that was home to their dams, laid traps, destroyed the dams, and set their dogs loose on the escaping beavers (Denys 1908: 429; LeClercq 1910: 279-280). Catching beaver in the winter was a lot harder because of the surrounding ice and snow covering the rivers, with beavers described as swift to evade the hunters and their dogs if they found their way into

water (Denys 1908: 432; LeClercq 1910: 280; Lescarbot 1914: 224). The hunting dogs of the Mi'gmaq were rewarded for their loyalty and companionship by sharing in some of whatever food has been caught, usually in the form of scraps, and generally being well treated, although,

> *The bones of the beaver are not given to the dogs, since they would lose, according to the opinion of the Indians, the senses needed for hunting the beaver. No more are they thrown into the rivers, because the Indians fear lest the spirit of the bones of this animal would promptly carry the news to the other beavers, which would desert the country to avoid further misfortune*.
> (LeClercq 1910: 226)

Other mammals, such as otters, martens, foxes, porcupines, hares, deer and bear, as well as birds and waterfowl, were eaten although to a seemingly lesser extent (LeClercq 1910: 280-281, 285). Hummingbirds were even captured and killed, though only for their wonderfully coloured plumage, not for eating (LeClercq 1910: 281).

Marine resources are mentioned as secondary in comparison with moose and beaver meat. Although it was easily procured, shellfish collection is not described in detail in any of the ethnohistoric accounts other than to say that it was eaten from time to time (Denys 1908: 383; LeClercq 1910: 285). Only Wallis and Wallis (1955: 30) mention that lobster and other shellfish were taken during low tide from mudflats and shoals and roasted on coals. According to faunal evidence from several sites in the Northeast, it appears that shellfish may have been consumed more often in prehistoric times than in the historic era (Sanger and Sanger 1974). Shellfish species differ according to region in the Maritimes, with southern New Brunswick and Nova Scotia having the greatest variety and abundance (Burley 1981:207).

LeClercq (1910) states that "Cod, salmon, herring, trout, bass, mackerel, flounder, sturgeon, sucker, pike, eels, squid, pickerel, smelt, and whitefish" (p.285) were caught close to shore. Different Mi'gmag fishing strategies existed according to the environment, with dip-netting taking place off of rocky outcrops, hook-and-line, jigging, and spearing methods employed when fishing off-shore in canoes or ice-fishing, and with fish fences and stone weirs built across small rivers and streams (Chute 1998; Denys 1908: 436- 437; Lescarbot 1914: 192; Wallis and Wallis 1955: 27-29; Whitehead 1987: 11-12). Sea mammals, such as seals, would have been crept up on while sleeping on sea-ice in the winter and early spring and swiftly clubbed (Wallis and Wallis 1955: 29-30). Alternatively, breathing holes could be cut into the sea-ice, and when the seals appeared, were speared using bone harpoon heads fitted with sharpened chert or flint (Wallis and Wallis 1955: 30). This same method was used for sealing in canoes in the spring and summer.

The tools crafted by Mi'gmaq men to pursue their hunting and fishing activities are not well described in the ethnohistoric material. However, evidence of flint-knapping and artifacts such as projectile points are often found at excavated village sites within the region including Old Mission Point (see Leonard 2002b). As mentioned earlier, from a young age boys were allowed to create their own hunting and fishing tools in preparation for the roles they would inherit from their forefathers (Denys 1908: 404,423-424; LeClercq 1910: 92). According to Wallis and Wallis (1955: 31) bows were made of fir, spruce, and maple, with the bowstring material being that of a large flank tendon taken from a deer, moose, or caribou. The actual points or arrowheads were created by deliberately striking sizeable pieces of quartz and chert off of larger cobbles of these raw

materials using items such as a hammerstones or antlers. These smaller pieces were then alternately chipped and flaked through the use of bone, wood, or other stone implements to create the shape of the projectile point. Alternatively, a harpoon point,

> *…was made of bone of moose or caribou, split with a large stone, and sharpened on a stone. Near the larger end a hole was cut or bored with a piece of sharp flint. Barbs were made near the head. The head was fastened to the shaft by means of long moose-hide thong. When the harpoon was thrown, the thong, which was held in the hand, was dropped.* (Wallis and Wallis 1955:30)

Fish hooks were made of two-pronged bone gorges, with the one end being slightly larger than the other to puncture through the mouth of the fish (Wallis and Wallis 1955: 27). Fishing-spears were made out of long shafts of wood, usually cedar, which were worked into to sharp points on one end and bolstered by wrapping cedar-bark just below the prongs of the spear (Wallis and Wallis 1955: 27) (Figure 5.2).

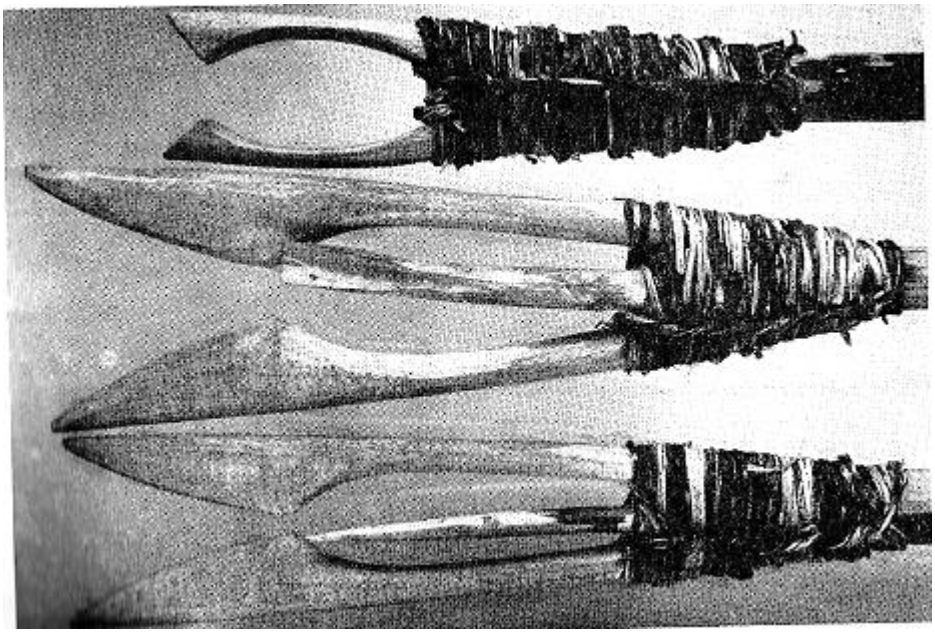

Figure 5.2 Wooden Fishing Spears, from Wallis and Wallis (1955:27)

The identity of men as primary food providers was made even more important and pertinent by the fact that the Mi'gmaq, under the observations of the early historic French

writers, did not sow corn or other vegetable crops, nor did they employ storage techniques to garner resource surplus (LeClercq 1910: 110, 112; Lescarbot 1914: 171). The lack of farming and storage on the part of the Mi'gmaq both fascinated and disappointed the French, and was purportedly the reason for fasting and starvation suffered by many village populations over the long winter months (LeClercq 1910: 110, 115; Lescarbot 1914: 255). The Maritime provinces, however, do fall within a climatic range that has the ability to sustain the growth of crops such as maize, with the Maliseet populations living along the St. John River in southern New Brunswick even doing so (Lescarbot 1914: 248-252). Tobacco also seems to have been farmed in great quantities by the Maliseet, and it is known that through trade the Mi'gmaq had access to this resource, so it is a possibility that maize could have potentially made its way into the diets of Mi'gmaq persons, although no archaeological evidence of such has been found. Maize cultivation by the Mi'gmaq people is still contested by researchers, as some oral narratives hint at the production of this crop earlier within the prehistoric period (Leonard 1996). Historically, bread, sometimes fresh, sometimes in the form of hard tack and biscuits, only became introduced to the Mi'gmaq through the Europeans.

5.2.2 Women's Roles and Responsibilities

Mi'gmaq women were the creators and overseers of not only family and community life, but also forms and styles of material culture that have contributed to the archaeological understanding of precontact and protohistoric Mi'gmaq culture as a whole. Women's major role with Mi'gmaq social life focused on their biological ability to carry and give birth to children, but it was also this same ability that led to their social exclusion at times. While this theme of women's bodies as both friend and enemy has

been touched upon by many writers studying a wide array of cultures, it has been skimmed over in regards to Mi'gmaq culture. Furthermore, Mi'gmaq women's crafting of various objects that are integral components to food resource procurement strategies, as well as trade and economy, have only been discussed in a handful of works. The socio-biological identities of women, and there effects on other issues such as health or social status, cannot be investigated unless these aforementioned aspects are investigated.

Childbirth took place outside of the home, either in a separate wigwam, or in desperate times, in the woods, with hard births being attended to by midwives and shamans, who coaxed out babies by blowing tobacco smoke around the expectant mother (LeClercq 1910: 89-90). Unwanted pregnancies could be aborted by the use of secret herbs without consequence (Denys 1908: 404; Wallis and Wallis 1955: 248). Nursing other young children at the same time as becoming pregnant appears to be the main reason for abortion with Denys (1908) stating, "The reason why they produce the abortion is, they say, because they cannot nourish two children at the same time, forasmuch as it is necessary that the child shall cease suckling of itself" (p.404). However, Denys (1908) also details the importance of fertility and the production of many offspring within Mi'gmaq culture, "They have three or four wives, and sometimes more. If one of them turns out to be sterile they can divorce her as they see fit, and take another. Thus they are able to have plenty of children" (p.404). Though the birth of a child was met with great joy within Mi'gmaq communities, the actual birthing process was regarded as unclean (LeClercq 1910: 228-229; Wallis and Wallis 1955:250).

Parturition, menstruation, and widowhood relegated women to periods of social isolation, as well as limited their access to both food and material resources. After birth,

women were confined to a separate wigwam for up to 30 or 40 days, because of the uncleanliness associated with childbirth (LeClercq 1910:229; Lescarbot 1914: 200; Wallis and Wallis 1955: 251). Girls experiencing menstruation were also excluded from society for the duration of their cycle, and like new mothers, not allowed to partake in beaver or moose meat or drink or eat from the same dishes as other household members,

> *…the women and girls, when they suffer the inconveniences usual to their sex, are accounted unclean. At that time they are not permitted to eat with the others, but they must have their separate kettle, and live by themselves, The girls are not allowed, during that time, to eat any beaver, and those who eat of it are reputed bad; for the Indians are convinced they say, that the beaver which has sense, would no longer allow itself to be taken by Indians if it has been eaten by their unclean daughters.* (LeClercq 1910: 227-228)

Widows, though not spatially isolated, were also not permitted to eat moose or beaver meat, provided by young hunters, only eating such if it were given to them by married or old men (LeClercq 1910: 228). If women were expected to give birth to many children, and in between births were still affected by their menstrual cycles, the amount of times women would have had to partake in these exclusions is staggering. Though other materials and food were likely made available to them during these periods of isolation, the separation of women away from the social aspects of daily life, especially communal dining practices, because of bodily stigmatization should be heavily considered in relation to its importance on the formation of women's identity within protohistoric Mi'gmaq culture.

Despite the taboos associated with female body changes and processes, Mi'gmaq mothers were praised by the French writers for their compassion and caring towards their offspring. D'Abbeville (1963) writes, "They take care not to be like many mothers here (France), who scarcely can await the birth of their children to put them out to

nursemaids…The Savage women would not want to imitate them in that for anything in the world, desiring their children to be nourished with their own milk" (p. 281). Jaenen (1974), speaking on Native American perspectives of French culture, goes one step further in his comparison between Mi'gmaq mothers and French mothers of the time, "They were quite unable to understand the harsher disciplinary methods of the French, the 'porcupine-like' affection of French mothers who so readily accepted the separation of their children and the practice of confining children for months in boarding schools" (p.286). What is apparent from these excerpts is that Mi'gmaq women were directly involved in raising their children, from breastfeeding them and continuing to care and teach them, especially in the case of girls, skills for the future. Alternatively, the troubling aspect of these accounts is the need to declare Mi'gmaq women as good mothers, and French women as bad mothers based on the perspectives of French missionaries and men who probably had little to no involvement in the affairs of women in the first place. If one were to critically examine the lives, roles and responsibilities of French women in a similar study, interpretations concerning their level of input and control over child-rearing practices might in fact be quite different.

As well as supporting their children, Mi'gmaq women were responsible for bolstering the morale of their communities in times of hardship, specifically when conflicts and war arose with other culture groups. Maillard (1863: 18-33) describes the preparations of Mi'gmaq warriors about to battle the neighbouring Maliseet in 1755, along with the roles of the women in strengthening the courage of their husbands, sons, and friends by performing several violent dances in honour of the victory to come,

shouting threats and encouragement, and making the men promise to bring back captives. When the conflict was over,

…all of our warriors embark to return to their country, where the entire nation receives them with uncommon rejoicings. As soon as the victorious boats of the Gaspesians have been sighted, the girls and women, all painted and adorned and wearing their necklaces of beadwork and wampum, appear at the edge of the water in order to receive the trophies and scalps which their husbands are bringing from combat. They even throw themselves in blind haste into the water in order to receive them, and plunge into the river every time the warriors make their hues and cries of joy. (LeClercq 1910: 270)

Women were actively involved in the torture of prisoners of war and traitors, too. Lescarbot (1914: 216) describes an incident when a Penobscot woman who had been taken captive helped a fellow male prisoner to escape, stealing for him a tinder-box to aid him on his journey. When the Penobscot woman was found out, it was the young Mi'gmaq women who put her to death by slashing her repeatedly with a knife (Lescarbot 1914: 216).

Aside from reinforcing sought-after behaviour in their children and men through their care-giving, women's physical actions contributed to the architectural, dietary, and economic well-being of their communities. It is Lescarbot (1914: 201) who best describes the many responsibilities and crafting activities of Mi'gmaq women,

They also make baskets of rushes and roots to hold their provisions…make purses of leather, upon which they work designs worthy of admiration with their quills of porcupine coloured red, black, white and blue … make dishes of bark to drink out of… and necklaces and bracelets worn by them and the men, which are called matachias*, are of their making. When in the springtime or summer, the trees must be stripped to cover their houses with bark, it is they that do the work; as likewise they labour in making canoes and small boats… they work harder than the men, who play the gentleman, and care only for hunting and for war*.

Therefore, many of the materials researchers hope to find evidence of archaeologically, in order to attest to the occupation of a site or landscape by the Mi'gmaq people, are of

women's making. Women and girls constructed the wigwams, which could lodge from 15 to 20 people, using birch poles and bark sewn together with bone needles and sinew (moose tendon) to create the outside of the home (Denys 1908: 405-406, 415; LeClercq 1910:100). They collected fir branches and lined the inside of the wigwam with them, and painted the interior walls with nature scenes and animals (LeClercq 1910:100-102). They chopped firewood with stone and later iron trade axes, to keep the fires burning at all times (Denys 1908: 406).

The importance of the hearth fire and its connection with women's changing identities from prehistory and into the protohistoric period is related in the works of Maillard (1863). Around 1740, Maillard wrote a letter to friends back in France that described his meeting with a Mi'gmaq shaman named Arguimaut from Prince Edward Island who spoke of what life has been like prehistorically as gathered from the tales passed down to him from generations older family members (Lockerby 2004: 407). In his statement to Maillard (1863), Arguimaut describes hunting and cooking strategies of old, and also says that the preservation of the wigwam fire was of the utmost importance in those times, especially in winter. Furthermore, he says that it was the women of the wigwam (comprised of slaves, daughters, and multiple wives) who had the responsibility of keeping the fire going. If the fire was still lit after 3 full moon cycles it became sacred, and the woman who had tended to the fire in those last few days was praised and ceremonially smudged by the male members of the community who went on to perform a dance to the Sun. If the woman was also the head wife and mistress of the wigwam, a title ascribed to the first wife to give birth to a son, a feast would be thrown in her honour. LeClercq (1910: 229) also mentions that certain medicine-women had been honoured as

priestesses of the Sun, the personification of the Creator in Mi'gmaq mythology. This role as guardian of the fire and emissary to the Sun no longer really existed by the time French settlers and missionaries had come into the region in the 17th century.

Other household responsibilities of Mi'gmaq women and their young daughters included fetching and butchering the game taken down by their men. They used their sledges or *tabagan* (toboggan) to transport the meat, bones, and hide of the animal back home (Denys 1908: 404; LeClercq 1910: 119). By breaking, powdering, and boiling the bones of animals like the moose, the women produced the greasy dense food staple known as *cacamo*, or moose butter (Denys 1908: 422-423; LeClercq 1910: 118). Hides were cleaned with quartz and chalcedony scrapers to prepare for the tanning of leather, sewing of clothing, and cording snow-shoes (Denys 1908: 423; Leonard 1996: 65-66). And when the time came to move camp after depleting the surrounding area of game and other resources, it was the women and little girls who carried the contents of the village on their backs in woven bags and baskets; the men and boys carried nothing (Denys 1908: 405).

Baskets, mats, pouches or purses, and netting were made by Mi'gmaq women, not only for storage purposes, but also to catch and collect an abundance of fish (Deal 2008: 10-12; Denys 1908: 405; Lescarbot 1914: 252-253; Whitehead 1987: 11-12) (Figure 5.3). In the late summer and early fall (August - October), cattail leaves, reeds and rushes would be collected from marshy areas along the rivers, dried in the sun, bundled and then stored until needed (Gordon 1995:3; Whitehead 1987:1). It is believed that basket and net-making would have been an ideal activity for the long winter months where the majority of time for all persons would have been spent indoors (Gordon 1995). Braiding

plant-fibres could have been done by hand or through the use of bone or wood needles, producing a variety of patterns such as twining and twill-weaves (Gordon 1995:5). Cordage would have been produced by spinning already beaten plant-fibre, probably using a plummet (Whitehead 1987:23). Nets used for dip-net fishing practices were likely constructed with basswood fibres due to their incredible strength (Whitehead 1987: 11-12). Basswood bag-nets, used to hold fish and eels, were attached to wicker-woven fish fences made of whole reed shoots woven in tight braids and stuffed with twig filler (Whitehead 1987:11-12). Denys (1908: 437) details the use of fish fences and bag-nets in the following passage:

They make use of another device. At the narrowest place of the rivers, where there is the least water, they make a fence of wood clear across the river to hinder the passage of the fish. In the middle of it they leave an opening in which they place a bag-net like those used in France, so arranged that it is inevitable the fish should run into them. These bag-nets, which are larger than ours, they raise two or three times a day, and they always find fish therein. It is in the spring that the fish first ascend, and in autumn they descend and return to the sea. At that time they placed the opening of their bag in the other direction.

Though women are not described as having hunted and fished themselves, the production of basketry used as fishing technology clearly showcases their contribution to food procurement methods.

Mi'gmaq women also contributed substantially to trade with the creation of items such as shell and copper beads. While shell and copper beads were used as pieces of adornment for the body, they were also considered prestige goods that could be traded for other advantageous resources, "Historically, shell bead wampum in northeastern North America had numerous functions: as ornamentation in belts or mnemonic records, and as an exchange object for both reciprocal gifts and non-reciprocal payments" (Trubitt 2003: 247). Local shellfish species, such as soft-shell clam and blue mussel, from nearby

estuarine and oceanic areas would have been used by the Mi'gmaq as raw material for the production of shell beads (Chute 1998). Shell disc beads were made by grinding off the umbo-section of the shell, and then very precisely and delicately drilling into the center of the shell piece to create a hole for the bead (Trubitt 2003). The procedure would have required a good deal of patience and accuracy as prehistoric populations would have been employing tools such as bone or wood awls to drill away at the shell.

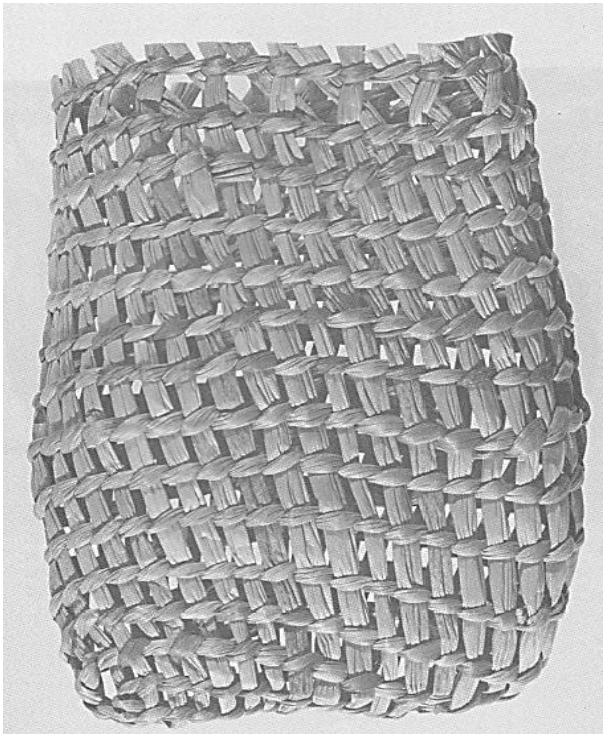

Figure 5.3 Mi'gmaq twined cattail-and-rush bag, recreated by Gordon (1997:95)

Copper, on the other hand, would have been much more malleable and easier to form into a variety of objects, such as copper tube beads, tinkling cones, sheets, blanks, and rods (Leonard 1996: 85-85). For many years it was believed that Mi'gmaq copper items were created out of recycled European copper, or that raw Native copper was acquired as part of long-distance trade with other Algonkian culture groups living in the

Great Lakes region, specifically in the area around Lake Superior (Keenlyside 1980: 16). However, the area encompassing Cape D'Or, Nova Scotia has recently been proposed as a more local source of Native copper material within the Maritimes region, as several sites dotting the Bay of Fundy's coastline have yielded sizeable amounts of raw copper nuggets (Keenlyside 1980:16; Leonard 1996: 91) (Figure 5.4).

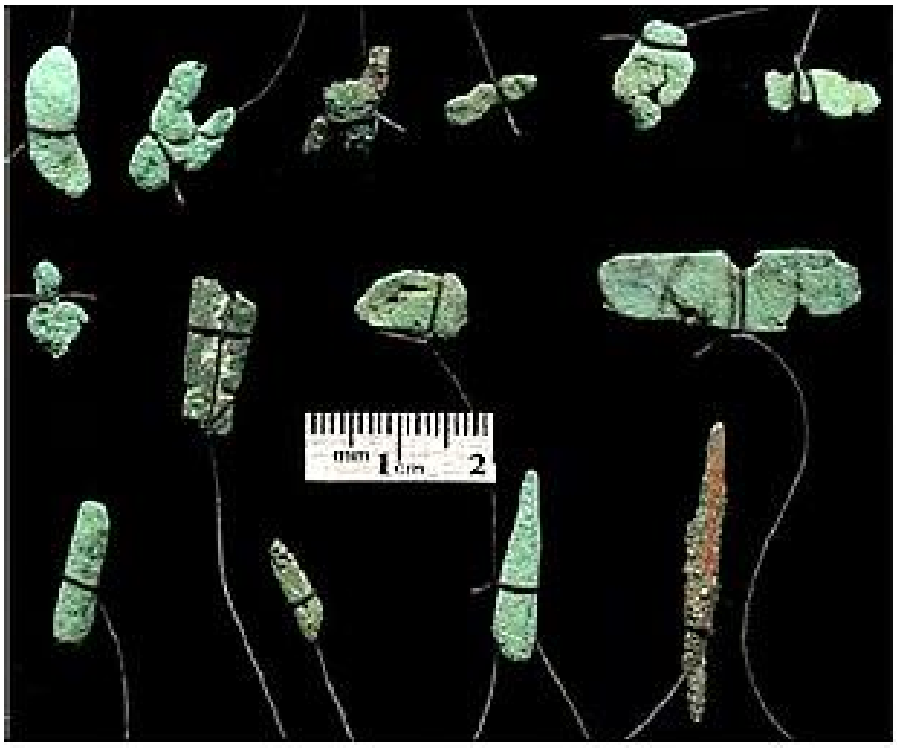

Figure 5.4 Late Woodland Copper Artifacts from Shediac Bay, from Leonard (2002b:50)

As has been shown, women's many contributions to their communities are highlighted within the works of French writers, but it is Wallis and Wallis (1955) who best sum-up the lives of Mi'gmaq women, "Overburdened and overworked, periodically unclean and dangerous to the men, bearing and loving many children, they nevertheless were essential to the life of the group, and sometimes, were so recognized" (p.243). Copper and shell beads, along with the crafting of baskets that potentially stored food

items such a smoked meat and fish, bear and seal oil, or even dried berries, were the result of Mi'gmaq women's creative efforts that undoubtedly added to socio-economic aspects of daily life and regional trade. Additionally, these objects expose Mi'gmaq women's close relationship with the production of material culture, all of which influenced and negated patterns of identity for other individuals within Mi'gmaq society. Likewise, it was the new material culture and customs of the European settlers that changed the roles and responsibilities of Mi'gmaq women as cultural contact continued.

5.3 Old Age

The experience that comes with ageing allowed older individuals to step in as mentors, counsellors, and storytellers (Denys 1908: 418). Elders were always consulted before deciding upon war, or other important affairs within their communities (LeClercq 1910: 234, 269). Additionally, it was only upon reaching a certain age that those said to have been born with supernatural abilities, coupled with wisdom gained over the life course, could step into the role of shaman or medicine-woman (Denys 1908: 417). For even within old age, gendered boundaries still existed, with men performing rites associated with magic, such as predicting the location of the next successful hunt, and women being considered better herbalists, concocting remedies for a vast number of ailments (LeClercq 1910: 216, 229). *Buoin* were both loved and feared by the Mi'gmaq people, and therefore commandeered prestige through their supposed powers and knowledge as described by Denys (1908: 418),

> *Those medicine-men were lazy old fellows who would no longer go hunting, and who received from others everything they needed. If there were any fine robes, or other rarity in a wigwam, that was for Monsieur the Medicine-Man. When animals were killed, all the best parts were sent to him. When they had cured three or four persons, they never lacked anything more.*

The French missionaries and settlers, however, were far less impressed with the role of the *buoin*, often referring to them as 'jugglers' within their writings in an effort to mock and discredit them (see the works of LeClercq (1910) and Lescarbot (1914)).

Reaching old age within Mi'gmaq society denoted special treatment in the form of certain privileges accorded to elderly individuals by their communities. For instance, the reason having a large family comprised of multiple children was so idealized within Mi'gmaq culture had to do with the belief that offspring were indebted to their parents, having to provide them with food and material resources, as well as a great deal of respect. One way in which the elderly were shown such respect, in relation to their status within Mi'gmaq society, was through the spatial relationships present within the household itself. The elderly were accorded a sought-after sleeping spot within the household, along with children and married men, whereas young unmarried men and women were subjugated to sleeping farther away from the warmth of the fire (LeClercq 1910: 100). Married women were delegated the worst sleeping position, closest to the entrances of the wigwam, with LeClercq (1910) stating that this was done in order that they could better serve their husbands and greet guests.

The spatial distribution of sleeping positions according to social role and age is interesting in two respects. First, it highlights how socio-biological identities were maintained and communicated on a daily basis in the home, even being so clear-cut and readily observable that someone from a distinctly different culture, in the case of the French writers, could report on it. Second, it allows for the interpretation that the elderly were given a spot closest to the fire not only out of respect, but also due to the possible

frailty associated with old age as well as childhood, given the inclusion of children in the same space.

Given their frailty, the privileged social status of the elderly could be dismantled by illness, though often only in dire circumstances (Wallis and Wallis 1955: 257). LeClercq (1910: 92) mentions that,

These wretched children often repay their poor parents with ingratitude, for some have been seen who have killed and assassinated their fathers when these have reached a decrepit old age. There have been found, I affirm, monsters of nature, who have abandoned them in the midst of the woods and the snows, and who, as a climax to their cruelty, have broken their heads.

While LeClercq interprets this 'ingratitude' as murder, what he describes may in fact represent an act of euthanasia, whereby the very sick were abandoned to their deaths in the winter colds in place of a slow painful death. Other authors have taken this passage to show that much like unhealthy babies, the Mi'gmaq could not abide disabled or sickly persons, instead viewing them as burdens on the whole of the community (Jaenen 1974:271). Generally, attitudes towards the elderly were ones of affection, with Lescarbot (1914: 215) even drawing comparisons between the Mi'gmaq and French, with the Mi'gmaq being found to be much more compassionate in this capacity,

One thing I will say concerning fatherly piety, that the children are not so cursed as to despise their parents in old, but provide them with venison, as do they stake towards those who engendered them; a thing which is the shame of many Christians, who, weary of their parents long life, oftentimes strip them before they go to bed, and so leave them naked.

Yet, the social roles and positions of the elderly would become altered as cultural interactions with the Europeans persisted into the historic period.

5.4 Cultural Contact and Changing Lifeways

When cultural contact occurs a two-way transaction takes place with both groups learning from and observing the other, adding aspects of that different culture to their own. If interaction persists, the influence of one culture on the other will grow, potentially changing the identity of persons within either group as time goes on. When this alteration in lifeways and roles becomes noticeable, and depending upon the timing and way in which these cultural interactions took place, a relationship between the two groups will be solidified. This relationship can be thought of as harmonious or volatile, based on gradual syncretism or assimilation, and regarded as for good or for ill, depending on the perspective engaged. These relationships, however, are rarely thought of as insignificant. In most instances, the relationship between two different cultural groups is a mixture of all of these aforementioned factors, and so seemingly knotted together that the only word able to describe it is complex. The relationship between European and Mi'gmaq populations in the historic era is no different. Although, it can be argued that Mi'gmaq interactions with European material culture in the form of trade goods began to transform Mi'gmaq lifeways before European persons were even directly encountered.

Bourque and Whitehead (1985: 328) suggest that before 1600, very few European expeditions were carried out which established direct contact and item exchange with Native persons living in around the Gulf of Maine region. Yet, on these few voyages explorers noted that European trade goods seemed to have already been circulating in the area without such interaction taking place (Bourque and Whitehead 1985). Bourque and Whitehead (1985: 332 -333) believe that this is because the Maliseet, Passamaquoddy,

and Mi'gmaq peoples were already using such items in daily life and trade with other Algonquian culture groups prior to greater European expansion of the Maritimes in the 17th century. Similarly, before 1600, Mi'gmaq villagers in places as remote and protected as the Restigouche River had likely never come across a European person directly, but through trading with Iroquoian groups of the St. Lawrence River had still gained access to goods such as copper kettles, iron trade axes and knives, and glass beads. The Iroquoians were already involved in the fur trade, prompting the Mi'gmaq to actively participate in the collection of furs as well (Bourque and Whitehead 1985).

This in turn makes passages written by Lescarbot (1907) in the first decade of the 17th century, regarding the behaviour of Mi'gmaq persons in some of his first voyages around the Gaspé region unsurprising. In one passage, he describes how out of nowhere his vessel was approached by two Mi'gmaq men sailing in a European-style shallop with a moose painted on its sail looking to see if the French had items to trade (Lescarbot 1907: 309). He goes on to detail several other voyages that took place; one in particular involving Frenchmen including Champlain, a Mi'gmaq man named Messamouet, and a Maliseet sagamore known as Secoudon, all on-board the same ship traveling along the coast of the Gulf of Maine (Bourque and Whitehead 1985: 333; Lescarbot 1907: 323-324). The purpose of this journey for the Native men according to Lescarbot (1907) was because, "They had much merchandise, gained by barter with the French, which they has come thither to sell" (p.324). Therefore, even before other French writers had made their way to the region, before they could observe and write about Mi'gmaq culture and customs, Native persons of the Maritimes had already socio-economically incorporated European material culture, going so far as to trade it with other indigenous groups.

Though the appearance and trading of European goods within the region may predate the actual arrival of settlers and missionaries in some areas of the Maritimes, the effects of this material culture proved to be as vital in changing aspects of identity for the Mi'gmaq as face-to-face contact. As trade amongst Native populations and Europeans focused extensively on furs and iron or copper tools, the need for trading items such as shell beads and ornamentation to acquire other materials slowly disappeared (Bourque and Whitehead 1985). The majority of these traditional items, as previously outlined, were the products of Mi'gmaq women's creative efforts. The more durable and sought-after goods of the Europeans by Native communities relegated women's crafting activities to a pastime, not a socio-economic necessity for contributing to regional exchange networks, which may have been gynarchically-driven to begin with (Leonard 1996: 66). Furthermore, it can be argued that because women's identities within their society were in large part formed by these contributions, when their products were passed over for goods of European-make, a hierarchical shift occurred in which women's status within Mi'gmaq society diminished, alongside the gradual loss of their traditional crafting knowledge. For in the ethnohistoriccal accounts it is said that women single-handedly ran their households, could choose to deny potential suitors and initiate divorces, inspired courage and even helped kill captives in times of war, but apparently had, "…no command among the Indians. They must obey the orders of their husbands. They have no rights in the councils, nor in the public feasts" (LeClercq 1910: 239). Perhaps it is this idea of a change in identity wrought by interactions with European material culture that can rectify the discrepancies apparent in the writings of the French as to Mi'gmaq women's power, rights, and status within their communities. For as

Leonard (1996) states, "If women controlled the flow of certain goods, they may have wielded more political influence than traditionally believed" (p.66).

If women's roles became lessened with the arrival of European goods, then men's social status seems to have been unaffected, if not somewhat bolstered, when such items began to be circulated. Guns would have aided in activities such as hunting enormously, allowing the men to catch game in half the time it would have taken them previously. However, the obvious trade-off in using such technology would be an end to flint-knapping activities to create hunting tools. Although now supplied with iron fish hooks and jigs, some traditional fishing methods and materials continued to be used into the 20th century on reserves in New Brunswick and elsewhere in the Maritimes (Chute 1998; Whitehead 1987:11-12). Following contact, other previously unknown foodstuffs such as hard tack, salt, and brandy were introduced into the diets of the Mi'gmaq. Therefore, when direct interpersonal contact was made with Europeans, Mi'gmaq men, who were already considered providers and leaders, unequivocally assumed new roles as merchant heads of regional trade and cultural interaction within their societies. However, the loss of the power held by chiefs and elders was noted by the French writers,

One sees no more among these people those large assemblies in the form of councils, nor that supreme authority of the heads of families, elders and chiefs, who regulated civil and criminal affairs, and in the last resort decided upon war and upon peace, giving such orders as they though absolutely essential, and enforcing the observance thereof with much submission and fidelity. There are now only two or three Indians, who in their own districts still preserve, though feebly, a sort of power and authority, if one can say that such is found among these peoples. (LeClercq 1910: 234)

Direct contact with European peoples also resulted in changes to the health of the Mi'gmaq, as well as to their spiritual belief systems, especially in regards to burial practice and concepts of the afterlife. Of course, these subjects also contribute to the

metamorphosis of identity and subsequently are the focus of the next chapter of this thesis.

CHAPTER 6: MI'GMAQ DEATHWAYS

Mi'gmaq attitudes and practices related to health, death and mourning, funeral rites, and the afterlife will be examined in the following chapter. Ethnohistorical descriptions of Mi'gmaq physical appearance and health, traditional remedies and changing perceptions regarding disease and illness upon European contact will be provided first. Next, passages pertaining to perspectives on manner-of-death for the deceased and its relation to funerary rites will be described. The Mi'gmaq mortuary cycle, which includes events and practices associated with body preparation, mourning, and burial will then be detailed. Mi'gmaq beliefs and lore connected to the location of cemetery space, as well as the links between body and spirit, and its bearing on the identity of the deceased, will then be examined. This chapter will conclude by discussing connections between Mi'gmaq afterlife myths and actual burial practices as seen through archaeological evidence from the Maritimes.

6.1 Health, Remedies, and Disease

In the ethnohistorical accounts the French describe the Mi'gmaq people as generally healthy, physically-apt, mentally-quick, and overall, quite handsome (Denys 1908: 41; LeClercq 1910: 240-241, 296; Lescarbot 1914:137-146). Many individuals seem to have been capable of reaching a grand old age, and perhaps with some exaggeration, were still said to be physically-active and able to fulfill the same social roles as younger persons,

They still lived long lives. I have seen Indians of a hundred and twenty to a hundred and forty years of age who still went to hunt the Moose; the oldest, who neared a hundred and

*sixty years, according to their account, no longer went. They count by moons. (*Denys 1908: 399-400)

On the other hand, the Mi'gmaq found the physical appearance and demeanour of the French to be strange, if not laughable at times (Jaenen 1974: 271; Wallis and Wallis 1955: 120). In one observation from Biard in1616 , he describes how the Mi'gmaq were fond of making fun of the French, essentially calling them ugly and unintelligent whenever it pleased them,

Any of our people who have some defect, such as one-eyed, squint-eyed, and flat-nosed, are immediately noticed by them and greatly derided, especially behind our back and when they are by themselves. For they are droll fellows, and have a word and a nickname very readily at command, if they think they have occasion to look down upon us. (Thwaites 1896-1901 JRII: 3)

Beards on the faces of the Europeans were also considered very odd, as Mi'gmaq men hardly grew any facial hair naturally (Lescarbot 1914: 140; Thwaites 1896-1901 JRIII: 22). French clothing, especially the long robes of the missionaries, as well as a few of the chores done by settlers, such as chopping wood, were seen as evidence of French men's effeminacy, given that these same tasks were relegated to the duties of women within Mi'gmaq society (Jaenen 1974:271).

Denys (1908: 415) mentions that no disease or fever recognizable to the Europeans was found among any Mi'gmaq population they encountered, with all minor ailments being easily remedied through herbalism. The role of herbalist or apothecary was performed by elderly individuals, usually female, who administered a variety of balms, salves, teas, and oils derived from mainly plant, but also animal products (Chandler et al. 1979: 51; Wallis and Wallis 1955: 127). Different plants and items such as moose bones and beaver liver were regarded as special and used to treat various

ailments (Denys 1908:417; LeClercq 1910: 298-299: Lescarbot 1914:186; Wallis and Wallis 1955: 127-134). Lore and superstition were inherently entwined with the actual creation of each remedy (Chandler et al. 1979). The smoking, blowing, and smudging of tobacco and willow is predominantly described in the accounts of the French as a cure-all that also aided in mental clarity and was indulged in by men, women, elders and even children (Denys 1908: 417; LeClercq 1910: 298-299). However, ailments that could not so easily be treated, such as those caused by unseen or supernatural forces were adhered to by a shaman, always an elderly male, who carried out alternative rites to comfort the sick or injured (Chandler et al. 1979: 51). Whether man or women, herbalist or shaman, all Mi'gmaq physicians were looked down on by the French, who viewed their concoctions and beliefs as suspicious, going as far as to equate their work to communion with the Devil (Denys 1908: 417; LeClercq 1910: 222-227).

Other practices are cited by the French writers as contributing to the good health of the Mi'gmaq people. Sweat baths or lodges, for instance, were a point of fascination for the French and well-loved by Mi'gmaq men (Denys 1908: 416; LeClercq 1910: 297). Women were not allowed to participate in the sweat lodge ceremony (Denys 1908: 416; LeClercq 1910: 297). Yet, protohistoric Mi'gmaq women are said to have had better oral health than their male counterparts due to their chewing of fir gum, which served to clean and whiten the teeth, as they caulked canoes (Denys 1908: 424). Denys (1908: 424) even suggests that fir gum be acquired and chewed by French women to procure the same results. Blood-letting is also said to have been practiced by the Mi'gmaq in order to relieve the body of old blood, thought to make the mental and physical capabilities of an individual sluggish (LeClercq 1910: 298-298; Wallis and Wallis 1955: 122-123).

Even with descriptions of unhygienic wigwam conditions, the Mi'gmaq seem to have only suffered the occasional accident or injury, with no signs of observable infectious or metabolic disease being found within any population before the arrival of the Europeans, according to the writings of the French (Denys 1908: 415-416; LeClercq 1910: 291). It is now known that a strain of tuberculosis, and possible other less virulent strains of other infectious disease, existed in the Americas before European contact was made (Daniel 2000; Drake and Oxenham 2012; Mackowiak et al. 2005). However, the spread of these strains were limited and cannot be described as endemic within populations at any time in the prehistoric past; hence the lack of immunity on behalf of the Native American populations at the time of contact (Daniel 2000; Drake and Oxen ham 2012; Mackowiak et al. 2005). Furthermore, there has not yet been any positive identification of pathology associated with this disease in any prehistoric Atlantic Canadian skeletal assemblage. Therefore, the severe changes to Mi'gmaq health within the historic era were undoubtedly brought on by ongoing interaction with European persons.

The spread of infectious diseases such as tuberculosis, smallpox, and scarlet fever decimated Native American populations in the Americas, including the Mi'gmaq people. Prior to European contact, it is estimated that the Mi'gmaq population numbered between 10, 000 and 15, 000 persons (Prins 1996:27; Leonard 2002b:17). Though exact numbers are not known, and will never be known, the loss of life for indigenous persons can only be described as devastating (Bourque and Whitehead 1985). It has been suggested that, at first, the Mi'gmaq may have believed that these diseases originated from the animals that they had always hunted, specifically the beaver (Hornborg 2008; Martin 1978). For

this reason, the enormous number of beaver pelts taken and sold by Native groups as a part of the fur trade served a further purpose of revenge, as the animals had instigated the conflict and declared a form of biological war on Native populations (Hornborg 2008; Martin 1978). This interpretation has also been used to argue against the overly simplistic and romanticized stereotype that Native American groups are 'at-one' with nature, in favour of promoting the symbiotic relationship that actually existed between indigenous groups and their environments (Hornborg 2008; Martin 1978).

Regardless of this interpretation, it did not take long for Mi'gmaq persons to make the connections between the illnesses affecting their communities and their ongoing interactions with Europeans. These connections were also made elsewhere by individuals from other culture groups, such as the Iroquois. There are several accounts describing how Huron women approached the chief and elder councils of their communities, begging them to dismiss or kill the European missionaries in the area before entire villages succumbed to the sickness and death these persons continued to propagate through prayer and conversion (Thwaites 1896-1901 JR I: 117-118). However, disease was not the only factor that changed the health of Native American populations; the introduction of European foodstuffs and the alteration of traditional diets and subsistence strategies also affected Native health to a significant degree. Specifically, alcohol in the form of brandy and wine led to a drastic change in the everyday demeanour of Mi'gmaq persons, with the French writers sadly commenting in length on the increasing violence, disorder, and death within the communities they had observed for so long (Denys 1908: 444-445, 448-450; LeClercq 1910: 253-258). The disruption of the old way of life was readily apparent to Mi'gmaq persons, with one individual openly acknowledging the

changes brought on by direct contact and exchange with the Europeans to LeClercq (1910: 106),

And if we have not any longer among us any of those old men of a hundred and thirty to forty years it is only because we are gradually adopting your manner of living, for experience is making it very plain that those of us live longest, who, despising your bread, your wine, and your brandy, are content with their natural food of beaver, of moose, of waterfowl, and fish, in accord with the custom of our ancestors and of all the Gaspesian nation. Learn now, my brother, because I must open to thee my heart; there is no Indian who does not consider himself more happy and more powerful than the French.

The recourse of interactions between Native Americans and Europeans in the historic era has forever changed perceptions of health and disease in regards to cultural contact. The effects of these changes further transformed beliefs, practices, and stories related to the subject of death and burial.

6.2 Perspectives on Manner-of-Death

Death is inevitable, however, the way in which an individual dies may negate where and when a funeral and burial was afforded to the deceased, as well as the amount and context of mourning carried out by relatives and friends. Though there is a paucity of explicit ethnohistorical information on how circumstances surrounding death affected Mi'gmaq ideas and memories associated with the dead, there are several glimpses in the writings that suggest differential burial practice was performed dependant on the manner-of-death for the deceased.

Most persons are described as dying from old age or illness (LeClercq 1910:299-300). Accidental death, whether caused by hunting activities gone wrong or spontaneous wigwam fires, also occurred but seems to have garnered typical funerary rites (LeClercq 1910: 180-183). Yet, drowning was considered an exceptional accidental death. Mourners apparently burned portions of the body and threw gifts into the waterway where the

person had drowned, in order to appease those supernatural entities that possibly played a part in the death of the individual (Wallis and Wallis 1955:266). Though suicides and murders did take place, nothing is mentioned on how deaths of this manner were viewed by the Mi'gmaq, nor are different burial practices described as being performed in such instances (LeClercq 1910: 248, 255).

Alternatively, the warrior dead were collected and brought home for burial, receiving ornate funerals in honour of their dedication and sacrifice (Lescarbot 1914: 273; Wallis and Wallis 1955: 266). During the ceremony, the mourners of the warrior dead promised to avenge their deaths, perpetuating hatred and deepening rivalries amongst the parties involved in the initial conflict (Lescarbot 1914: 273; Wallis and Wallis 1955; 266). Those that did not participate in the actual fighting, such as woman and children, were rarely killed by neighbouring Mi'gmaq, although they were taken as captives and slaves (Lescarbot 1914: 215). On the other hand, if conflict ensued between different culture groups, these individuals could become victims of war, with LeClercq (1910: 301) retelling one example of such involving the Mi'gmaq population living on the banks of the Miramichi River, where several villages were completely decimated at the hands of the Iroquois. In this case, funerary rites for the Miramichi Mi'gmaq included the use of crosses as grave markers (LeClercq 1910: 301).

6.3 The Mi'gmaq Mortuary Cycle: Mourning and Funerary Rites

At the moment of death, the wigwam of the deceased was filled with close friends and family members, who promptly stepped outside of the dwelling to share the news of the loss with their communities, as well as beat upon the side of the wigwam to coax the spirit of the individual to leave that space by way of the smoke-hole (Denys 1908: 438-

439; LeClercq 1910: 300; Wallis and Wallis 1955: 262). Shortly thereafter, the women of the household went to retrieve the furs, skins, and bark needed to shroud the body and build the funeral bier (Denys 1908: 439; LeClercq 1901: 300). The body was bound in a flexed position, from head to knee, by using leather cords and then wrapped in fur and bark painted red and black (LeClercq 1910: 300). In other accounts, like those from Lescarbot (1914: 274) the body was first embalmed with some kind of salve, but possibly also the skin was removed, dried, and then reattached to the bones with leather ties. This passage bears resemblance to what some of the Mi'gmaq told LeClercq (1910: 302) about body preparation in former times:

I have learned only this from our Indians that the chiefs of the nation formerly entrusted the bodies of the dead to certain old men, who carried this sacredly to a wigwam built on purpose in the midst of the woods, where they remained from a month or six weeks. They opened the head and the belly of the dead person and removed thereafter the brain and entrails, they removed all the skin from the body, cut the flesh into pieces, and, having dried it in the smoke or the sun, they placed it at the foot of the dead man, to whom they gave back him skin which they fitted on very much as if the flesh had not been removed.

At the same time as the body preparation, the relatives and friends of the deceased went into a state of heavy mourning and fasting which could last, depending upon the social status of the individual, up to 3 or 4 days coinciding with the funeral orations and feast (Denys 1908: 437). To show their grief these individuals would unbind their hair, cut it, and wear it loose and unadorned, as well as paint their faces completely black (LeClercq 1910: 301-302; Lescarbot 1914: 277). Funerals consisted of all members of the village gathering for a solemn ceremony, where orations were repeated on behalf of the dead, consisting of detailing their genealogies, stories associated with their ancestry, and their good qualities and accomplishments. Strangely, the traditional mortuary rites experienced and described first-hand by the French writers only pertained to the burials

of Mi'gmaq men. While LeClercq (1910: 182-186) mentions the burial of an infant and woman in the area of the Miramichi River, he attests to the fact that their funerals were carried out according to Christian practice, and that only after the reappearance of the women's husband were Mi'gmaq funerary orations carried out for this man's wife and baby. According to Denys (1908), "All of the burials of the women, boys, girls, and children were made in the same fashion, but the weeping did not last so long" (p. 439).

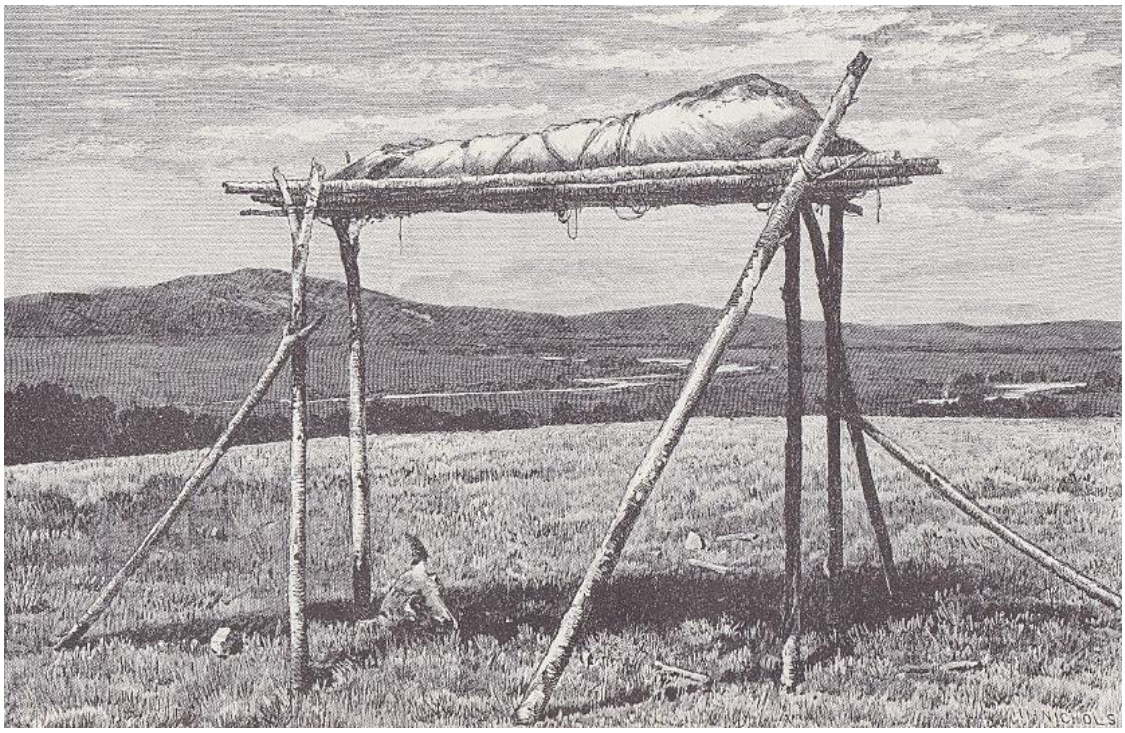

Figure 6.1 H.H. Nichol's Depiction of a Scaffold Burial, in Yarrow (1976:158)

The mood of a funeral shifted after eulogies were completed, turning into a celebration, also known as a *tabagie* by the French, of the joy to come for the departed given that they were on their way to a happy existence in the afterlife (Denys 1908: 439; Lescarbot 1914: 284). This joyous transition was marked by feasting, gifting, and dancing, and celebrated by all in attendance except for immediate family members. The

mourning behaviour they expressed during the funeral ceremony could last up to a year after death, which subsequently was the prescribed length of time of widowhood for the wife or wives of the deceased (Denys 1908: 438-439; LeClercq 1910: 302). After this year, widows could remarry, although if they had children grown enough to support their needs they rarely did so (Denys 1908: 439; LeClercq 1910: 302). There is no mention of how soon a man could re-marry after the death of his wife.

Figure 6.2 T.Sinclair and Son's Depiction of Tree Burial, in Yarrow (1976:161)

The year of mourning experienced by the family also corresponded to the length of time needed for the body to decompose and become skeletonized. The Mi'gmaq practiced both primary and secondary forms of burial. If a person died in the spring or

summer they could be placed whole within a grave of 4 or 5 feet deep (LeClercq 1910: 300). Alternatively, the body of the deceased already placed upon a bier was covered up or held up by wood planks and poles to form a sepulchre, undergoing the changes associated with putrefaction over this set time (Denys 1908: 439; Lescarbot 1914: 284) (Figure 6.1). If an individual died in the winter and no grave could be dug or bier constructed, the enshrouded body was placed in the branches of a high sturdy tree in the woods, again being allowed to decompose for many months (LeClercq 1910: 302) (Figure 6.2). Eventually, the remains from the biers and the tree-burials were collected, and the bones were washed and rewrapped in new furs, skins, and bark (LeClercq 1910: 302). These bone bundles were then placed in an earthen grave (LeClercq 1910: 302).

Before the remains were placed in the grave, the burial pit itself was lined with furs from various animals (Denys 1908: 434; LeClercq 1910: 301; Lescarbot 1914: 288). Denys (1908) describes the propensity of fur materials in some burials, "There have been dead men in my time who have taken away more than two thousand pounds of peltries" (p.439). Along with furs, all the possessions the deceased would need in the afterlife were placed into the burial pit (Figure 6.3). The personification of social roles and responsibilities continued on even in the Ghost World, the Mi'gmaq afterlife, and thereby the dead had to be outfitted with the equipment and goods to carry-out their designated duties and activities:

If it was man, they add his bow, arrows, spears, club, gun, powder, lead, porringer, kettle, snowshoes…If it was woman, her collar for use in dragging the sled or in carrying wood, her axes, knife, blanket, necklaces of wampum or beads, her tools for ornamenting and painting the clothes, as well as the needles for sewing canoes and for lacing snowshoes. (LeClercq 1910: 301)

Sometimes these items would be broken or vandalized purposefully, specifically any European goods that were included in protohistoric graves, such as copper kettles. This was done to release the spirit of the object, allowing it to travel to the afterlife with the deceased (Denys 1908: 439-440; Harper 1957; Martin 1975). What was not buried with the dead or given away at the funeral ceremony was burned (Lescarbot 1914: 283; Wallis and Wallis 1955: 267).

Figure 6.3 Old Mission Point Burial Goods 1972, from Turnbull (1974)

The sheer quantity of goods placed in the grave, given away, or destroyed amazed the Europeans who thought the practice reckless and wasteful, and every effort on their part was made to stop this aspect of Mi'gmaq mortuary rites (Denys 1909: 339-440).

Eventually the body was covered with more furs, fir and cedar branches, and earth. Wood logs could be placed over the space to denote the location of the burial, or otherwise, the grave went unmarked. From then on the dead were left to their own devices in the afterlife and, "…no one visited the graves except for an additional burial...the name was never again spoken" (Wallis and Wallis 1955: 266-267).

6.4 Beliefs and Lore: Cemeteries and the Afterlife

The Mi'gmaq believed the best place for a cemetery was on a secluded island, separated from the mainland by some distance of water (Lescarbot 1914: 283; Wallis and Wallis 1955: 266-267). The location of these cemeteries was supposed to be a closely guarded secret, given the many valuables placed in the graves of the dead (Lescarbot 1914: 283; Wallis and Wallis 1955: 226-267). However, LeClercq (1910: 302-303) mentions that he was privy to knowledge about the Gaspesians' ancient cemetery located on *Tisniguet* (Heron Island), where he personally came across the remains of a Mi'gmaq box burial.

There are several reasons given for the geographic separation of the dead and the living, such as the spiritual and physical pollution that could become imprinted on the living from close proximity to the dead body, as well as the fear of ghosts, known as *skadegutmatc* or *skite'kmuj*, who were known to have difficulty crossing bodies of water (Wallis and Wallis 1955: 266; Whitehead 2006: 207). A *skite'kmuj* represented the spirit in human form, essentially looking like a ghost body, a shadow, a shade of the deceased individual (Whitehead 2006: 207). *Skite'kmuj* have "…feet, hands, a mouth, a head, and all other parts of the human body: that it had still the same needs for drinking, for eating, for clothing, for hunting and fishing, as when it was in the body" (LeClercq 1910: 213-

214). It is therefore implied that in Mi'gmaq belief the body and spirit were not considered one, for the spirit lived on after the body has decayed and ceased to exist. However, the spirit has an overwhelming affinity or attachment to the idea of the body, given that ghosts in Mi'gmaq stories appear in human form and are said to haunt the spaces in which bodies are buried. Additionally, this suggests that the identity of the living person was carried on in death, although it was recognized that the *skite'kmuj* of the person was somewhat of an unnatural entity. This attachment to the concept of the body and the experiences undertaken by the living body on behalf of the spirit may also explain possible differential burial practices for Mi'gmaq children. Young children and babies were not buried within cemetery space because, "The soul of an infant does not go far from its body, and a deceased infant is buried beside a path, that the soul may slip into the bosom of a woman passing by and animate an undeveloped fetus (Wallis and Wallis 1955: 262). While ghosts are said only to appear under exceptional circumstances, many stories revolving around personal experiences with *skite'kmuj*, as well as other supernatural entities, were included in Rand's (1894) collection of Mi'gmaq legends and Wallis and Wallis' (1955: 368-375) ethnographic study of the Mi'gmaq in the early 20th century.

Like other supernatural beings inhabiting the living world of the Mi'gmaq, such as the *Migamawesu*, or forest people, and the *Pugulatmutc*, dwarf-like persons who inhabited the hilly parts of the Gaspé and Baie des Chaleurs region, a ghost could take on a mischievous, ominous, and sometimes even friendly demeanour (Wallis and Wallis 1955: 303-304, 356, 363-365). Yet, unlike these other entities, the spirits of the dead were not meant to exist in the world of the living, and instead were supposed to travel to

and stay in the afterlife, or Ghost World, after death. LeClercq's (1910) recording of the oral narrative told to him about the Ghost World and its guardian, the giant Papkootparout, is the earliest and only story to depict the Mi'gmaq afterlife. Whitehead (2006) has since revised LeClercq's version of the tale of Papkootparout, which can be found in her compendium of Mi'gmaq legends.

6.4.1 The Tale of Papkootparout and the Ghost World

The story begins with the death of one of the Gaspesians, a sick elderly man whose spirit enters the Ghost World but is sent back by Papkootparout, reanimating his dead body for a short time to tell the Mi'gmaq about the existence of the land of the dead (LeClercq 1910: 208; Whitehead 2006: 207-208). Soon after, the only son of one of the hunters living in the village dies suddenly (LeClercq 1910: 208; Whitehead 2006: 209). The father of the child, beside himself with anguish, rallies his friends and fellow hunters imploring them to travel to Ghost World with him. According to the legend, the Ghost World was, "…separated from them only by a passage of forty to fifty leagues over a pond that could be crossed with ease by fording" (LeClercq 1910: 208). When they had sufficiently supplied themselves for the journey, the group of men set out to find and bring back the spirit of the dead child (LeClercq 1910: 209; Whitehead 2006: 209). Each night, the men set-up poles and platforms which hovered over the great expanse of water, allowing them a few moments of sleep before the next day's trek (LeClercq 1910: 209; Whitehead 2006: 210). The journey was so arduous that a few of the men died of fatigue before even reaching the Ghost World (LeClercq 1910: 209; Whitehead 2006: 210). When the hunters finally reached their destination they stood in awe, for,

Consequently, they say that our voyagers were equally surprised and comforted to see on their arrival an infinity of spirits of moose, beavers, dogs, canoes, and snowshoes, which hovered pleasingly before their eyes, and which, by I know not what unknown language, made them understand that these things were all in service of their fathers. But a moment later they thought they should die of fear and terror when, approaching a wigwam like those which they had in their own country, they saw a man, or rather a giant, armed with a mighty club, and with bow.arrows, and quiver, who, with his eyes gleaming with anger, and a tone of voice which indicated the completeness of his wrath, spoke to them in the words; 'Whoever you are, prepare yourselves to die, since you have had the temerity to make this journey, and to come all alive into the Land of the Dead. For I am Papkootparout, the guardian, the master, the governor, and the ruler of all souls'. (LeClercq 1910: 209-210)

In response, the father of the dead child offers his life up to Papkootparout, for, heartbroken at the loss of his son and knowing full-well that he should be punished for his arrogance in trespassing on the Ghost World, he does not wish to go on any longer (LeClercq 1910: 210; Whitehead 2006: 211).

Figure 6.4 *Waltes* Gaming Pieces from Old Mission Point, Archaeological Services New Brunswick

Papkootparout is so touched by the man's modesty and heartache that he pardons him, and furthermore, taking pity on the man, says that he will release the spirit of the

dead child into the care of his father. However, there is one condition: Papkootparout requests that they play *waltes* with him. *Waltes* is a Mi'gmaq game of chance, played with a bowl and small tokens or disks. Each token has two sides, with one side being plain and the other embellished with some kind of mark or design (Figure 6.4). The object of the game is for each individual playing to flip as many of the tokens design side up per bowl toss. The amount of tokens facing design side up each turn were counted using wooden sticks, displayed for all to see in order to keep score of the player's wins. Papkootparout offered tobacco, maize, and spirit berries, the food of the dead, to the men if they won every successive game, with the hunters betting all of the equipment and provisions left over from their journey (LeClercq 1910: 211; Whitehead 2006: 211). By the end of the day in the Ghost World, the hunters had won every round of *waltes*, receiving all of these items to take back to their world (LeClercq 1910: 211; Whitehead 2006: 211).

The goal of their journey to the land of the dead had not been forgotten though, as the father of the dead child,

> *…hoped, in accord with the promise that which had been made to him, to obtain the soul of his son, which remained always invisible, but which became in an instant the size of a nut by the command of Papkootparout, who took it in his hands, wrapped it very closely in a little bag, and gave it to our Indians*. (LeClercq 1910: 211)

Papkootparout told the men that in order to return life to the dead child, the child's body had to be placed within a newly built wigwam made solely for this purpose, and that only then could the little bag be opened and the spirit re-enter the body (LeClercq 1910: 211; Whitehead 2006: 212). They were never to open the bag before this event, lest the spirit escape and flee back to the land of the dead (LeClercq 1910: 211; Whitehead 2006: 212).

Before returning home, Papkootparout shows the men the Ghost World, specifically the area occupied by those who had done good and acted accordingly in their lifetimes, and those that were punished for their missteps. The *skite'kmuj* of the good are seen to eat all the game they want, with the spirits of the animals allowing themselves to be hunted and caught freely (LeClercq 1910: 212; Whitehead 2006: 212). They see the good spirits in their comfortable wigwams, filled with fresh cedar and fir branches and covered with furs, doing exactly as they had done in life (LeClercq 1910: 212; Whitehead 2006: 212). The *skite'kmuj* of the cruel and unjust, however, were seen to dine on the rotten bark of trees, and relegated to a space made with the most pitiful dried up fir branches (LeClercq 1910: 212; Whitehead 2006: 212)

When the men get back to their village, they are overwhelmed with questions about the land of the dead, and the hunters share their experience openly telling the community what they have seen. The people, so filled with joy and put at ease by the men's description and affirmation of the afterlife, along with their success in retrieving the spirit of the dead child, decide to celebrate by feasting and dancing (LeClercq 1910: 212-213; Whitehead 2006: 212). The little bag holding the *skite'kmuj* of the child is given to an old woman for safe-keeping, as the men want to dance, but she becomes curious about the contents of the bag, and foolishly, decides to open it (LeClercq 1910: 213; Whitehead 2006: 212-214). The spirit of the dead child escapes, flying back to the Ghost World (LeClercq 1910: 213; Whitehead 2006: 214). The child's father hearing of what has transpired dies of heartbreak on the spot, only being reunited with his son in the land of the dead (LeClercq 1910: 213; Whitehead 2006: 214).

6.4.2 Interpretations and Criticisms of the Tale of Papkootparout and the Ghost World

There are several aspects of Mi'gmaq funerary and afterlife ideology that are revealed inadvertently within the tale of Papkootparout. The most pronounced of these aspects, perhaps, is the fact that the Ghost World, the afterlife, can be found on the same plane of existence as the world of the Mi'gmaq, known as the Earth World. Furthermore, if one is willing to make the journey, the living can enter the realm of the departed and vice versa. All one has to do is cross the water to get to the afterlife, potentially symbolically reflected in the Mi'gmaq peoples' supposed choice to bury their dead on islands bounded by water on each side.

Mi'gmaq oral narratives speak to the idea that many worlds exist, with some located above the earth and sky, and some below the earth or water (Hornborg 2006; Whitehead 2006). Each world has beings that live and originate within them, and much like living humans crossing into the world of the dead, these beings can come into contact with other realms from time to time. In many of the Mi'gmaq legends collected by Rand (1894) beings from other realms can even marry and have children with humans, whose physical form can change to suit the needs of their new environments. Yet, the happiness produced by such unions is always short-lived because one being in the relationship simply does not belong in the other person's world. All such stories end sorrowfully, with the Mi'gmaq man or woman usually having to the leave their otherworldly partner to go back to and live amongst their own people in the Earth World. The recurring theme of worldly transition, connection, and loss in these stories indicates their significance in terms of Mi'gmaq worldview. According to Hornborg (2006) these themes are a constant within the Mi'gmaq tales of the six worlds because of the belief that, "The body of any

particular being is not built to exist in all worlds; that is why oneness is impossible" (p.323). It is clear that the passages embracing these themes in the tale of Papkootparout outline the Mi'gmaq belief that death was seen as the transition into another world, a world that only the spirits of the dead absolutely belonged to and the living could only experience when spirit was separated from body.

However, LeClercq's (1910) recording of the legend of Papkootparout has also been criticized in terms of its accuracy in portraying pre-contact Mi'gmaq ideological beliefs. Hornborg (2006: 330) suggests that the tale is entirely disingenuous, either knowledgably fabricated or unwittingly falsely reported by LeClercq because of the Western religious and literary influences that can be recognized throughout the tale. Hornborg's (2006: 330-331) suspicions are seemingly raised by the passages referring to the segregation of good and evil persons in the afterlife, LeClercq's use of the term 'soul' instead of spirit or ghost, and the thematic similarities in this tale and in Roman and Greek myth, which would have been known and studied by missionaries given their education in Latin.

Skepticism in light of the biases held by European writers in regards to their observations on the Mi'gmaq and their culture is absolutely warranted. Yet, in the same instance, Hornborg's (2006) criticisms of whether or not the tale of Papkootparout accurately reflects the pre-European cosmological beliefs of the Mi'gmaq is in itself biased. The suggestion is made that unlike in Christian belief where the afterlife is conceptualized as above (heaven = good people) and below (hell = bad people) the living world, the Mi'gmaq Ghost World is found on the same plane of existence as the Earth World, making it inequitable with the Christian sense of justice, morality, and

punishment (Hornborg 2006: 315). Elsewhere, however, Hornborg (2006) states that in each of the worlds, seemingly 'good' and 'bad' entities exist, with none of the realms being "…morally homogenous" (p.315). It is therefore contradictory to single out LeClercq's inclusion of the differing surroundings and activities of those spirit individuals, based on their behaviour in life, in the Ghost World. If 'good' and 'bad' entities exist in all the other worlds, then there is no reason for them not to in the Ghost World, especially when the written accounts of the French clearly indicate that the Mi'gmaq held on strongly to their own standards of adequate behaviour and action within society, as well as justice and punishment (LeClercq 1910: 242-250; Lescarbot 1914: 210-217).

Hornborg (2006) also takes note with the term 'soul' in LeClercq's version of the Papkootparout story. She states that at the time LeClercq was frequenting the Baie des Chaleurs region European missionaries and merchants had been in the area for almost 150 years already, suggesting Christian ideology strongly influenced Mi'gmaq spiritual beliefs (Hornborg 2006: 330). Contrastingly, LeClercq and the other French writers indicate that many of the Mi'gmaq were unwilling to part with the beliefs of their ancestors, finding it exceedingly difficult to talk them out of certain practices, specifically, those having to do with burial rites (Denys 1908: 440-441; LeClercq 1910: 213-214; Lescarbot 1914: 287-288). It cannot be said that Christianization had no effect on Mi'gmaq cosmological beliefs over time, as several 20th century Mi'gmaq legends collected by Wallis and Wallis (1955) reflect the religious syncretism between traditional beliefs and the Christian faith. However, the use of the term 'soul' may only point to the fact that LeClercq wrote the story in his own words, which should be obvious to the

reader given his running commentary throughout the tale. A story should not be perceived as disingenuous merely because of the language used; any oral narrative is bound to undergo some changes dependant on the person it is being told by, but that does not mean the tale itself was not told to such an individual in a language or expression that could be considered more traditional. Regardless of specific terminology the essence of a story can stay the same, hence the power of oral traditions.

Lastly, Hornborg (2006: 330) believes that the thematic similarities among many Greek and Roman myths and the tale of Papkootparout is evidence that LeClercq either fabricated the legend or was duped into thinking the story was truly Mi'gmaq in origin,

> *By the seventeenth century, Renaissance thinkers had developed a strong interest in Classical literature, including Greek or Roman mythology. LeClercq betrays his interest in this topic when he refers to Papkootparout as 'little Pluto'. Clearly connected to the tragedies both of Orpheus and Eurydice and of Demeter/Persephone/Chore, this story betrays a strong European influence. Skilled in classical mythology, LeClercq would certainly have known those Greek stories. He must have allowed himself to be distracted by the superficially Mi'kmaq features of this narrative to believe that the Papkootparout tale was a genuine Mi'kmaq story.*

There is a possibility that LeClercq made archetypal connections between the characters, events, and symbolism in the tale of Papkootparout and the Ghost World and Greek and Roman myths. This does not mean that the characters, events, and symbolism within the tale are not Mi'gmaq in origin. In fact, if LeClercq had also studied the legends and lived among the peoples of other western Algonkian culture groups he may have recognized similarities between the Papkootparout tale and stories of Nanabush or Nanibozhu and the Spirit World (see Chamberlain 1891).

Hornborg's work (2006, 2008) is unmatched in conceptualizing oral narratives and their connections to the everyday life and landscapes of the Mi'gmaq people, so it is

hard to understand why credence is not given in this respect to the tale of Papkootparout. Common archetypes exist in every story and in every culture because they are purposefully recognized as such. They are used to grant one individual perspective on the world, demonstrate one character with vices and virtues, in order that the complexity of life can be easily understood under a certain context, expressing a specific set of messages to the one hearing or reading the tale. While the critical examination of oral narratives and folklore is a necessity in any circumstance concerning anthropological interpretations of any kind, even more so when the stories are recorded by someone outside of the culture under study, it is also a mistake to entirely dismiss the 'truth' of a tale based on such a factor. It is therefore dangerous in this case to assume that a story like that of Papkootparout does not accurately reflect some aspects of Mi'gmaq afterlife beliefs and is not derived from Mi'gmaq culture. The reliability of the story can only be theorized in accordance with its application in interpreting examples of Mi'gmaq burial evidence and possible mortuary practices and beliefs.

6.5 Archaeological Examples of Mi'gmaq Mortuary Practice in the Maritimes

There have been many sites excavated and examined by archaeologists in the Maritimes that are associated with Native American mortuary activities. These sites signify the ancient and continuous occupation of the region by several Native American peoples, including the Mi'gmaq. However, only a few of these recorded sites support the French writers' descriptions of Mi'gmaq mortuary practices, specifically those from Skull Island (CbDd-1) in southeastern New Brunswick, and the Hopps (BkCp-1) and Northport (BlCx-1) sites in Pictou and Cumberland Counties, Nova Scotia, respectively (Figure 6.5) (Garlie 1992; Harper 1957; Leonard 1996; Whitehead 1987). For a more detailed

listing of all prehistoric and historic burials found in the Canadian Maritime Provinces please consult Garlie (1992).

Figure 6.5 Late Woodland and Early Historic burial sites in the Maritimes

All three sites are dated between the Late Woodland and the Early Historic eras (Gordon 1995, 1997; Leonard 1996; Whitehead 1987). The burial features at each site were generally circular in shape, a few meters in diameter and dug to a depth of between 2 and 5 feet deep (Harper 1957: 12-13; Leonard 1996: 206; Whitehead 1987:68). All contained elaborate burial goods. The oldest of these burial features, the one excavated by Leonard (1996: 206) at Skull Island as part of his PhD research, is described as being,

…lined with birch bark, the outside of the bark facing down. A fire was built in the centre of the pit and the defleshed bones of at least ten individuals, representing all age classes, were placed in the pit and cremated. Grave goods placed in the pit include both ground and flaked stone tools, unworked lithic materials, pipes of stone and birch bark, marcasite crystals, red ochre, copper nuggets and finished artifacts, pottery and foodstuffs.

No European items were included in the grave deposit given the site's early calibrated date of 680 +/- 70 BP, placing it chronologically in the late 14th to early 15th century (Leonard 1996: 34).

At the Northport and Hopps sites, however, European trade goods were found as a part of the burial inclusions gifted to the dead. The Northport site has been dated to between 1550 and 1600 AD based on its artifact assemblage (Whitehead 1987: 69). The burial deposit was discovered and excavated by cottage vacationers in the summer of 1971 and held the remains of a young adult female (Whitehead 1987:68). The young woman's remains were found in flexed position, indicating that this was likely a primary burial. Whitehead (1987: 68) explains that the grave was richly adorned:

Under a layer of red ochre there were four inverted copper pots….the body was encased in birch bark and fur pelts…some of the surviving fragments of these materials show fine traces of woven plant fibres. Personal adornment consisted of a necklace of discoidal and cylindrical shell beads, a leather wrist strap and a sheet copper bracelet for gorget. There were also 45 glass beads which probably came from another necklace. Four iron trade axes had been placed on or by the breasts and thighs. Other iron objects included two knives and number of as-yet unidentified implements. The deposit also included a fragment of sheet copper, two shell fragments, fragments of a possible abrader of sandstone, and two modified animal long bones, which were probably beamers.

The 2 separate grave deposits of the Hopps site were found and excavated by the property's owner K.B. Hopps in 1955 and 1956 (Harper 1957: 11) Like the Northport site, the Hopps site featured lavish grave goods, such as a wooden bow, various fur pelts, pouches of trade vermillion, pieces of European cloth and woollen blankets, glazed

pottery beakers, reed and rush woven basketry and matting, hundreds of forged iron spearheads and multiple iron awls, knives, daggers, swords, axe heads, and lastly, 22 copper kettles (Harper 1957: 14-15; Leonard 1996: 208-209). A few of the kettles showed evidence of purposeful crushing and smashing (Harper 1957: 15).

The first burial feature of the Hopps site held the remains of one adult male, and the second featured skeletal portions of 3 or 4 adult individuals and 1 juvenile, whose remains were placed in a birch bark bag (Harper 1957: 14-15). All of the skeletal elements recovered from both deposits were fragmented and poorly-preserved, leaving open the possibility of secondary burial.

It should be noted that the second burial feature was layered, with their being several stratums of human remains and grave goods (Figure 6.6). There is also evidence that at least 2 small fires were lit over the grave in the top-most layer of the burial feature (Harper 1957:16). The items included in the grave are all from the Early Historic period, and the burial pit was treated as a mass grave, meaning that Harper (1957) believed all of the remains were deposited in a short expanse of time, if not entirely in one instance. The archaeological remnants of Mi'gmaq mortuary custom from these three sites corroborate the ethnohistorical accounts, but also exhibit subtle discrepancies in burial practice hardly mentioned or refuted in those same reports.

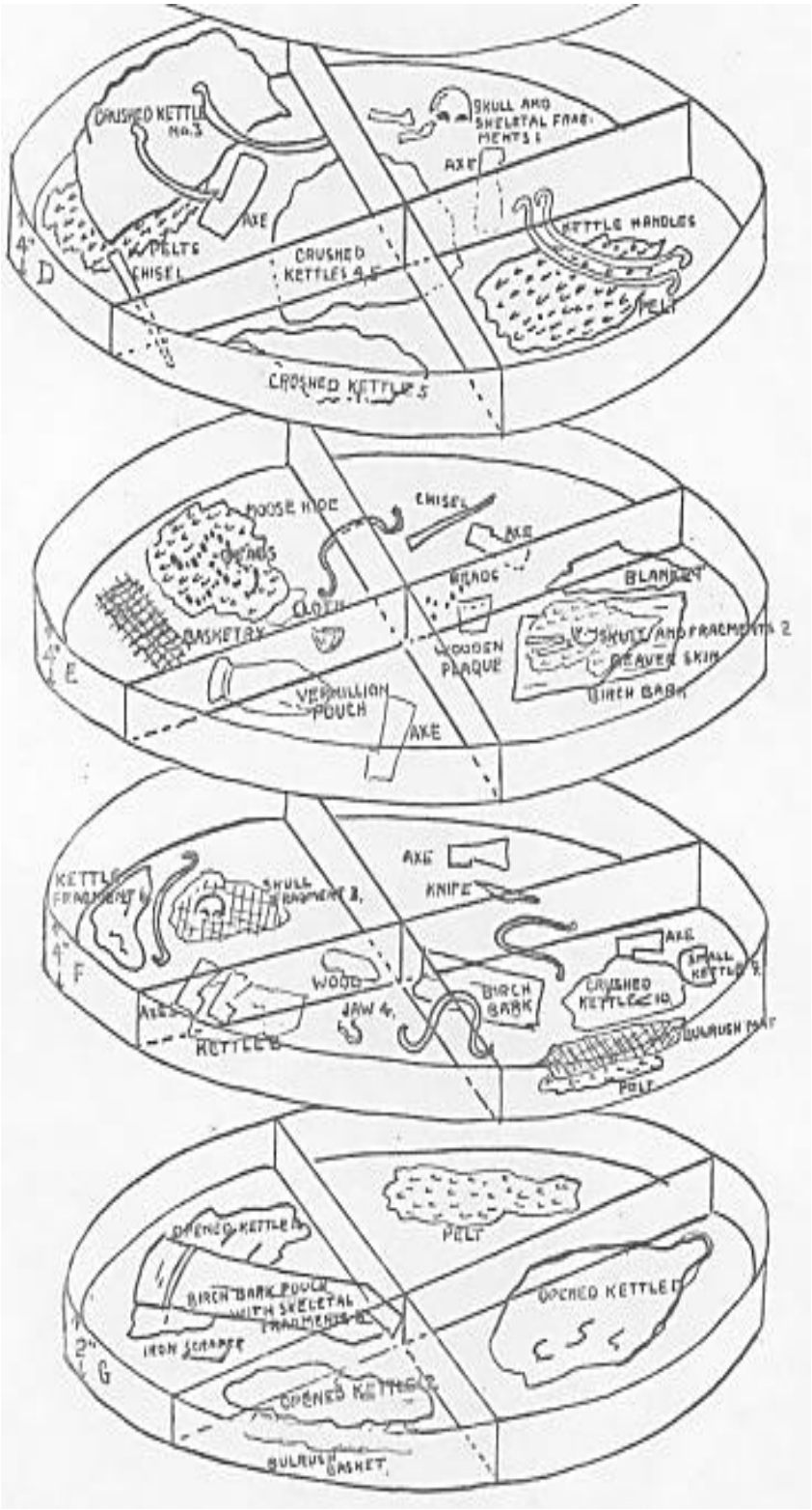

Figure 6.6 Layered Stratum of Burial Pit #2 of the Hopps Site, from Harper (1957:33)

For example, both Lescarbot (1914: 284) and LeClercq (1910: 302) state that the Mi'gmaq never practiced rites associated with cremation. Contrastingly, the remains recovered from Skull Island were found in a burial feature that can be accurately described as a crematory ossuary (Leonard 1996: 206). Augustine Mound in Red Bank, New Brunswick, discovered by Red Bank elder Joe Augustine in 1972 and excavated by Turnbull from 1975 to 1976, though of a much earlier date (BP 2500-2700), also exhibits evidence of mass burial and the subsequent cremation of human remains (Turnbull 1976). Perhaps this is an indication that cremation was a more ancient mortuary custom of the Mi'gmaq than the practice of primary and secondary inhumation burials. On the other hand there is always the possibility, and greater probability, that funerary rites varied regionally and tribally among the Mi'gmaq.

The presence of red ochre and plant fibre textiles in relation to funerary rites is barely described in the accounts of the French, though the finds from Skull Island, Northport and Pictou, as well as elsewhere in the Maritimes, suggest that these items were a vital part of burying the dead. In fact, the presence of red ochre has become synonymous with Native American mortuary customs in Atlantic Canada, with the uncovering of even the smallest scattering of the substance indicative of a possible burial, causing archaeological excavations to stop until other authorities are consulted regardless of whether human bones are also found. Though evidence of basketry, matting, cordage, and bags or pouches has only been preserved in a handful of sites, such items were likely used in many burials to hold other grave goods, food or seeds. The juvenile burial of the Hopps Site further substantiates claims that plant fibre textiles were used to bind and wrap the body of the deceased as a part of the funerary process. The few textile fragments

that have been preserved well enough from mortuary contexts have been reviewed and analyzed by the likes of Deal (2008), Whitehead (1987) and Gordon (1995, 1997), who have contributed greatly to researchers' understanding of how these items were created and from which plants or trees the necessary textile fibres were derived.

Lastly, though the burial pits at Skull Island and the Hopps site held human remains from multiple individuals, no large-scale organized Mi'gmaq cemetery has ever been discovered to-date in the Maritimes. While the ethnohistorical accounts point to the location of these cemeteries as being on the smaller islands surrounding New Brunswick and Nova Scotia, there is no archaeological evidence as-of-yet to support these statements. Heron Island, the site of the Gaspesians' supposed ancient cemetery, has never yielded artifacts or skeletal elements associated with Mi'gmaq prehistoric or protohistoric burials. However, through word-of-mouth, the idea that islands like Heron Island were once burial grounds still persists even today (Clarke 2000; Leonard 2002a, 2002b). Though coastal erosion may play a part in the disappearance of such mortuary evidence, only time, resources, and more archaeological fieldwork done in the vicinity of such islands will attest to the belief that these places were once the site of long-term use cemeteries for the Mi'gmaq people.

CHAPTER 7: MATERIALS AND METHODS

This chapter will outline the present conditional state and methods used in the osteological analysis of the Old Mission Point remains. First, a brief explanation of the recovery efforts will be given, followed by a description of the assemblage in terms of skeletal preservation. Next, problems inherent to bioarchaeological study, and their importance in regards to interpretation, will be outlined. Central questions that will be answered through the osteological assessment of the remains, fulfilling the research objectives of this thesis, will be stated. Finally, the methods employed, along with any methodological bias, in this analysis will be provided.

7.1 Recovery and State of the Remains

A detailed account of the steps taken to recover the human remains from the Atholville gravel pit in the spring of 1972 does not exist, with the skeletal elements seemingly being handled by both RCMP officials as well as members of New Brunswick's Historical Resources Administration. RCMP reports from this period have been destroyed (personal communication, Corporal Beliveau, Violent Crimes Division, Moncton). From what can be garnered from Turnbull's reports (1973, 1974) and the initial inventory of the remains, salvage operation consisted of collecting all skeletal fragments thought to be associated with separate and distinct burials. However, excavating the remains seems to have proved difficult as several of the burials were highly disturbed and damaged by the construction activities. Consequently, some of the burials, specifically those holding juvenile remains, were found commingled. Whether the commingling of the remains occurred because of heavy machinery disturbance or

may have signified the location of a mass grave could not be established on site. Therefore, while all of the adult skeletons and a few juvenile skeletons were bagged separately by burial feature, most of the juvenile remains were bagged together according to element due to the commingling of the remains *in situ*.

Figure 7.1 Warping, Scarring and Breakage of Skeleton #4 Cranium, photo by author

The composition of a skeletal assemblage, in terms of the age, sex, and health statuses of the deceased, can attest to mortuary patterns and funerary practice in the past. In order to make such determinations, however, requires that the assemblage under study be well-preserved in terms of individual skeletal completion. Unfortunately, the remains from Old Mission Point are poorly preserved, with none of the skeletons being wholly complete. Several factors may explain the poor skeletal preservation of the assemblage,

the first of which directly involves the damage inflicted on the remains by the use of heavy machinery on site. Several of the more delicate skeletal elements, such as the bones of the cranium and pubic symphyseal region, exhibit severe fragmentation, scarring and warping (Figure 7.1). The second reason for the incompletion of the assemblage may stem from the difficulty experienced by those salvaging the remains in identifying and bagging skeletal fragments created from the machinery damage. Furthermore, those with little to no experience dealing with the remains of juveniles may unintentionally miss important skeletal elements during recovery due to their small size. The fragility of juvenile remains combined with the possibility of breakage from machinery or insufficient excavation techniques can result in a complete loss of a juvenile skeleton.

Other factors resulting in the poor preservation of the skeletal collection may be decompositional (differential preservation based on age-at-death) and taphonomic (i.e soil acidity, element displacement due to animal interference) in nature. Regardless of what may have caused the poor state of the remains, the lack of preservation complicates laboratory analysis, making it impossible to complete a full osteological profile for any individual, as well as further lending to problems associated with sample bias and the Osteological Paradox.

7.2 Sample Bias, Mortality Biases, and the Osteological Paradox

There are several biases that are inherent within osteological studies that can drastically skew the interpretation of data sets as well as researchers' palaeodemographic perceptions of morbidity and mortality. Some of these problems directly involve the preserved state of the remains at the time of study, possibly because of taphonomic factors that may have reduced the chance of finding individual skeletal elements, known

as environmental mortality bias, creating methodological limitations during lab analyses (Saunders and Hoppa 2003). However, the most crucial problems surround those inferences made about population health based on what is observed palaeopathologically in skeletal collections. These inherent demographic and population-based biases are collectively known as the Osteological Paradox, a term first put forward by Wood et al. (1992). By exploring these conceptual problems, biases inherent to samples under study are often revealed, resulting in a much more realistic idea of what skeletal collections can tell us about life, health, and death in the past.

It is impossible to claim that a specific skeletal assemblage represents the health statuses present within the living population from which it stemmed (Saunders and Hoppa 2003; Wood et al. 1992). Sets of human remains can ultimately only represent the *deceased* population; they cannot account for those who continued to live, did not die and were not buried in that space (Wood et al. 1992). More so, some skeletal samples may only account for a fraction of those buried in a specific place and at a certain time, based not only on the excavation and recovery techniques employed on site but also differential burial practices. The exclusion of some individuals from skeletal assemblages because of differences in mortuary practice based on socio-cultural beliefs is known as cultural mortality bias (Saunders and Hoppa 1993). The composition of a skeletal sample in terms of age and sex distribution must also be critically assessed in order that the mistake is not made in which the researcher extrapolates upon the health of the larger living population based upon those skeletons that fall within a particular age or sex category. This is also true when discussing prevalence rates of disease or infection within living populations in regards to those skeletons that may exhibit some forms of pathology.

Wood et al. (1992: 344) give the following example in order to explain why such an assumption would be inaccurate on the part of the researcher,

While we may find the skeletons of many of the other individuals who had been at risk of death at age 20 but who died later, say, at age 6o, we observe their characteristics as 6o-year-olds, not 20-year-olds. As a result, the sample of 20-year-olds (or any other age-group) is highly selective for lesions that increase the risk of death at that age. Estimates of the population prevalences of such lesions from skeletal series are therefore subject to precisely the same sort of selectivity bias as the derivation of population prevalences from clinical data, because neither type of data constitutes a representative sample of the entire population at risk.

This form of bias is known as *selective mortality* (Wood et al. 1992).

Associated with selective mortality is what Wood et al. (1992:344) termed the *hidden heterogeneity in risks*; meaning that each individual with a population has different susceptibility to disease and death based on a multitude of factors. This is closely correlated with biological mortality bias; the idea that some individuals are more likely to die than others based on extraneous circumstances present within their environment (Saunders and Hoppa 1993). These factors or circumstances include not only an individual's biological composition, being dependent upon genetics, but also socio-economic status, cultural practices, and even a person's relationship with their physical environment in terms of geography and climate. Therefore, those with an increased risk of disease and death based on the interplay between these factors are more likely to become a part of the deceased population, allowing osteologists to study those that were the most susceptible throughout different stages of life. This is why it is integral for the osteologist to take a biocultural position within their work in order to elucidate the multiple risks that may be linked to the presence of palaeopathological lesions on human remains.

Lastly, Wood et al. (1992) call into question our understanding of the term 'health' in regards to the pathology exhibited on skeletal elements. Too often it has been assumed that when skeletal remains show pathology attributable to some form of disease, the lesions indicate that the individual under study must have been sickly or unhealthy in life. Much of the time, however, skeletal remains are found that exhibit no pathological lesions whatsoever. Does this mean that those skeletons which do not feature any lesions represent individuals who were much healthier in life compared to those skeletons that do exhibit some form of pathology? The answer is no, as skeletal lesions take time to develop, with bony tissues being the last to respond to long-term disease or trauma affecting an individual. In this sense, skeletons which do exhibit lesions represent individuals who lived chronically with an illness, fighting it off long enough for changes in the bony tissues to occur. This is the same case for those skeletons which show signs of healing lesions, signifying that the individual lived long enough to overcome an episode of bodily stress. Skeletons without lesions may embody those battling the acute form of a disease, being unable to survive and subsequently dying during an episode of stress. Therefore, osteologists should consider that individual skeletons which **do** exhibit lesions may have in fact been 'healthier' than those individuals that do not feature any such pathology, having been able to live through the disease or trauma long enough for changes to occur on the bones of the skeleton.

By adhering to a biocultural approach throughout the course of this study, it is possible to reduce the risk of making mistakes of interpretation in connection with the Osteological Paradox. Furthermore, relating instances of sample bias within the Old Mission Point skeletal sample, in regards to these inherent osteological problems, can

only serve to validate any subsequent interpretations pertaining to the research objectives of this project. The Old Misison Point skeletal collection is a relatively small assemblage based on the minimum number of individuals (MNI) within the sample. It is known that not all skeletal fragments were collected from, nor were the limits of the burial area ever established for Old Mission Point, leaving open the possibility that other individuals were buried in the space but never discovered or recovered. Therefore, the skeletal assemblage from Old Mission Point likely only represents a portion of the deceased population in this instance. Moreover, the remains are generally incomplete, fragmented and commingled, suggesting that an environmental mortality bias, at the very least is apparent within the sample. These biases are acknowledged in the hope that the results of this study will be of more use to future researchers who face these same problems within their own studies, along with those that use the information recorded here in comparison with their own work.

7.3 Central Questions

The following questions will be answered through the analyses performed on the human remains and in turn will help fulfill the research objectives of this thesis:

1. What is the biological identity of the deceased? This will be answered through the determination of ancestry, age, and sex for each individual identified within the skeletal sample via morphological analysis. Nonmetric traits present on the skeletal elements will also be recorded. Identifying individuals will result in the minimum number of individuals (MNI) present within the burial assemblage.

2. What was the health and nutritional status of the deceased? This question will be answered by visually assessing the bones for any pathology, performing carbon and nitrogen stable isotope analysis on extracted bone collagen, and estimating the stature of the deceased through metric measurement of the long bones. Taken together these analyses will provide evidence for disease or trauma, diet, and the course of skeletal growth and development for each identified individual.

7.4 Methods

With permission from the Listiguj Mi'gmaq Band Council, this research uses several bioarchaeological methods of skeletal assessment to collect information pertaining to the biological, health and nutritional statuses of the individuals under study. Morphological assessment of the remains will help to determine MNI, as well as the ancestry, age, sex, stature, and any lesions associated with differing forms of pathology. Biomolecular analysis of the remains will reveal dietary information through carbon and nitrogen stable isotope analysis by collagen sampling from the Old Mission Point individuals.

Like any other scientific study, however, the various methods used in this analysis are subject to certain degrees of bias and error. By acknowledging potential areas of error within the lab work it is the hope of the researcher that any problems encountered later on in this study can be counteracted. Moreover, to make the investigation into the human remains from Old Mission Point more consistent and comparative to other osteological studies, the guidelines for recording skeletal data mentioned in Brickley and McKinley (2004) and Buikstra and Ubelaker (1994) were followed. The following

section will outline the methods used in the morphological and biomolecular assessment of the remains, as well as discuss problems pertaining to each of these analyses.

7.4.1 Morphological Assessment

Skeletal morphology can build a complete biological profile when remains are well-preserved and multiple methods of analysis are used correctly over the whole of a skeleton. Unfortunately, the human remains recovered from Old Mission Point were heavily damaged, affecting the amount of recordable data. Fragmentation of the remains posed a serious problem in the lab, as accurately applying morphological methods relies upon the assumption that skeletal elements are relatively complete and consistent from individual to individual. The fragmentary nature of the entire skeletal sample, along with the subsequent estimation of ancestry, ultimately determined those methods that were deemed appropriate for estimating age, sex, and stature for the deceased.

7.4.1.1 Determining MNI

The majority of the individuals from Old Mission Point were recorded and bagged as being from separate singular primary burial features. Most of the juvenile remains in the sample were bagged together based on the commingling of elements upon their discovery by the heavy machinery, as well as the relative inexperience of the excavators in recognizing juveniles of different age groups. Commingling of human remains can make it difficult to establish the MNI of a particular assemblage, but by performing element counts and ruling out element overlap a number can almost always be generated, even in the most extreme cases such as mass graves or ossuary sites. The commingled juvenile remains within this collection were separated out according to age, based on the size of the bones, the formation of features, and evidence of epiphyseal union. A count was then

taken of the preserved skeletal elements, and of the 8 identified juveniles within this commingled portion of the assemblage, 6 featured relatively well-preserved right femorii. The other two juvenile individuals were identified based on their distinctive ages as well as element overlap, with a single right tibia indicating the presence of a child between 3.5 and 4.5 years and a left radius indicating the presence of a neonate within the sample based on long bone measurements. The other 6 singular graves, representing the burial of 5 adults and 1 juvenile, which had been recorded and bagged separately, were then laid out individually and another count of the preserved skeletal elements was performed. Each of these burials also featured the preservation of a single right femur. Therefore, MNI was determined based on the element count of right femorii (12) and the distinctive juvenile age categories of 2 individuals within the commingled portion of the sample.

7.4.1.2 Estimation of Ancestry

The adult crania from Old Mission Point were scored according to the non-metric traits listed by Gill (1998) and Rhine (1990) in order to estimate the ancestry of the remains.

The estimation of ancestry is the single most contentious form of analysis within osteological studies (Albanese and Saunders 2006). This is because identifying 'race' immediately segregates individuals along the lines of skin colour and ethnicity, seemingly suggesting that there is more intervariation between different geographic groups than intravariation (differences within the populations themselves) (Albanese and Saunders 2006; Hefner 2009). Identifying 'race' or ancestry is ultimately based on social constructs, not biological validity, as all humans regardless of skin colour or ethnicity are of the same species; *Homo sapiens* (Albanese and Saunders 2006; Gill 1998; White and

Folkens 2005). It has therefore been argued that the idea of identifying 'race' in archaeological or forensic contexts may only serve to perpetuate racism, along with economic and social inequalities (Albanese and Saunders 2006).

Although the concept of ancestry or 'race' is biologically irrelevant it is categorically useful for physical and forensic anthropologists (Albanese and Saunders 2006; Gill 1998). Especially in regards to this case, where positive verification of the remains as being Native American in ancestry will lead to their eventual repatriation and reburial, estimation of ancestry is needed to determine which methods are best-suited to estimate age, sex, and stature, as well as contextualize the remains in terms of mortuary context. However, the methods used in estimating ancestry itself have been highly criticized, with the non-metric cranial method specifically being described as, "…unscientific, because it is unreplicable, unreliable, and invalid" (Hefner 2009: 985) as it is an experience-based approach. In order to give validity to non-metric ancestry estimation, Hefner (2009) suggests that it be paired with statistical methods of analysis, essentially looking at the frequency in appearance of such traits within such populations using comparative assemblages with large sample sizes. In one such paper, Hefner (2009) concluded that there was a significant amount of variation in the frequency of traits associated with particular ancestral groups within archaeological populations; meaning that in some cases ancestry has been determined for skeletal samples based on very few of these positively identified associated traits. Consequently, Hefner (2009) surmises that many osteologists base their estimations of ancestry on other factors such as mortuary context and overall skeletal impressions, only referring back to listing present cranial traits once ancestry has been determined by other means.

Statistical methods used to estimate ancestry, specifically discriminant function analyses (DFA), are based on metric measurement comparisons between geographic populations that have been recorded and entered into large databases (Ousley and Jantz 2012). FORDISC is one such statistical tool, widely available to those working within forensics and bioarchaeology. FORDISC allows researchers to upload their metric measurements into its program, automatically runs metric comparisons, and then gives a result for ancestry (as well as sex) based on matches within its database. Several researchers, however, have noted that because FORDISC's reference samples are mainly comprised of late 19th and 20th century individuals from the Haman-Todd and Terry collections (most of whom are Caucasian or African American) that there is an inherent bias in using this program for assessing ancestry in many archaeological populations (Albanese and Saunders 2006; Elliot and Collard 2009). Yet, FORDISC is linked closely with national forensic databases, and subsequently with each new version released its dataset is updated with new metric information related to individuals from different geographic populations. However, such data still does not account for trait variation among populations over time. Elliot and Collard (2009) also suspect that because the measurements taken from reference samples come from complete skeletal individuals that FORDISC as a program cannot account for errors in measurement associated with incomplete or fragmented forensic or bioarchaeological assemblages.

The severe fragmentation affecting the Old Mission Point skeletal assemblage makes it difficult to confidently assign ancestry based solely on non-metric and metric forms of analysis. In regards to scoring non-metric cranial traits, because the crania are inconsistently incomplete from individual to individual the majority of traits that can be

examined for this assessment are only seen on a handful of elements; elements which differ in their preservation for each of the adults within the collection, resulting in a preservational bias. Furthermore, given Elliot and Collard's (2009) claims that incomplete measurements may affect the results generated by FORDISC, along with the fact that its reference samples stem from a narrow timeframe and relatively few geographic populations, it is not an appropriate tool to use for the analysis on the human remains from Old Mission Point. Therefore, aiding the estimation of ancestry for the Old Mission Point assemblage is the context of the burials themselves, radiocarbon dates derived from bone for each identified individual, along with non-metric cranial trait scoring during the osteological assessment.

7.4.1.3 Adult Age Estimation

Age was estimated for each adult individual within the assemblage through cranial suture closure (Meindl and Lovejoy 1985), dental wear patterns (Lovejoy 1985), and tooth eruption and root completion (Hillson 1996; Smith 1991; Ubelaker 1989; Whittaker 2000). No adult individual in the Old Mission Point collection possessed an intact pubic symphyseal or sphenooccipital region; two areas of the skeleton which have been noted to be useful in terms of ageing (Buikstra and Ubelaker 1994; White and Folkens 2005). While the aforementioned methods were deemed appropriate for this study because of limited element preservation, as well as possible population affinities, they have all been subject to controversy within the field of bioarchaeology.

Cranial suture closure, "…is considered to be at best of limited value when applied to archaeological assemblages and then only as part of a multifactorial approach" (O' Connell 2004: 20). This is because the closure of sutural lines has been found not to

be consistent from population to population or within age groups, and may be heavily influenced by sexual dimorphism as suggested in previous bioarchaeological studies (Cox 2000; Key et al. 1994; White and Folkens 2005). Furthermore, Meindl and Lovejoy's (1985) sutural closure method can only provide a broad age range for each individual it is applied to within a particular skeletal sample as the standard deviations associated with the different levels of sutural closure are rather large, possibly causing overlap between age categories.

As dental tissues are extremely durable, they tend to withstand degradation and destruction, unlike bone, in most archaeological contexts. Therefore, the examination of tooth wear patterns to determine age has a long history within the field of bioarchaeology (Walker et al. 1991; Whittaker 2000). However, there are several biases that need to be checked when employing tooth wear methods, specifically in terms of population specifics (Walker et al. 1991). Alternatively, dental attrition rates can be affected by a number of factors such as diet, activities which involve the teeth as tools, as well as the consumption of different foodstuffs in relation to social role or status, especially in regards to age and sex (Walker et al. 1991). To ascertain which factors may have contributed to tooth wear rates connected with a specific population, other forms of archaeological or ethnohistorical evidence must be used in conjunction with skeletal assessment.

Dental eruption and root completion are believed to be reliable methods for determining whether an individual can be considered an adult within skeletal samples (Buikstra and Ubelaker 1994; Cox 2000; Hillson 1996; O'Connell 2004; Smith 1991; Ubelaker 1989; White and Folkens 2005; Whittaker 2000). The eruption of the third

molar around the age of 18, and the completion of this tooth's root between the ages of 21 and 25 is generally consistent between geographic populations and individuals of differing sex, making it ideal for identifying those within the early stages, or those who have subsequently passed into, young adulthood (Hillson 1996; Smith 1991; Ubelaker 1989; Whittaker 2000).

If the ancestry of the remains is determined to be Native American, several of these methods, specifically Meindl and Lovejoy (1985), Lovejoy (1985) and Ubelaker (1989), will be population appropriate as these methods were derived from the analysis of prehistoric Amerindian skeletal collections. However, due to each of these methods having a relative degree of bias associated with ageing adult individuals within osteological collections, along with the preservation issues affecting the remains recovered from Old Mission Point, this study can only employ the use of the broad age categories suggested by Buikstra and Ubelaker (1994); Young Adult (20-34), Middle Adult (35-50) and Old Adult (50+).

7.4.1.4 Juvenile Age Estimation

The juvenile skeletons within the sample were placed into the age categories suggested by Scheuer and Black (2000), outlined in Table 7.1 according to diaphyseal long bone length and dental formation and eruption (Hillson 1996; Maresh 1970; Smith 1991; Ubelaker 1989; Whittaker 2000). When possible, the appearance and fusion of secondary ossification centres (epiphyses) was also taken into account when ageing the juveniles within the assemblage (Schaefer et al. 2009). Though the timing in the appearance and fusion of the epiphyses is well-documented from the perinatal stages up and until young adulthood, because the recovery of juvenile remains from salvage

contexts tends to be rushed and unmethodical they often get left behind due to their small size (Scheuer and Black 2000). The Old Mission Point salvage efforts suffered from this same problem, with many of the juvenile skeletons missing epiphyses that are associated with long bones recovered from the burials.

Table 7.1 Juvenile age categories, taken from Scheuer and Black (2000)

Embryo - First 2 months of intra-uterine life
Foetus – Third month to birth
Perinate – Around the time of birth
Neonate – Birth to the end of the first month
Infant – Birth to the end of the first year
Early Childhood – To the end of the fifth year
Late Childhood – 6 years until puberty
Adolescence – puberty until 20 years

Measuring long bone lengths and noting the development and eruption of the dentition have long been considered reliable in terms of ageing juvenile skeletons from bioarchaeological contexts (Cardoso 2007; Forrest 2010; Ruff 2007; Saunders 2008; Saunders et al. 1993; Schaefer et al. 2009; Scheuer and Black 2000). Diaphyseal bone lengths have not only been used as an indicator of physiological age, but have also been used to determine juvenile stature and body mass or size (Ruff 2007). However, recent studies have shown that compared to dental development and eruption, skeletal growth is much more sensitive to external environmental factors (specifically socioeconomic status) that can affect an individual's health and normal bodily development (Cardoso 2007; Forrest 2010; Saunders 2008). Poor health and nutrition can subsequently result in stunted skeletal growth, causing underageing of juvenile skeletons within archaeological assemblages based on long bone lengths (Cardoso 2007; Forrest 2010; Saunders et al. 1993).

Another potential problem facing the use of long bone lengths in ageing juvenile skeletons involves the disparities between method reference samples and bioarchaeological assemblages. Though Maresh's (1970) long bone length data is commonly used comparatively with both prehistoric (Forrest 2010) and historic (Cardoso 2007; Saunders et al. 1993) bioarchaeological data, it derives from the Denver Growth Study; a project that recorded the long bone lengths of over a hundred middle-class children of European ancestry from the 1940's and into the 1960's. While there is obviously inherent temporal as well as population disparities between Maresh's results and this osteological research, a recent comparison done by Schillaci et al. (2012) suggests that Maresh's data may still be appropriate in many, if not all, bioarchaeological studies as long as possible cases of skeletal stunting are acknowledged. Schillaci et al. (2012: 493) compared Maresh's results to those of the World Health Organization's (WHO) international growth standards with their conclusion being that,

The WHO growth standard is meant to depict typical human growth under optimal conditions and can be used to assess children worldwide regardless of ethnicity or socioeconomic status. The results from this comparison indicate that although the Maresh reference data generally conform to the WHO standard, reflecting a normal growth pattern, and therefore serve as a suitable reference for comparative studies of growth patterns, these reference data are not suitable for estimating stunting prevalence.

Therefore, in order to counteract any problems associated with stunting which may result in discrepancies in age between skeletal long bone length and dental formation and eruption, it is considered best to use these two methods in conjunction with one another (Cardoso 2007; Saunders 2008; Schaefer et al. 2009).

7.4.1.5 Sex Estimation

Sex was estimated for the adult individuals within the sample by visually examining the morphology of the skull (Buikstra and Ubelaker 1994; Williams and Rogers 2006), the greater sciatic notch of the innominate bone (Buikstra and Ubelaker 1994; Walker 2005), and the distal humerus (Rogers 1999). Current morphological methods for sexing the remains of juveniles have been found to be unreliable (Mays and Cox 2000), and therefore no attempt was made to sex the juvenile remains from this collection.

The most pertinent criticism of skeletal sexing techniques is the variability in sexual dimorphism between different geographic populations (MacLaughlin and Bruce 1986; Walker 2005). Specifically in terms of assessing the greater sciatic notch, several researchers have noted that older, more complex methodologies (Kelley 1979) for scoring this skeletal feature did not account for that fact that some populations are considered more weakly sexually dimorphic than others due to environmental differences (Mays and Cox 2000; McLaughlin and Bruce 1986; Walker 2005). Yet, the visual assessment of the cranial and pelvic bones has been found to be highly reliable and accurate (>80%) in both archaeological and forensic contexts, especially when used in combination with one other (Mays and Cox 2000; Buikstra and Ubelaker 1994; Williams and Rogers 2006). However, fragmentation and preservation of the skeleton obviously plays a part in which traits and areas of the skeleton can be scored. In many bioarchaeological contexts, including that of Old Mission Point, delicate skeletal elements such as the cranial bones and pubic symphyseal region can become easily damaged, negating their use in the estimation of sex. Though the assessment of the distal humerus has been found to be less

accurate (>70%) than examining the traits of the skull and pelvis region to determine sex, it is still considered particularly useful in situations where skeletons are incomplete (Rogers 1999; Vance et al.. 2011).

7.4.1.6 Estimation of Adult Stature

Stature was estimated for 4 out of the 5 identified adult individuals within the assemblage using Genovés' (1967) regression formulae for both male and female indigenous Mesoamericans based on maximum femoral length.

The three greatest problems facing the accurate application of stature regression equations to archaeological skeletal collections are differences in population affinity, long bone preservation and fragmentation, and secular changes in bone length and height (Genoves 1967; Sciulli et al. 1990; White and Folkens 2005). While geographic and temporal affinities between Genovés' reference sample and the decedents from Old Mission Point are different, it is the methodology that provides the closest match in terms of population affinity, especially compared to other formulae generated by Trotter and Gleser (1958) and Trotter (1970). Furthermore, Genovés' formulae allows for the measurement of fragmented long bones in order to estimate living stature unlike other methods that may also have been appropriate, such as Fully's (1956) anatomical method, which requires skeletal completion.

7.4.1.7 Recording Non-Metric Traits

Non-metric traits were recorded using the standards suggested by Buikstra and Ubelaker (1994). The study of non-metric traits within bioarchaeology has predominantly revolved around migration and settlement theories, with the scoring and recording of traits being used on a comparative basis between populations as a measurement of

biological distance (Buikstra and Ubelaker 1994; Mays 2000; Tyrrell 2000). It is generally assumed that the presence or absence of non-metric traits within populations is based upon genetic heritability and phenotypic expression. The argument has therefore been made in many archaeological studies that if individuals within the same skeletal sample show the presence of the same non-metric traits then there may be some kind of heritable, possibly familial, relationship between the deceased (Mays 2000; Tyrrell 2000). Alternatively, Mays (2000) suggests that the frequency in the presence of some non-metric traits within certain populations may also be due to external factors such as diet or climate. In turn, for non-metric traits to be confirmed as indicators of biological affinity between individuals or populations in bioarchaeological research the role of genetic heritability in terms of skeletal growth and development must be expanded upon (Tyrrell 2000).

7.4.1.8 Recording and Identifying Pathology

Pathological lesions were described using unambiguous terms recommended by Buikstra and Ubelaker (1994), Brickley and McKinley (2004), and Ortner and Putschar (1981). The scoring of any musculoskeletal markers (MSM) followed the scale-system outlined by Hawkey and Merbs (1995). In order to describe any palaeopathology present within the sample a step-by-step process was undertaken beginning with measuring the lesion and describing its location (including the bone affected, side, and the proximity of the lesion to anatomical landmarks). Next the pathology was categorized as being blastic (bone-forming), lytic (bone-destroying) or a mix of both. If new bone formation could be seen around the lesion, this was also described using terms such as woven and dense, or smooth and lamellar. Any porosity associated with the pathology was also categorized as

being small or pinprick sized or larger and interspersed. This was done in order to recognize any sign, as well as the different stages, of healing. In relation to each individual, the extent of the same type of lesion, or indeed other lesions, over the entire skeleton were also described as many forms of disease exhibit patterning over certain bony elements.

The use of unambiguous terminology and the provision of detailed anatomical descriptions of skeletal abnormalities are all important when undertaking palaeopathological analysis (Buikstra and Ubelaker 1994; Brickley and McKinley2004; Ortner and Putschar 1981). This is because clear, detailed description of any lesion allows for pathological comparisons to be made between osteological assemblages along biocultural perspectives. It is only through the osteological description and subsequent consultation of relevant clinical, as well as ethnohistorical or archaeological, lines of evidence that an accurate diagnosis in regards to the cause of pathology can be made. Furthermore, good bioarchaeological practice requires understanding the equafinality of skeletal lesions and palaepathological analysis in general.

The inclusion of detailed pathological description and differential diagnoses is imperative for the analysis on the Old Mission Point remains for several reasons. Of primary concern is the fact that all of the skeletons in the collection are incomplete with the remaining elements being poorly preserved, making it difficult to assess the skeleton as whole. Following standard procedures will allow the remains to be more broadly comparative to other skeletal samples in terms of pathology, possibly allowing for connections to be made between dietary patterns, socio-cultural or labour activities, and individual and population health. Lastly, any indication as to the health status of the

deceased during their lifetime may influence the interpretation of the burial context or mortuary customs for this project.

7.4.2 Biomolecular Assessment

Biomolecular means of osteological assessment are often used in conjunction with skeletal morphology to corroborate evidence for establishing biological identity, as well as the nutritional and pathological status of the deceased. As they are known as destructive or invasive forms of analysis, permission is not always granted to perform such means of assessment on collections, specifically those of a sensitive socio-political nature. The value of such analyses is never contested, however, as they can confirm or expand upon information that cannot be validated by morphological assessment alone. In this context, stable isotope analysis will used to shed light on the dietary patterns of those buried at Old Mission Point, connecting the results of this study to the information derived from ethnohistorical accounts.

7.4.2.1 Stable Isotope Analysis

The collagen extracted from the Old Mission Point human remains was assessed as a part of carbon (C) and nitrogen (N) stable isotope analysis based on the methods outlined by Ambrose (1993) and Brown et al. (1988).

Unlike ^{14}C which is the radiogenic isotope used in radiocarbon dating, ^{13}C and ^{15}N are considered stable elements because they do not steadily decay over time within organic matter (Brown and Brown 2011; Mays 2000). Depending on what we eat and what we drink, human bone collagen takes on different proportions of ^{13}C and ^{12}C, as well as and ^{15}N and ^{14}N, allowing bioarchaeologists to make distinctions between the amount of terrestrial versus marine protein within the diet of past populations (Brown and

Brown 2011; DeNiro 1985; Mays 2000; Richards et al. 2001; Schwarcz et al. 1985; Schwarcz and Schoeninger 1991). In turn, this information lends to the interpretation of trophic position for skeletonized individuals.

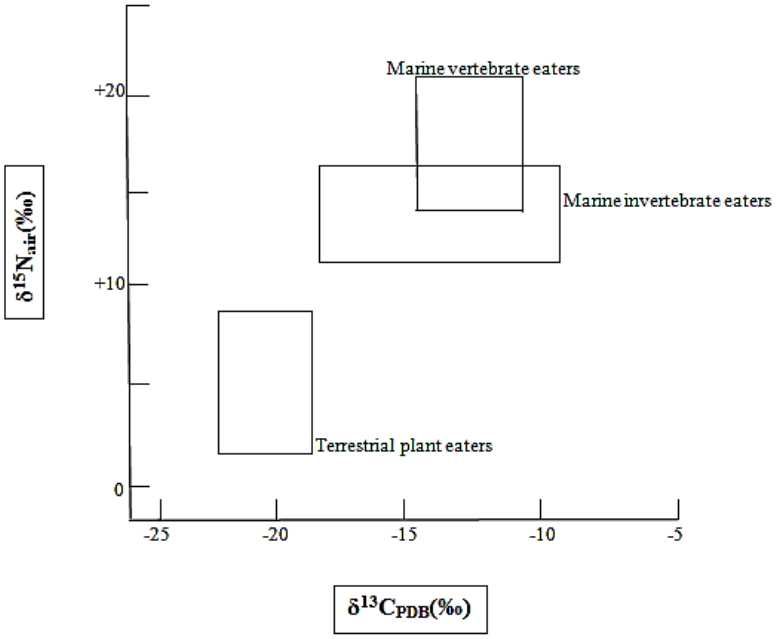

Figure 7.2 Carbon and nitrogen isotope ratios for bone collagen, after DeNiro (1985: 808)

The concentration of ^{13}C and ^{15}N in each sample is represented as a value, discussed by using the notations $\delta^{13}C$ and $\delta^{15}N$ respectively (Ambrose 1990; DeNiro 1985). When these values are written out numerically their concentration is described in parts per million (‰) (DeNiro 1985). Commonly within stable isotope studies, $\delta^{13}C$ values derived from human bone collagen are used to differentiate between the consumption of C_3 foods, such as barley or wild potatoes, and more tropical, sometimes cultivated, C_4 foods such as maize (DeNiro and Epstein 1981; Mays 2000; Schwarcz et al. 1985; Schwarcz and Schoeninger 199; van der Merwe and Vogel 1978). For example, elevated $\delta^{13}C$ values, between -12‰ and -9‰, within bone collagen are believed to

indicate a diet dependent on cultivated C_4 foods, whereas diets depleted of ^{13}C, with values falling close to -26‰, can be linked to a reliance on terrestrial C_3 foods (DeNiro 1985; DeNiro and Epstein 1981; Schwarcz et al. 1985; van der Merwe and Vogel 1978) (Figure 7.2). The consumption of marine foods also leads to an enrichment of ^{13}C within human bone collagen.

Elevated $\delta^{15}N$ values in human bone collagen are associated with a diet reliant on marine protein. Yet, it is considered harder to interpret ^{15}N enriched bone collagen given the often long and varied food chains that exist amongst marine animals, forcing bioarchaeologists to make trophic level distinctions between $\delta^{15}N$ values (Richards et al. 2001; Schwarcz et al 1985). Most freshwater fish species have lower $\delta^{15}N$ values closer to 12‰, as compared to carnivorous marine mammals which feature higher $\delta^{15}N$ values of around 18‰ (Richards et al. 2001) (Figure 7.2). Access to food resources, whether terrestrial or marine, is often directly linked with social and cultural practices, as well as ideological belief systems. Stable isotope analysis is therefore commonly used in bioarchaeology as a means of corroborating evidence for differential access to food resources based on age, sex, gender, and social status (Ambrose et al. 2003; Privat et al. 2002; Schwarcz and Schoeninger 1991; White et al. 2004).

With stable isotope analysis the greatest assessment issues pertain to the chemical and physical degradation of bone and subsequently bone collagen (Brown and Brown 2011; Nielsen-Marsh et al. 2000). The taphonomic processes that follow the death and burial of an individual can cause the breakdown of bony tissue due to the introduction of bacteria (Brown and Brown 2011; Nielsen-Marsh et al. 2000). Furthermore, the diagenetic alteration of bone, caused by the uptake of elemental composites by bone as it

comes into contact with differing sediments or environments, can drastically change isotopic values of bone collagen, causing inaccurate interpretations related to diet (DeNiro 1985). DeNiro (1985) suggests that the simplest and most effective way to discount that changes have occurred within bone collagen due to diagenesis is to examine the atomic carbon and nitrogen ratios of each collagen sample taken. Bone collagen is said to be of good quality (i.e. not having undergone diagenetic changes) if atomic carbon and nitrogen ratios fall within the range of 2.9 to 3.6, which is the range that reflects normal feeding patterns for modern-day terrestrial animals (DeNiro 1985: 808). Additionally, the carbon and nitrogen and collagen yield percentages for each sample can also be used to assure the quality of bone collagen (Ambrose 1990; De Niro 1985). Other potential problems involving contamination of bony tissue can also take place after human remains are excavated. If bone is not stored properly in the lab setting, or if it is exposed to other contaminating agents via washing or handling, recovery of suitable bone collagen for testing becomes lessened (Brown and Brown 2011; Nielsen-Marsh et al. 2000).

For the purposes of this study, bone samples were cut from all individuals within the Old Mission Point assemblage (Table 7.2). Though femorii bone samples were taken from most of the individuals, this skeletal element was not consistent within all burials or the femur itself was deemed inappropriate for sampling based on completion and the state of preservation. Consequently, bone samples were also taken from associated tibiae, scapulae, and a humerus. Consistency in sampling from the same element can help reduce problems associated with diagenesis and inhibit any overlaps in bone sampling from the same individual (Ambrose 1993).

Table 7.2 Bone samples taken for stable isotope analysis

Skeleton #	Laboratory MARC #	TERRA#	Sample Site (Element & Side)
1	1744	G7951	Right Tibia
2	1745	G7952	Right Femur
3	1746	G7953	Right Femur
4	1747	G7954	Right Femur
5	1748	G7955	Right Femur
6	1749	G7956	Left Femur
7	1750	G7957	Right Tibia
8	1751	G7958	Left Scapula
9	1752	G7959	Right Femur
10	1753	G7960	Left Femur
11	1754	G7961	Right Femur
12	1755	G7962	Left Femur
13	1756	G7963	Right Scapula
14	1757	G7964	Right Humerus

Additionally, sampling consistently from one skeletal element can limit issues involving variations in the turnover rate of bone collagen over the life course. Studies have shown that as humans age the tissues of the joints and bones, including bone collagen, experience less turnover, less renewal after the period of adolescence, subsequently causing bones to become less resilient over time (Hedges et al. 2007). Different bones will experience differential timing of bone tissue turnover. While this lack of renewal for such tissues can cause pathological problems like arthritis and osteoporosis in the living, from an isotopic perspective it means that bone collagen samples can actually reflect the long-term dietary patterns of deceased individuals depending on the element(s) sampled (Hedges et al.2007). For instance, bone collagen taken from the femur, specifically the mid-shaft, is considered to be one the most accurate sampling areas in terms of stable isotope analysis, reflecting an individual's diet for a period of up to ten years or more (Hedges et al. 2007).

Table 7.3 TERRA organic standards for carbon and nitrogen isotope analysis

Lab Code	Standard	# Needed	Mass required (mg)
G-33	MUN Sulfanilamide	3	.90
N-3	IAEA-N-1	4	.75
N-4	IAEA-N-2	4	.75
C-133	MUN-CO-2 (Suproper)	4	3.00
G-30	D-fructose	4	1.00
G-40	Protein (B2155)	2	1.00
G-34	BBOT	1	.50
		1	1.20
G-32	Sulfanilamide	1	.60
		1	.80
		1	1.20
		1	1.70

The following steps outline the lab procedures taken for the stable isotope analysis conducted as a part of this research: After cutting the bone, the samples were abraded to remove any surface dirt or cancellous bone tissue. After abrasion each sample was weighed, with the samples being between 150mg and 600 mg, and then put into screw-top test tubes. Chilled 0.5M HCl was then added to the test tubes to begin the demineralization process in the lab's refrigerator. The samples took anywhere from 2 days to 3 weeks to demineralize based on the weight and quality of the bone, with the acid being refreshed periodically during this period. When demineralization was complete, the spent acid was pipetted off and the samples rinsed 3 times with deionized water. Deionized water was then added a final time along with a few drops of 0.5M HCl to decrease the pH level for the fluid to 3. After this step the samples were placed onto a heating block set at 70°C which served to gelatinize the samples over a period of 48 hours. The fluid generated by the gelatinization process became collagen in suspension and this was then filtered off using Ezee filters™, polypropylene tubes with sintered

polyethelyne filters capable of separating 5ml of liquid from bony debris, into labeled plain glass tubes and covered with parafilm. Small holes were then punched into the parafilm and the samples were left to freeze at -20°C for 24 hours. After 24 hours, the samples underwent a 48 hour lyophilization (freeze-drying) period that produced raw collagen for each sample. The raw collagen was then weighed into labeled microtubes in order to be transported to the mass spectrometer at The Earth Resources Research and Analysis (TERRA) stable isotope facility at Memorial University for analysis. Portions of collagen were then taken from the microtubes, weighed out to ~1mg and put into 4x3.2mm tin capsules in preparation for the Carlo Erba NA-1500 Elemental Analyzer and ThermoElectron DeltaVPlus Gas Source Isotope Ratio Mass Spectrometer. Weighed mass was then recorded, along with the mass of weighed isotopic standards for organic carbon and nitrogen isotope analysis (Table 7.3), with the samples finally being submitted for processing.

CHAPTER 8: RESULTS

The focus of this chapter is to present the results of the morphological assessment, radiocarbon dating data, and stable isotope analysis performed on the human remains from Old Mission Point. Additional information is also presented here on the analysis of the artifacts recovered alongside the skeletal remains which are considered to be remnants of grave goods, and subsequently, mortuary practices.

8.1 Results of Morphological Assessment and Radiocarbon Dating

The Old Mission Point crania exhibited a number of traits positively associated with Native American (Amerindian) ancestry in Gill (1998) and Rhine (1990), including a broader sloping frontal bone, rhomboid/square-shaped orbits, a medium-to-large sized nasal bridge, medium-to-large sized nasal bones, wide mastoids, rugose projecting malars, angled zygomaticomaxillary sutures, elliptic palates, robust mandibles, moderate chin projection and size, and moderately shovel-shaped incisors. The calibrated radiocarbon dates also strongly suggest that the individuals buried at Old Mission Point are ancestrally Native American given the relative age and diversity of the dates (Table 8.1). While the majority of the burials date to the Late Woodland (AD 1000 – 1534) and Early Historic (AD 1534 – 1755) periods, the calibrated radiocarbon date for one individual (Skeleton #3) is a great deal older than the rest, dating to the Early Woodland period (BC 500 – AD 300). While this date is clearly an outlier, it is entirely plausible that this individual was buried at *Tjigog* during the Early Woodland period as corroborated by Turnbull and Turnbull's (1973) archaeological finds associated with the

occupation of the site during this time by the prehistoric Mi'gmaq. The collagen yield percentage, carbon and nitrogen percentages, and the carbon versus nitrogen atomic ratio for this sample are well within the expected parameters denoting good quality collagen, further suggesting that this date is not a product of either a lab error or preservational bias.

Table 8.1 Radiocarbon Date Results

UCIAMS#	Individual	Uncalibrated Date	Calibrated Date* - *1sigma*	Calibrated Date - *2sigma*
125912	Skeleton 2	BP 415+/-20	AD 1674 -1807	AD 1662 - 1827
107245	Skeleton 3	BP 2405+/-15	BC 151 - 30	BC 196 - AD 35
107246	Skeleton 4	BP 740+/-20	AD 1509 -1620	AD 1471 - 1651
107247	Skeleton 5	BP 780+/-15	AD 1519 - 1629	AD 1477 - 1661
125908	Skeleton 6	BP 620+/-15	AD 1531 - 1628	AD 1492 - 1650
125909	Skeleton 7	BP 725+/-15	AD 1444 - 1492	AD 1420 - 1533
125910	Skeleton 10	BP 665+/-15	AD 1534 - 1633	AD 1493 - 1658
125911	Skeleton 11	BP 565+/-15	AD 1639 - 1705	AD 1615 - 1815
125913	Skeleton 12	BP 525+/-15	AD 1641 - 1691	AD 1617 - 1808

*calibrated using CALIB v.6.0 program (Stuiver and Reimer 1993). For calibration methodology please refer back to Chapter 3, Section 3.4. For full dataset variables please refer to Appendix C, p.264.

Table 8.2 MNI and Age Distribution

Age Category	Number of Individuals
Foetus	-
Perinate	-
Neonate (birth – 1month)	1
Infant (< 1 year)	4
Early Childhood (< 6 years)	4
Late Childhood (6 -12 years)	-
Adolescence	-
Young Adulthood (20 -35 years)	1
Middle Adulthood (35- 50 years)	2
Old Adulthood (50+ years)	-
Adult of Unknown Age	2
TOTAL (MNI) =	14

The minimum number of individuals represented within the assemblage is 14, with 5 adults and 9 juveniles being identified within the sample (Table 8.2). All of the juvenile remains represent very young individuals, likely individuals within the first few years of life. Three of the adults represented in the sample could be placed into age categories, whereas the other 2 individuals, while obviously adults, could not be confidently aged. Of the adults, 2 were identified as male, 1 as female, with sex for the other two individuals being unknown given the state of preservation for the remains.

Table 8.3 Results for Adult Stature Estimation

Individual	Age	Sex	Genovés Stature Estimation (cm)
Skeleton 1	Y. Adult	Male	164.6 +/- 3.4
Skeleton 2	M. Adult	Male	162.6 +/- 3.4
Skeleton 3	Unknown	Unknown	163.1 +/- 3.4
Skeleton 4	M. Adult	Female	154.6 +/- 3.8

Non-metric traits were recorded for each individual based on preservation of the necessary skeletal elements. Though the remains of a few of the adult individuals within the assemblage shared non-metric traits such as partially visible metopic sutures and supraorbital foramen, the paucity of preservation and small population size of the assemblage disallow connections to be made between ancestry or heritability in regards to such traits. Metric measurements of the femur along with Genovés (1967) methodology for stature estimation determined the height of 4 of the 5 adults within the assemblage (Table 8.3). As Genovés (1967) study was based upon the examination of Mesoamerican, and not northern Native American, skeletal remains there is potential bias in the results presented for stature estimation. However, when the results are compared to Genovés (1967) data detailing long bone ratios and stature for the Mesoamerican

population studied, the Old Mission Point adult individuals fall close to the stature median among both males (157cm) and females (152cm) within his data set.

Figure 8.1 Occlusal dental wear pitting of left molars of Skeleton #1, photo by author

Figure 8.2 Musculoskeletal stress markers of Skeleton #1. Note the rugosity and definition of the soleal line and linea aspera of the femur from the posterior aspect, photo by author.

The juvenile remains within the assemblage did not show any form of pathology macroscopically due to their poor preservation and completion. However, the remains of 4 out of 5 of the identified adult individuals did feature several different pathological

lesions present on the long bones, vertebrae, and dentition, as well as musculoskeletal markers (MSM) of the appendicular skeleton.

The fragmented maxilla of Skeleton #1, identified as a young adult male, exhibited a slight amount of dental wear in the form of pitting on the mesiobuccal, distobuccal, and mesiolingual cusps of the first molar (LM^1) and mesiobuccal cusp of the second molar (LM^2) (Figure 8.1). The third molar (LM^3) exhibited no wear, likely due to the young age of the individual in question, but a small amount of dental calculus was noted along the distobuccal aspect of the cervicoenamel junction (CEJ). The premolars (LP^3, LP^4) appear to have been lost postmortem as the sockets remain empty with no sign of socket resorption, indicative of active healing and antemortem tooth loss, at the time of death. However, the alveolus of the maxilla appears porous and reactive and was actively receding away from the CEJ of the teeth at the time of death, as exhibited by the moderate amount of root exposure of all three preserved molars.

The long bones of Skeleton #1 feature extremely rugose muscle attachment sites, scoring high (=3) on Merbs and Hawkey's (1995) scale for the development of musculoskeletal stress markers. Specifically, the deltoid tuberosity on the lateral aspect of the right humerus is ridged and well-defined, as are the linea aspera and soleal lines on the superoposterior aspects of both femorii (Figure 8.2) and anterior crests of each tibiae. These same muscle attachment sites featuring strong markers are apparent on the very same limb bones of Skeleton #2, the other identified middle adult male within the Old Mission Point assemblage.

Figure 8.3 Pathology of lumbar vertebrae for Skeleton #3. Lateral view of erosion of the vertebral bodies' anterior margins, anterior marginal lipping, and presence of osteophytes on L3, photo by author

Skeleton #3, one of the adult individuals that is of unknown sex and cannot be confidently placed into any given age category, exhibits pathology affecting the lumbar vertebrae as well as periosteal reactive bone on the left femur and both fibulae. The bodies of the first four recovered lumbar vertebrae (L1-4) are degraded, appearing vascular, and exhibiting erosion along the anterior margins of the centra (Figure 8.3). Furthermore, anterior marginal lipping in the form of osteophytes stretching superiorly

towards the vertebral body located above is quite severe on L3, crossing the intervertebral disc area and almost articulating with the inferoanterior margins of those same vertebral bodies (Figure 8.3).

The distal anterior aspect of Skeleton #3's femur, immediately superior to the patellar surface, shows a deposit of woven reactive bone that is porous, almost fibrous in appearance (Figure 8.4). A similar formation of woven bony spicules is located on the mediodistal end of the left fibula, superiorly extending approximately 7cm from the lateral malleolus's articular surface. The superoanterior surface of the right fibular head also features bony reactive deposits, as well as a slight bend in the posterolateral direction.

Figure 8.4 Anterior view of reactive woven bone deposit on Skeleton #3's left distal femur, photo by author.

Figure 8.5 Dental Pathology of Skeleton #4. (Top) Inferior view of maxilla/palate with heavy occlusal dental wear on right molars, post-mortem tooth loss. (Bottom) Superior view of mandible with heavy occlusal wear of right molars, moderately healed periapical abscess causing antemortem tooth loss in area of left molars, photo by author.

Skeleton #4 represents the only identified middle adult female within the skeletal assemblage. The almost complete mandible of Skeleton #4 exhibits a great deal of postmortem tooth loss, with every socket supposed to hold an incisor, canine, or premolar being empty and showing no signs of healing (Figure 8.5). The left first molar (LM_1) and second molar (LM_2) appear to have been lost antemortem in association with a large periapical abscess that was in the process of actively healing at the time of death as indicated by the level of resorption undergone by both tooth sockets (Figure 8.5). Only the right molars (RM_1, RM_2, and RM_3) and the left third molar (LM_3) are still present. All three right molars show a high degree of wear on each cusp and root exposure, with RM_2 and RM_3 featuring calculus build-up on the distobuccal aspects of the enamel along the CEJ. The left third molar shows some polishing of the cusp facets but no pitting, however, there is dental calculus on its distobuccal and distolingual surfaces, extending from the CEJ to the top of the enamel crown.

The extent of postmortem tooth loss exhibited by Skeleton #4's mandible is similar on the same individual's maxilla with the exception that the right second premolar (RP^4) and left canine (LC^1) are present. Both the buccal and lingual cusps of the RP^4 and the single cusp of the LC^1 show large dental wear pits. All three molars on the right and left sides of the maxilla are preserved, however, the amount of attrition on either side differs greatly (Figure 8.5). The right first molar (LM^1) exhibits severe wear on all cusps in a u-shaped pattern, subsequently exposing a large amount of dentin underneath the enamel surface. The right second molar (LM^2) features almost the exact same wear pattern and level of dentin exposure except for the mesiobuccal cusp. The right third molar (LM^3) shows polishing of all cusp facets, with pitting and dentin exposure

beginning in the centre of the tooth's occlusal surface. The left maxillary molars (LM^1, LM^2, and LM^3), while showing polishing and some pitting, are only moderately worn in comparison with those of the right side.

Figure 8.6 Vertebral pathology of Skeleton #4. Superior view, first lumbar vertebrae (L1) with Schmorl's node on body, and cervical vertebrae (C1-5) exhibiting degraded and distorted bodies. Note the osteophytes and marginal lipping on each, photo by author.

Skeleton #4's cervical, thoracic, and lumbar vertebrae all exhibit pathological lesions associated with degenerative joint disease. All seven cervical vertebrae have porous bodies that are heavily eroded and depressed, signaling the destruction of the invertebral discs located between each (Figure 8.6). These same vertebrae also exhibit anteroinferiror marginal lipping. The eight preserved thoracic vertebrae (T1, T3-9) are

also degraded, with large osteophytes and severe anterior marginal lipping that extends inferiorly. The only two recovered lumbar vertebrae, L1 and L2, feature inferiorly extending osteophytes, with the body of L1 featuring an off-centre circular bone depression, possibly a Schmorl's node (Figure 8.6).

8.2 Results of Stable Isotope Analysis

The TERRA $\delta^{13}C$ and $\delta^{15}N$ isotopic values for each individual within the Old Mission Point assemblage are presented in Table 8.4. The ultrafiltered stable isotope results provided by the UCIAMS lab as a part of the radiocarbon dating process are presented in Table 8.5. For all information pertaining to the stable isotope results from both the TERRA and UCIAMS labs please refer to Appendix B on p. 263 of this thesis.

Table 8.4 TERRA $\delta^{13}C$ and $\delta^{15}N$ stable isotope results

Individual	Age Category	Sex	MARC#	TERRA#	$\delta^{13}C$(‰)	$\delta^{15}N$(‰)
Skeleton1	Y. Adult	Male	1744	G7951	-18.5	13.0
Skeleton2	Adult, Unknown	Male	1745	G7952	-18.6	11.0
Skeleton3	M. Adult	Unknown	1746	G7953	-14.5	16.5
Skeleton4	M. Adult	Female	1747	G7954	-12.5	15.9
Skeleton5	Adult, Unknown	Unknown	1748	G7955	-13.4	16.1
Skeleton6	Y. Child	N/A	1749	G7956	-17.5	13.0
Skeleton7	Y. Child	N/A	1750	G7957	-17.3	12.4
Skeleton8	Infant	N/A	1751	G7958	-18.0	14.3
Skeleton9	Y. Child	N/A	1752	G7959	-16.2	17.5
Skeleton10	Y. Child	N/A	1753	G7960	-19.5	13.8
Skeleton11	Infant	N/A	1754	G7961	-19.1	14.3
Skeleton12	Infant	N/A	1755	G7962	-18.9	15.0
Skeleton13	Neonate	N/A	1756	G7963	-20.2	11.9
Skeleton14	Infant	N/A	1757	G7964	-18.3	14.7

While most of the $\delta^{13}C$ and $\delta^{15}N$ isotope values from each lab closely match one another, there are a few differences in these same values for some of the individual bone collagen analyzed. The ultrafiltration process itself does not account for these differences

in the $\delta^{13}C$ and $\delta^{15}N$ values as the collagen yields provided by both labs fall within acceptable parameters. Each sample from either lab facility also has an atomic carbon to nitrogen ratio of between 3.2 and 3.3, signifying that the bone collagen analyzed was of good quality and not negatively affected by diagenetic processes. A difference in the skeletal element used in either analysis is likely responsible for this variation in the $\delta^{13}C$ and $\delta^{15}N$ isotopic values from each lab, given possible differential bone turnover rates as well as preservational bias. The stable isotope results from TERRA are exclusively considered in the discussion of the diet, health, and weaning practices of the Old Mission Point individuals throughout the following sections of this study.

Table 8.5 UCIAMS Ultrafiltered $\delta^{13}C$ and $\delta^{15}N$ stable isotope results

Individual	Age Category	Sex	UCIAMS#	$\delta^{13}C$(‰)	$\delta^{15}N$(‰)
Skeleton2	Adult, Unknown	Male	125912	-18.8	11
Skeleton3	M. Adult	Unknown	107245	-14.1	15.6
Skeleton4	M. Adult	Female	107246	-15.6	18.1
Skeleton5	Adult, Unknown	Unknown	107247	-12.6	15.8
Skeleton6	Y. Child	N/A	125908	-17.1	13.1
Skeleton7	Y.Child	N/A	125909	-15.1	14.1
Skeleton10	Y. Child	N/A	125910	-16.5	17.1
Skeleton11	Infant	N/A	125911	-18.9	14.4
Skeleton12	Infant	N/A	125913	-19.1	13.9

The high $\delta^{13}C$ and $\delta^{15}N$ values indicate that this population was reliant on marine resources as their main dietary protein (DeNiro 1985; Little and Schoeninger 1995; Richards et al. 2001; Schwarcz et al. 1985). There are differences in the values amongst individuals within the assemblage along the lines of age and sex (Figure 8.7). However, the small sample size of the population under study does not elicit the use of statistics to check for significance in the variation of these values. Furthermore, all subsequent

interpretations pertaining to the lines of evidence must be regarded as tenuous because of the sample size.

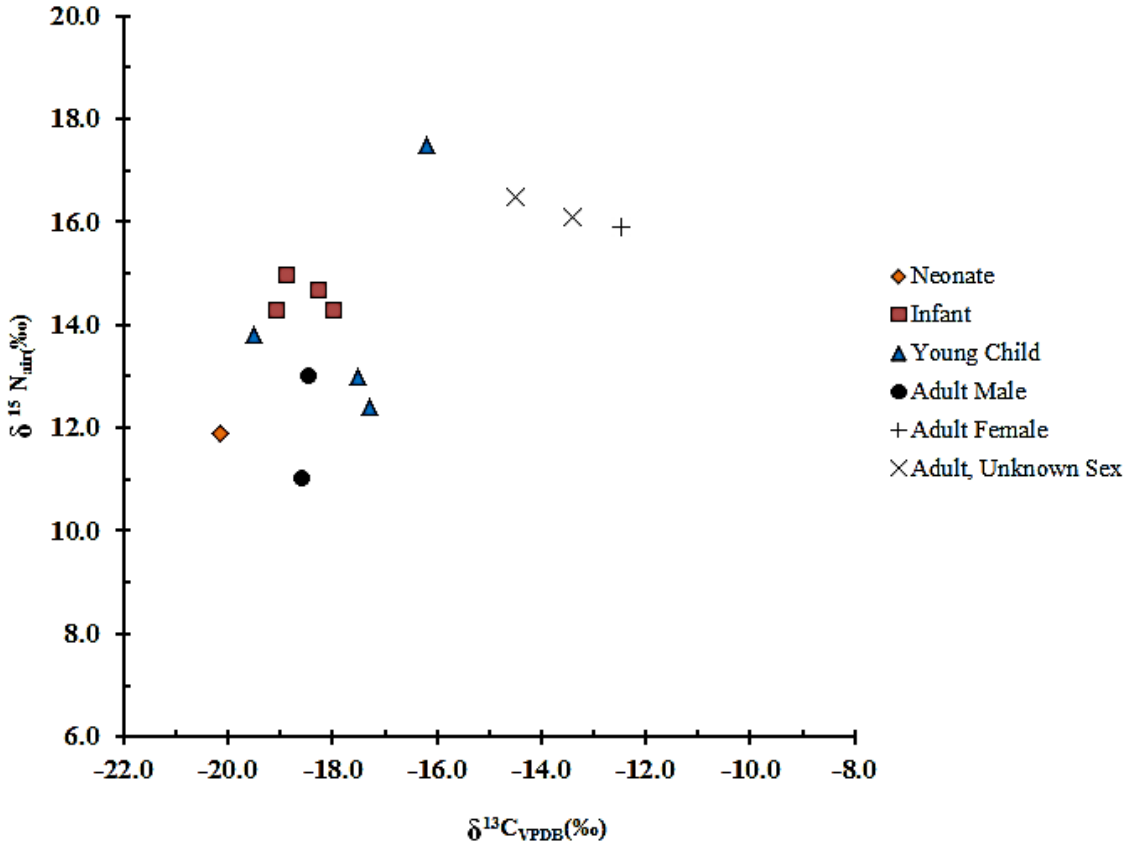

Figure 8.7 $\delta^{15}N$ and $\delta^{13}C$ values differentiated by age and sex

There is a clear differentiation of two groups amongst the adults within the Old Mission Point skeletal assemblage based on the results of the carbon and nitrogen stable isotope analysis. The two identified males have much lower $\delta^{13}C$ and $\delta^{15}N$ values than that of the one positively identified female within the sample. Interestingly, the two adults whose sex could not be identified during the morphological assessment have $\delta^{13}C$ and $\delta^{15}N$ values much more similar to that of the adult female. When $\delta^{13}C$ and $\delta^{15}N$ values are averaged according to sex, the adult male average (n = 2) is -18.5‰ ± -.05‰ and 12‰ ± 1‰ and the adult female average (n = 1) is -12.5‰ and 15.9‰, respectively.

The overall adult $\delta^{13}C$ and $\delta^{15}N$ value average (n = 5) is -15.5‰ ± -2.1‰ and 14.5‰ ± 2.5‰, which includes the carbon and nitrogen stable isotope results for the two adult individuals whose sex could not be identified. These averages are important when compared against the individual carbon and nitrogen stable isotope results for the juveniles represented within the skeletal sample (Figures 8.8 and 8.9).

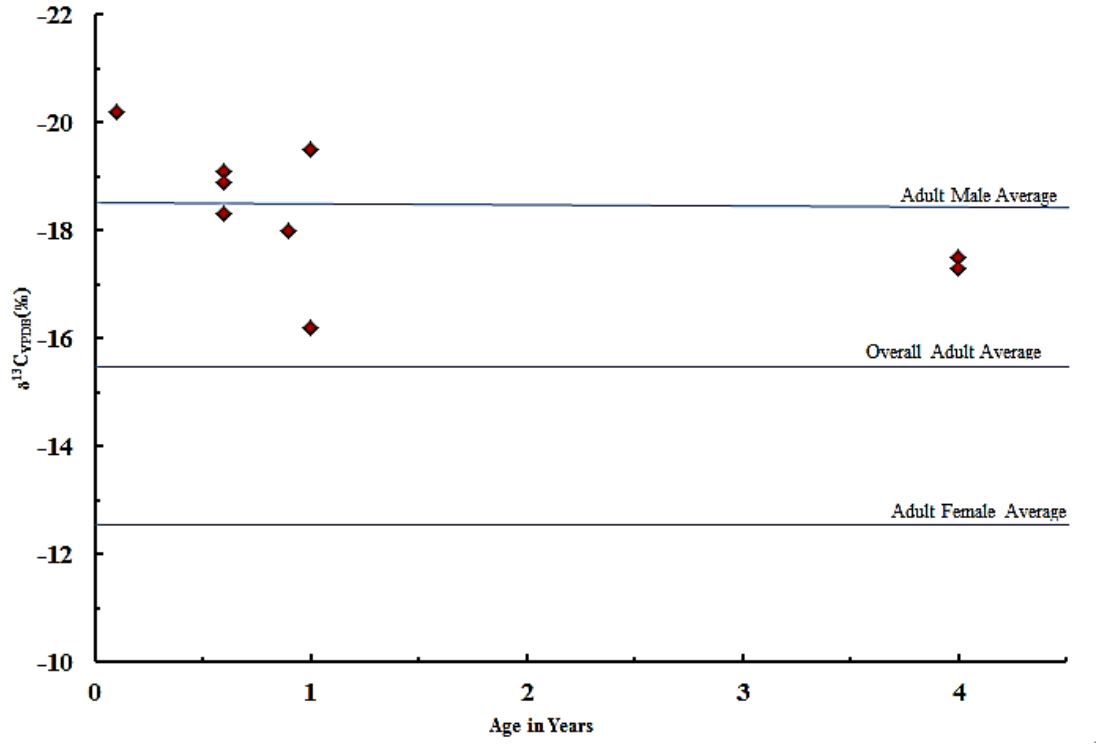

Figure 8.8 Juvenile $\delta^{13}C$ values and age

Elevated nitrogen levels for several of the Old Mission Point infants and young children may attest to their consumption of breastmilk shortly before death. The ingestion of breastmilk causes infant nitrogen values to be enriched from 2- 3‰ as the milk is derived from the mother's tissues, causing the infant to appear 'carnivorous' and increasing the child's trophic level position over that of adult females within any given population (Dupras et al.2001; Fogel et al. 1989; Fuller et al. 2006a, 2006b; Katzenberg

et al. 1996; Richards et al. 2002; Schurr 1998). The low $\delta^{13}C$ and high $\delta^{15}N$ values of 6 out of 9 of the Old Mission Point juveniles compared to that of the overall adult $\delta^{13}C$ and $\delta^{15}N$ value averages suggests that all except one of the juveniles between the age of 6 months and 1 year within the sample had begun to be weaned. The 2 other young children who were identified as being around 4 years of age have $\delta^{13}C$ and $\delta^{15}N$ values similar to the adult males within the sample and were likely fully weaned.

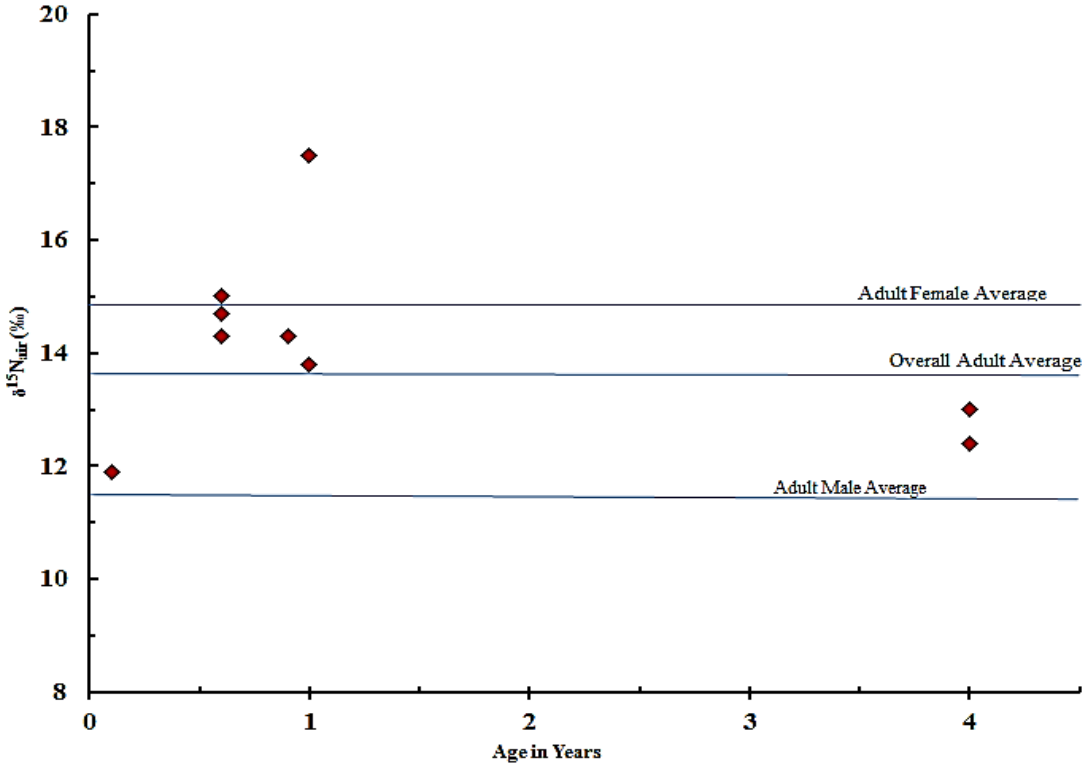

Figure 8.9 Juvenile $\delta^{15}N$ values and age

8.3 Results of Grave Good Identification

The items recovered alongside the Old Mission point human remains as a part of standard osteological inventory procedure have proved to be most interesting in regards to the reconstruction of possible behaviours and activities associated with burying the dead in Mi'gmaq culture.

Figure 8.10 Grave goods and human remains found in lab, (Clockwise) Plastic container found with remains, copper tube beads, infant talus and calcaneus, birch bark and beaver fur, worked wood with attached beaver fur, all photos by author

The majority of the artifacts came out of a plastic container placed within one of the drawers holding juvenile remains that had been bagged according to skeletal element. From the outside of the container bone, degraded copper, and wood could all be seen attached together by matted fur, bark, and soil (Figure 8.10). When the container was opened and the layers carefully peeled back, the contents of the clump revealed an infant's talus and calcaneus, shell bead fragments, and 4 copper tube beads strung with cordage. The remains and beads had been wrapped in a plant-fibre textile that had been covered with the bark and fur.

Figure 8.11 Cordage comparisons. (Top) Old Mission Point copper tube beads with area of protruding cordage highlighted, photo by author (Bottom Right) Hopps site cordage spun with s-twist and plyed with z-twist (Gordon 1997:27), (Bottom Left) Old Mission Point cordage, photo by author

Microscopically, the matted material matched both modern and historic samples of beaver (*Castor canadensis*) fur, which was attached to white birch (*Betula papyrifera*) bark. The textile, though fragmented, is of a hand-braided twill-weave pattern likely made out of cut strips of cattail (*Typhia latifolia*) leaves (Joleen Gordon, personal communication). The material is so thin and the braiding so small and delicate that it would have taken a great deal of effort to produce this item, possibly a bag or basket. The copper tube beads are typical of those produced during the Late Woodland period (Kevin Leonard, personal communication). The broken end of one of the beads revealed two-ply cordage spun with an s-twist and plyed with a z-twist, and is remarkably similar

to rush (*Scirpus*) cordage found at Red Bank during the Augustine Mound excavations (Figure 8.11). The blue-purple and white shell bead fragments, likely made from bivalves found close to the site, including blue mussel (*Mytilus edulis*), matched those found elsewhere in the assemblage.

Figure 8.12 Shell beads associated with human remains, photo by author. 30x.

Other items associated with the grave features and human remains from Old Mission Point were also found during the osteological assessment, such as more shell beads (Figure 8.12), staghorn sumach (*Rhus typhina*) seeds and fungal fruiting bodies (*Sclerotia*), a small pebble of milky-white quartz, and a piece of yellow-brown ochre.

CHAPTER 9: DISCUSSION

This chapter elaborates upon the results of the previous section in connection with reconstructing biological and social aspects of identity, as well as changes to the identity of the deceased, by comparing the osteological, archaeological, and ethnohistorical information collected during the course of this research. The skeletal assemblage is first discussed in terms of its composition, specifically the ancestry and number of individuals within the sample. Other factors in the composition of the skeletal sample that are linked to the reconstruction of biosocial aspects of identity, such as variation among individuals of differing age and sex, are examined in regards to diet, skeletal pathology and health. The results of the carbon and nitrogen stable isotope results suggest a different dietary pattern for the Mi'gmaq than described in the writings of the French. These results also shed light on potential gendered variation in diet and infant weaning practices. The relationship between forms of skeletal pathology and diet, the ageing body, social behaviours, and biomechanical activity patterns for the Mi'gmaq are then discussed. Lastly, the context and spatial relationship of the burials to the site are detailed in comparison with Mi'gmaq cosmological beliefs and the negotiation of identity between the living and the dead. While some aspects of Mi'gmaq mortuary ritual are confirmed, and even possibly uncovered through these comparisons, other notions of Mi'gmaq funerary practices, such as the location of burial areas, are found to be inconsistent among the osteological, archaeological, and ethnohistorical sources.

9.1 Biological and Social Identity

The results of the morphological assessment confirm that the human remains found at Old Mission Point are of Native American ancestry, confirming that the remains represent persons from the Mi'gmaq populations that have lived along the Restigouche River for centuries. Though the sample size of the assemblage is small, comprised of 14 individuals, the number of persons identified during this research was much more than expected, with only 2 or 3 individuals initially believed to be included within the skeletal collection. Furthermore, from what little was known about the composition of the assemblage, there was thought to be only adult remains included within the sample, with no reported juvenile burials. This is surprising given that over half of the individuals represented within the sample are juveniles under the age of 5 years.

Additionally, discrepancies between the findings of this study and the ethnohistoric accounts, in relation to diet, social roles, and mortuary behaviour, have proven to be as intriguing as the actual composition of the assemblage itself. These differences promote the use of a biocultural framework within bioarchaeological studies, while encouraging discretion towards the use of the direct historical approach. These discrepancies in information from the various sources further denote the importance of understanding how biological and social aspects of self contribute to the formation of identity. An appropriate place to begin this discussion on reconstructing biological and social aspects of identity is through the comparison of the stable isotope analysis results from this study to information from the ethnohistoric accounts on diet and the division of resources based on categories such as age, sex, and social practice.

9.1.1 Diet

The elevated $\delta^{13}C$ and $\delta^{15}N$ values of the individuals from Old Mission Point indicate that their main dietary protein was derived primarily from marine resources. This differs from the descriptions found in the ethnohistories consulted, which emphasize that the preferred food of the Mi'gmaq living in the northern Maritimes region was large terrestrial game, especially moose (Denys 1909: 428- 430; LeClercq 1910: 274). While the stable isotope results do not deny that terrestrial fauna and flora may have been consumed in some respect, its overall contribution to the diet of the Old Mission Point individuals appears to be minimal.

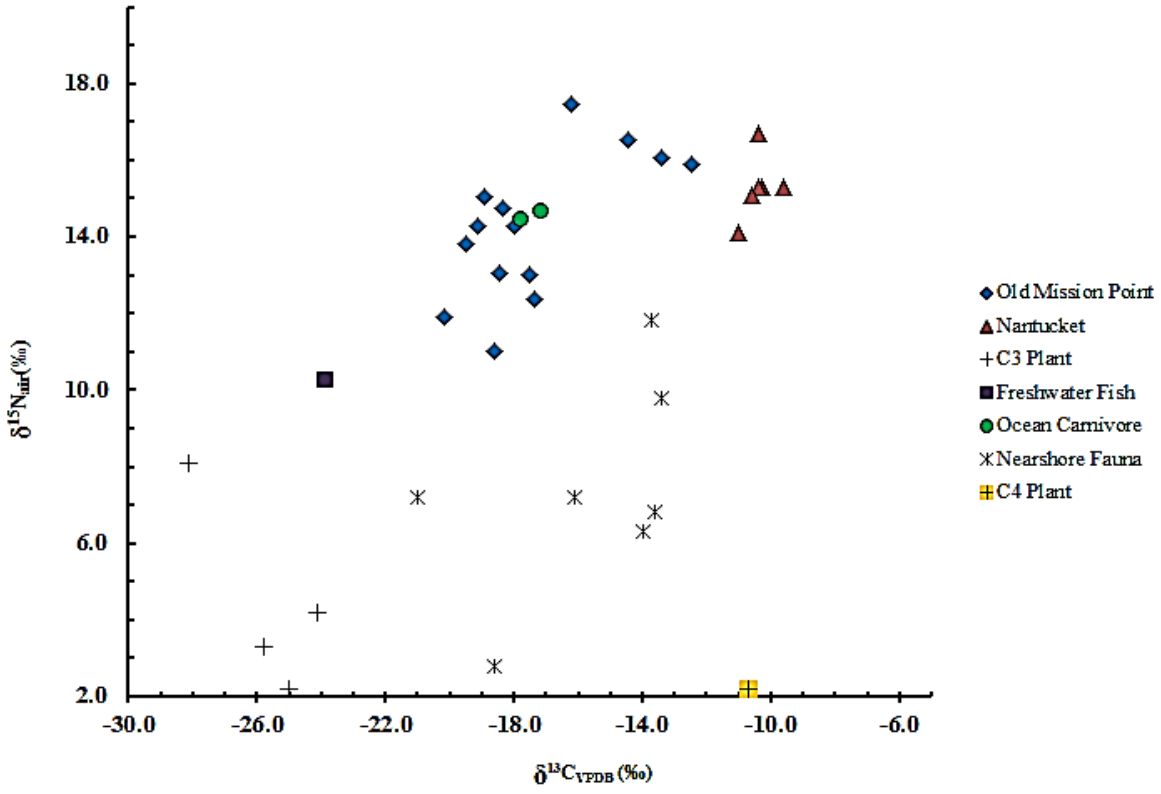

Figure 9.1 Population and fauna $\delta^{13}C$ and $\delta^{15}N$ value comparisons

However, it is hard to pinpoint exactly which marine species were included within the diet of these persons as potential faunal samples recovered from the site were

inaccessible. While stable isotope residue analysis has been performed on Mi'gmaq ceramics from sites located in the interior of New Brunswick, indicating that both terrestrial and marine foods were cooked and eaten together, no other isotopic study of either human or faunal remains has yet been conducted for this region of the Maritimes (Deal 1990; Deal et al. 1991). Though not ideal, faunal and human stable isotope data from outside of the Canadian Maritimes was consulted and compared to the results from Old Mission Point, in order to get a better sense of the dietary adaptations for the group under study (Figure 9.1). This outside data was taken from the works of Little and Schoeninger (1995) who analyzed faunal components and human bone collagen from six Late Woodland burials from Nantucket Island, Massachusetts (Tables 9.1 and 9.2). The fauna and flora species analyzed by Little and Schoeninger (1995) can be found in the marine and terrestrial environments surrounding the site of Old Mission Point.

Table 9.1 Nantucket Human $\delta^{13}C$ and $\delta^{15}N$ values, from Little and Schoeninger (1995: 357-358)

Nantucket Human Sample #	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)
MS1399	-10.3	15.3
MS3197	-10.4	15.3
MS3738	-10.6	15.1
MS3736	-10.4	16.7
MS3198	-11	14.1
MS3735	-9.6	15.3

Table 9.2 Nantucket Fauna and Flora $\delta^{13}C$ and $\delta^{15}N$ values, from Little and Schoeninger (1995: 357-358)

Type	Sample	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)
C3 Plant	Deer (*Odocoileus virginianus*)	-24.1	4.2
	Blackberry (*Rubis hispidus*)	-25	2.2
	Blueberry (*Vaccinium augustifolium*)	-25.8	3.3
	Cattail (*Typhia augustifolia*)	-28.1	8.1
Freshwater Fish	White Perch (*Morone americana)*	-23.9	10.3

Ocean Carnivore	Harbour Seal (*Phoca vitulina*)	-17.2	14.7
	Halibut (*Hippoglossus hippoglossus*)	-17.8	14.5
Nearshore Fauna	Blue Mussel (*Mytilus edulis*)	-21	7.2
	Oyster (*Crassotrea virginica*)	-18.6	2.8
	Clam (*Mya arenaria*)	-16.1	7.2
	Scallop (*Argopecten irradians)*	-14	6.3
	Canadian Goose (*Branta canadensis*)	-13.6	6.8
	Lobster (*Homarus americanus*)	-13.7	11.8
	Eel (*Anguilla rostrata*)	-13.4	9.8
C4 Plant	Maize (*Zea mays*)	-10.7	2.2

The comparison of the carbon and nitrogen stable isotope results for the Nantucket and Old Mission Point humans confirms that both populations were reliant on aquatic food resources. However, the Nantucket Islanders exhibit a far more coastal dietary adaptation, consuming more sea mammals and oceanic fish species, than compared to the Old Mission Point individuals, who seem to have a more variable diet, primarily focused on the consumption of freshwater fish, shellfish, and nearshore fauna (Little and Schoeninger 1995). The high $\delta^{13}C$ and $\delta^{15}N$ values of some of the Old Mission Point adults may point to the consumption of marine mammals or oceanic fish species that made their way into the Restigouche River via the Baie de Chaleurs. The bone toggling harpoon head recovered from one of the burials by Turnbull in 1972 further supports the idea that sealing was performed by those living at the site, probably in the winter and spring seasons. Another difference between the two populations is that the Nantucket humans were also consuming maize to some degree, unlike the Old Mission Point individuals whose isotopic signatures show no indication of maize consumption (Little and Schoeninger 1995). Furthermore, Little and Schoeninger's (1995) results show that little to no C3 terrestrial plant or animal foods were eaten on regular basis by the Nantucket Islanders, while these foods may have been eaten in small quantities by

some members of the Old Mission Point skeletal assemblage**.** The differences in the $\delta^{13}C$ and $\delta^{15}N$ values of the Old Mission Point and Nantucket humans displays the potential variability in diet even among hunter-gatherer groups simultaneously focused on marine resources.

The Old Mission Point carbon and nitrogen stable isotope results also point to variation in diet among the adult individuals, with the differentiation occurring between the two identified males (Skeletons #1 and #2) and the other three adults, including the one identified female (Skeleton #4), in the skeletal collection. The two males have far lower $\delta^{13}C$ and $\delta^{15}N$ values compared to that of the one female and the other two adults in the sample. This suggests that the males were consuming a diet comprised of more freshwater marine species, as well as possibly eating more land-based foods such as C3 plants or terrestrial game meat. In contrast, the high $\delta^{13}C$ and $\delta^{15}N$ values of the one female indicate a diet more consistent with eating nearshore fauna, such as eel or lobster, as well as oceanic species of fish or marine mammal. From what is written in the ethnohistoric accounts, this intrapopulation variation between males and females in diet is to be expected. Men's role as fishermen and hunters would have made freshwater fish, terrestrial animal meat, and C3 plants, such as berries, easily accessible. Men were also said to have eaten first, and eaten the better portions of any meat provided by fishing and hunting, leaving the women and children with scraps and less prestigious food items (LeClercq 1910: 290-291). Furthermore, the accounts say that depending on the biological state of a woman, in relation to menstruation and parturition, females were socially separated and denied access to terrestrial mammal meat on the basis of uncleanliness (LeClercq1910: 227-229; Lescarbot 1914: 200; Wallis and Wallis 1955:

251). Instead, they would be provided with other foods not as revered by the Mi'gmaq, such as fish or shellfish, lest they were to defile resources like beaver and moose with the state of their bodies (LeClercq1910: 227-229; Lescarbot 1914: 200; Wallis and Wallis 1955: 251).

The other two adults within the assemblage, whose sex could not be identified, have $\delta^{13}C$ and $\delta^{15}N$ values that are more similar to those of the female. While a determination of sex could never be made on the basis of the stable isotope data alone, it is nonetheless interesting to consider that if the two unidentified adults were in fact female an interpretation could be made focused on a distinction in diet based on sex even within this small sample. At the same time these unidentified individuals could be male. How reliable these results are for differential dietary patterns existing between males and females in Mi'gmaq society is debatable, as the results of the stable isotope analysis of the juvenile individuals within the assemblage show.

Breastfeeding infants and young children should display an enrichment in their $\delta^{15}N$ values that is 2-3‰ higher than those females of child-bearing age within the same population, given the trophic level effect (Dupras et al.2001; Fogel et al. 1989; Fuller et al. 2006a, 2006b; Katzenberg et al. 1996; Richards et al. 2002; Schurr 1998). Similarly, the $\delta^{13}C$ values of breastfeeding juveniles should also be 1‰ higher than those of adult females for the same reason (Fuller et al. 2006b). Therefore, it is assumed that the mother of a breastfeeding child has a diet similar to that of her adult female counterparts, and, if there is no differentiation in dietary patterns based on notions of sex and gender, a diet that is also similar to that of adult males within the same population.

There are only a few reasons as to why some very young juveniles will not show the elevated ^{13}C and ^{15}N isotopic signatures associated with breastfeeding. These reasons include a biological malfunction related to the breakdown of breastmilk and subsequent synthesis of ^{13}C and ^{15}N in bone collagen, the post-birth time interval and bone collagen synthesis of newborn children, or the that the child was never breastfed to begin with (Fogel et al. 1989; Fuller et al. 2006a; Katzenberg et al. 1996; Richards et al. 2002). While the first reason will be undetectable in juvenile skeletal remains, the second and third reasons can be considered in relation to interpreting breastfeeding and weaning practices in archaeological populations.

Fuller et al. (2006a, 2006b) and Katzenberg et al. (1996) both state that neonatal $\delta^{15}N$ and $\delta^{13}C$ values will closely mirror the $\delta^{13}C$ and $\delta^{15}N$ values of their mother several months after birth because of a lag in bone collagen synthesis during the first few months of life. Consequently, if death occurs shortly after birth, a newborn's $\delta^{15}N$ and $\delta^{13}C$ values will show no indication of the trophic level effect. The small length of time between the child's birth and their subsequent death, even if the child had been breastfed, would not have allowed for the synthesis of new bone collagen replete with the ^{15}N- and ^{13}C-enrichment associated with the consumption of breastmilk (Katzenberg et al. 1996). This lag in the appearance of the trophic level effect has been discovered in other tissues, such as in modern-day neonatal fingernail clippings, with the first signs of ^{13}C- and ^{15}N-enrichment only emerging after three months post-birth (Fuller et al. 2006a, 2006b). If the bone collagen $\delta^{13}C$ and $\delta^{15}N$ values of an infant older than 3 months of age do not reflect signs of the trophic level effect than other possibilities as to why there is a lack of ^{13}C- and ^{15}N-enrichment, such as the child never being breastfed, must be considered. In

essence, the $\delta^{13}C$ and $\delta^{15}N$ values of young juveniles, regardless of whether they are in the first few weeks of life or several months older, should somewhat reflect adult dietary patterns, especially those of adult females within the same population.

Within the Old Mission Point skeletal assemblage, all of the juvenile individuals aged between 6 months and 1 year of age show high $\delta^{15}N$ values that can be linked with the consumption of breastmilk shortly before death. Yet, in all but one exception, Skeleton #9, these $\delta^{15}N$ values are not higher than that of the one identified female within the sample. Furthermore, these same individuals' $\delta^{13}C$ values, though still slightly elevated, appear to be approaching the same $\delta^{13}C$ values for the adult *males* identified within the assemblage. This possibly indicates that these individuals had begun to be weaned onto solid foodstuffs but were continuing to be breastfed at the same time. However, the juxtaposition of the juvenile $\delta^{13}C$ and $\delta^{15}N$ values against those of the one adult female from the sample creates a dilemma; these juveniles could not possibly have been breastfeeding from females with a diet similar to that of Skeleton #4. Instead, these juveniles must have been consuming the breastmilk of female individuals with trophic level positions similar to those of the adult males.

Evidence of a similarity in diet between males and females is further provided by the stable isotope results for the neonate (Skeleton #13) represented within the assemblage. This individual's $\delta^{13}C$ and $\delta^{15}N$ values of -20.2‰ and 11.9‰ are more closely matched with the $\delta^{13}C$ and $\delta^{15}N$ values of -18.5‰ and 13‰ and -18.6‰ and 11‰ of the identified adult males within the sample, respectively. While it may be that this individual was never breastfed during the course of its short life, it still follows that this newborn's $\delta^{13}C$ and $\delta^{15}N$ values should reflect those of its mother, given the short post-

birth time interval before death. Therefore, the small period of time between birth and death, less than 6 weeks in the case of Skeleton #13, was likely not enough time to synthesize bone collagen that would have exhibited the trophic level effect seen in infants and young children that consume breastmilk as a main dietary component (Fogel et al. 1989; Fuller et al. 2006a, 2006b; Katzenberg et al. 1996; Richards et al. 2002). Summarily, while there appears to be dietary intravariation among the Old Mission Point adult males and female, the juvenile stable isotope results suggest that diet may in fact have been similar between the sexes within the living population. Therefore, in the absence of a larger sample size, it would be unwise to state that there must have been a differential dietary pattern between males and females within Mi'gmaq society as a whole. However, the juvenile stable isotope data presented, along with the large number (n=9) of juvenile individuals identified in the small skeletal assemblage itself, begs further discussion.

Juvenile remains are not recovered in most bioarchaeological excavations due to their fragility, as well as the possibility of differential burial practices for persons of such a young age. Though the Old Mission Point juvenile remains are incomplete and badly fragmented, their overwhelming presence within the skeletal assemblage is interesting, not only because of their burial alongside adult individuals, but also as a potential indicator of mortality rates among infants and young children within the population. There are multiple factors that contribute to the risk and rate of morbidity and mortality among infants and young children, including disease, malnutrition, and other environmental pressures based on social, and even religious, practices. The cause of death in most individuals, adult or juvenile, cannot be seen skeletally, leaving

bioarchaeologists to contemplate the many variables that potentially impacted the health of such persons. This contemplation generally involves incorporating the remains into a larger biocultural framework to pull out possible causes of poor health.

The relationship between weaning and infant mortality is one such factor that has been commented upon greatly in other bioarchaeological studies where large numbers of juvenile remains have been recovered and undergone stable isotope analysis (Katzenberg et al. 1996; Fuller et al. 2006a; Schurr 1998). Weaning is not a single event in the life course of an infant or young child; it must be thought of as a highly variable process in which mothers gradually stop breastfeeding while continuously introducing solid foodstuffs into their child's diet (Katzenberg et al. 1996; Fuller et al. 2006a, 2006b). The period of weaning is considered to be dangerous for young juveniles, especially those subject to unhygienic living conditions, because of their exposure to unknown pathogens through the digestion of weaning foods (Katzenberg et al. 1996; Fuller et al. 20006a, 2006b). Furthermore, weaning foods are often lacking in nutrition compared to breastmilk. Specifically, colustrum, the first milk produced by a mother and consumed by a baby, contains several known antibodies that will boost a child's immunity in an effort to nullify susceptibility to infection and early death (Bogin 1999).

The length of breastfeeding and the timing of initial weaning is based upon not only a mother's personal preference, but also largely by cultural practices (Dupras et al. 2001; Fuller et al. 2006a; Schurr 1998). Additionally, weaning behaviour is intrinsically linked with female social roles and fertility as breastfeeding halts ovulation, preventing pregnancy in women. In societies with a focus on large family units, or those with high infant mortality rates, weaning may begin quite early with an abrupt cessation of

breastfeeding so that a woman can become pregnant quickly once again. Alternatively, other societies that may also place social significance on large families with multiple children could instead prefer that women nurse their young for an extended period of time, even after introducing other supplementary solid foods into the diet. This is done so that their children receive an optimal amount of nutrition and immunity. This latter situation accurately describes the supposed breastfeeding and weaning practices of Mi'gmaq women, who were said to nurse their children up to 4 or 5 years of age, as communicated in the ethnohistoric accounts (LeClercq 1910: 91; Wallis and Wallis 1955: 248). The details painted by the Old Mission Point juvenile carbon and nitrogen stable isotope results contest these ethnohistoric descriptions of Mi'gmaq weaning practices. However, it is important to keep in mind in accordance with the Osteological Paradox that these juvenile individuals represent children who died early, and therefore may not accurately represent the health and weaning practices experienced by those children that continued to live and grow.

According to Fuller et al. (2006b) the timing of weaning within a set population can be estimated by examining the peak of juvenile $\delta^{15}N$ values in relation to age, which can be presented in weeks, months, or years. By examining juvenile $\delta^{13}C$ values, researchers can estimate how quickly a child was weaned off of breastmilk and onto solid foods, as $\delta^{13}C$ values in juveniles will decline much faster with the onset of weaning than $\delta^{15}N$ values (Fuller et al 2006b). Though it is a small sample size, the varying ages of the juveniles within the Old Mission Point assemblage allow for their $\delta^{13}C$ and $\delta^{15}N$ values to be plotted according to an age scale, establishing a possible timeline for weaning amongst these young individuals (refer back to Figures 8.4 and 8.5, p.160-161).

With only one exception, it is likely that all of the juveniles aged between 6 months and 1 year had begun to be weaned onto solid foodstuffs given that the peak of the $\delta^{15}N$ values among the juveniles is located at the 6 month age mark. Skeleton #9, aged 1 year, is the exception to this pattern, exhibiting $\delta^{13}C$ and $\delta^{15}N$ values that suggest this individual was still being exclusively breastfed shortly before or at the time of death. This indicates that the timing of weaning within the population was probably quite variable. However, Skeletons #6 and #7, both between 3 and 4.5 years of age, have $\delta^{13}C$ and $\delta^{15}N$ values that very closely match those of the adult males identified within the sample, suggesting that they were fully weaned. The similar trophic level position among the adult males and Skeletons #6 and #7 also means that these young children were consuming the same foods as these adults and not those of the identified adult female already discussed previously in this section.

If children were potentially fully weaned by 3 to 4 years of age, as the carbon and nitrogen stable isotope data from this study contends, then the timing and length of weaning among the Mi'gmaq is vastly different than that described by the French authors in their writings. Additionally, to put into perspective this early introduction of supplementary foods into the diet, it should be said that the 6 months to 1 year age interval coincides with the eruption of the first deciduous teeth, touching on the idea that a child's capability to chew soft, yet solid, foods initialized the weaning process within Mi'gmaq culture. Yet, these results and ideas do not necessarily negate that some children were being breastfed for an extended period of time, as seen in the case of Skeleton #9. Of significance, however, are the possible effects of weaning behaviour on the relative health of young juveniles. If the period of weaning represents a delicate time

in the life of a child, and perhaps that child is already vulnerable or susceptible to other forms of infection or disease based on their environment, then weaning behaviour could indeed have contributed to the deaths of such young persons, though inadvertently and as part of a larger epidemiological web.

Women's behaviour, too, would have been affected by the earlier timing of weaning alluded to by the carbon and nitrogen stable isotope results of this study. If much of Mi'gmaq women's social role depended upon their biological ability to give birth to babies, based on the ethnohistorical accounts emphasis on large family units comprised of many children, then the cessation of breastfeeding at an earlier date would have allowed for women to become pregnant quicker and at a more frequent rate. Again though, this idea seems to be at odds with what was written in the accounts of the French. Mi'gmaq women are described in the ethnohistories as purposefully using herbal aids to produce abortions so that they could nurse their children for an extended period of time (Denys 1908: 404; Wallis and Wallis 1955: 248). Tellingly, however, is the thought that if these women described in the accounts had been breastfeeding exclusively, then ovulation and pregnancy should not have been as likely to occur. Perhaps then, an early start to the weaning process was idealized within Mi'gmaq society because of the already high mortality rate among infants and young children. Or, perhaps, this form of weaning behaviour continued to be practiced because of the connections involving the decline of female social status and infertility. Unfortunately, what emerges from such interpretations is a cyclical pattern involving weaning, juvenile health vulnerability, and death. By not breastfeeding their children for an extended period of time, in favour of becoming pregnant again, and alternatively giving their babies contaminated foodstuffs

unknowingly at an earlier but more vulnerable age, Mi'gmaq weaning practices potentially increased the risk of morbidity and death in young juveniles, undoing any attempts to produce, and keep alive, more children.

9.1.2 Skeletal Pathology

There is a strong relationship between diet, biomechanical stress, and biological and social aspects of identity. The relationship that exists among these factors also plays a part in the development and possible causation of differing forms of skeletal pathology seen on the teeth and bones of the adults within the Old Mission Point assemblage. For example, the dental pathology featured on Skeletons #1 and #4 can be connected with a diet rich in marine foods.

Dental calculus refers to the mineralization of bacterial plaque which appears as a hard cement-like deposit on a tooth's surface (Hillson 1996; Lieverse 1999; Ortner and Putschar 1981; Waldron 2009). There is evidence to support the idea that specific types of diet, the degree of oral hygiene, and the alkalinity of an individual's oral environment can all contribute to the development of dental calculus (Lieverse 1999; Littleton and Frohlich 1993; Waldron 2009). Arguments exist for the formation of calculus deposits based on both high protein- and high carbohydrate-intake diets (Lieverse 1999). However, several studies have found that the skeletal remains of prehistoric hunter-gatherers dependant on aquatic resources often exhibit a greater percentage of calculus deposits than compared to skeletal collections comprised of prehistoric agriculturalists (Lieverse 1999; Littleton and Frohlich 1993). In fact the skeletal remains of prehistoric agriculturalists tend to feature a greater prevalence of caries (dental cavities) because of their predominantly sugary, starchy diets (Lieverse 1999; Littleton and Frohlich 1993).

Furthermore, though dental calculus and caries can both be present on the dentition of a single individual, the oral environments in which these conditions thrive should be completely different from one another. Mineralization of bacterial plaque requires a more basic or alkaline oral environment, whereas the bacterial infection that creates caries needs a more acidic oral environment in order to demineralize and destroy the tooth structure (Hillson 1996; Lieverse 1999; Ortner and Putschar 1981; Waldron 2009). The presence of dental calculus has also been linked with the presence of dental attrition (tooth wear) and periodontal disease, which causes the recession of the gums, exposure of the roots of the teeth, and inflammation of the alveolar bone (Ortner and Putschar 1981; Waldron 2009).

The preparation and consumption of marine-based foods may also account for the degree of dental wear seen on the occlusal aspects of Skeleton #1's maxilla and Skeleton #4's maxilla and mandible, respectively. Dental attrition refers to the removal and destruction of a tooth's enamel by both biomechanical and dietary means (Hillson 1996; Littleton and Frohlich 1993; Ortner and Putschar 1981; Smith 1984; Waldron 2009). Mild dental attrition is often categorized through the appearance of small facets or pits on the cusps of teeth. If the amount of dental attrition becomes severe, these pits will become larger, coalescing and exposing the underlying dentin of the tooth structure, which can subsequently lead to other forms of oral infection or tooth loss. When foods like fish or meat are smoked or dried they take on an abrasive and chewy quality that over time can affect the condition of tooth enamel (Deter 2009; Littleton and Frohlich 1993; Smith 1984). Pieces of shell grit that fail to be retrieved before the consumption of shellfish can also cause dental attrition if repetitively eaten (Deter 2009). Moreover the type of dental

wear pattern produced by such foodstuffs has been documented, with abrasive foods found to procure flat wear (affecting mainly the occlusal surface of the dentition) as opposed to the oblique dental wear patterns connected with the consumption of softer, starchier foods (Hillson 1996; Smith 1984). Oblique dental wear patterns can also be caused when the teeth are used as tools (Hillson 1996; Smith 1984). Flat wear is produced as a part of 'puncture-crush' movement of the masticatory cycle, which occurs when hard, dense foods need to be broken into smaller pieces before an individual can safely swallow them (Smith 1984).

Hunter-gatherer groups that predominantly rely on mammal meat or aquatic resources, often prepared and stored by means of drying or smoking, tend to exhibit flat dental wear patterns (Deter 2009; Littleton and Frohlich 1993; Smith 1984). On the other hand, agriculturalists that eat soft C3 or C4 plant-based foods, which may be prepared via stone-milling, baking or boiling, feature a higher frequency of oblique dental wear patterns (Deter 2009; Littleton and Frohlich 1993; Smith 1984). In other bioarchaeological studies focused on connecting dental wear patterns with specific types of diet, populations known to be reliant on marine foods were generally found to show higher rates and severity of dental attrition, low caries rates, periapical abscessing caused in part by the destruction of the dental tissues, and less antemortem tooth loss (Littleton and Frohlich 1993; Ortner and Putschar 1981). Though the sample size of the Old Mission Point skeletal assemblage does not allow for generalized statements to be made regarding the state of dental health within Mi'gmaq society, the findings of these studies match the dental pathology exhibited by Skeleton's #1 and #4.

Age is also an important factor in determining the extent and severity of dental wear, hence why dental attrition patterns are often used as an ageing methodology for skeletal collections (Hillson 1996; Ortner and Putschar 1981; Smith 1984; Waldron 2009). It follows that a tooth that erupts earlier, like a first molar, will likely display more wear than a tooth that erupts later in the life of an individual, like a third molar. Older individuals will also display more severe dental attrition. The connection between age and the rate of dental attrition is seen in the case of Skeleton #4, the middle adult female who features larger dental pits on the right maxillary and mandibular molars, exposing the underlying dentin, as compared to Skeleton #1, a young adult male who exhibits much smaller pitting on the cusps of only his right first and second maxillary molars and not his relatively new third molar. It should also be noted, however, that the right maxillary and mandibular dentition of Skeleton #4 displays more severe wear than that of the left side. This differential pattern of wear is likely because of one-sided chewing developed in tandem with the large periapical abscess of the alveolar bone located on the left side of the mandible. This acceleration of attrition was accounted for when ageing this individual. Furthermore, age is a major contributing factor when it comes to pathology affecting the joints and musculoskeletal attachment sites of the body.

Degenerative joint disease is an umbrella-term for a variety of pathological lesions that can affect the appendicular and axial skeleton, with the severity of such lesions cumulatively increasing with age (Boulle 2001; Jurmain 1990; Jurmain and Kilgore 1995; Mok et al. 2010; Molnar et al. 2011; Ortner and Putschar 1981; Waldron 2009; Weiss and Jurmain 2007). Osteoarthritis and vertebral osteophytosis are both forms of degenerative joint disease that are often said to commonly affect skeletal collections

regardless of their cultural association or ancestry. Yet, the presence and severity of osteoarthritis and vertebral osteophytosis have also been tied to activity patterns and the strenuous use of the body's joints (Jurmain 1990; Molnar et al. 2011; Weiss and Jurmain 2007).

Osteoarthritis most often affects the synovial joints of the body and refers to the gradual breakdown of the cartilaginous tissues surrounding these areas, destroying the functionality of joints in the process (Boulle 2001; Jurmain 1990; Jurmain and Kilgore 1995; Molnar et al. 2011; Ortner and Putschar 1981; Waldron 2009; Weiss and Jurmain 2007). New bone formation, usually in the form of marginal osteophytes (the defining characteristic of vertebral osteophytosis), change in the shape and contouring of joint facets, vascularity and lastly eburnation (polishing) of the joint surface can all be used to diagnose osteoarthritis (Jurmain 1990; Jurmain and Kilgore 1995; Ortner and Putschar 1981; Waldron 2009; Weiss and Jurmain 2007). However, eburnation is considered to be the key indicator for osteoarthritis of the synovial joints in the skeleton (Molnar et al. 2011; Waldron 2009; Weiss and Jurmain 2007). Osteoarthritis can also affect the spine. However, if marginal osteophytes are all that can really be seen to affect the vertebrae under study it is more amenable to state that the spine of the individual exhibits vertebral ostephytosis, and not osteoarthritis, given the lack of other skeletal indicators for that specific form of degenerative joint disease.

While Schmorl's nodes can be considered a form of vertebral degeneration, and are most definitely etiologically connected with the ageing human body, another important factor in their apparent causation is said to be repetitive stress placed on the spine in the form of mechanical loading (Faccia and Williams 2008; Mok et al. 2010;

Stirland and Waldron 1997; Waldron 2009). The recurrent lifting of heavy objects is usually indicated as the primary source of mechanical loading on the spine (Faccia and Williams 2008; Mok et al. 2010; Stirland and Waldron 1997; Waldron 2009). Schmorl's nodes are smooth, circular depressions that are found on the bodies of vertebrae, most often in the thoracic and lumbar regions (Faccia and Williams 2008; Mok et al. 2010; Stirland and Waldron 1997; Waldron 2009). Prolonged pressure or trauma to the spine leads to the breakdown of the fluid (nucleus pulposus material) found within the cartilaginous spinal discs, which formally separate each vertebrae (Faccia and Williams 2008; Mok et al. 2010; Waldron 2009). The gradual destruction of the spinal discs ultimately causes this fluid to break free and seep out, eroding into the cartilage endplate, and subsequently the bone of the vertebral body (Faccia and Williams 2008; Mok et al. 2010; Waldron 2009). The formation, and duration, of Schmorl's nodes is said to cause extreme back pain, exacerbated by experiencing stiffness of the spine related to vertebral osteophytosis or osteoarthritis (Faccia and Williams 2008; Mok et al. 2010).

The vertebral pathology featured on Skeletons #3 and #4 qualifies as degenerative joint disease. The changing shapes of these individuals' vertebral bodies, especially in Skeleton #4's cervical vertebrae, indicate the clear destruction of the articular cartilage between each body during life, causing severe porosity and erosion of the bone. Furthermore, the marginal lipping and extent of osteophytes for both individuals lends to the severity of the pathology seen, which corresponds to Waldron's (2009) operational definition of osteoarthritis of the spine. The circular depression on Skeleton #4's first lumbar vertebrae matches the description of a Schmorl's node.

Though they are not necessarily defined as a pathological feature in the common sense of the term, musculoskeletal stress markers are also connected with the ageing body, and perhaps even more so than osteoarthritis, vertebral osteophytosis and Schmorl's nodes, they are linked with the biomechanical activities and stress experienced by an individual over the lifecourse (Faccia and Williams 2008; Mok et al. 2010; Molnar et al. 2011; Ortner and Putschar 1981; Stirland and Waldron 1997; Weiss et al. 2012). Musculoskeletal stress markers (MSM) "…is a term used for the sites of origin and insertion of muscle tendons (entheses) and ligament attachments (syndesmoses) in the skeleton" (Molnar et al. 2011: 285). Musculoskeletal stress markers will show where physical activity or strain would have actively worked muscle attachment sites, causing bone features to appear rugose because of the, "…increase in blood flow and a consequential stimulation of bone forming cells, which will result in bone hypertrophy and an increase in MSM development" (Weiss et al. 2012: 70).

The rugosity of specific skeletal features indicative of muscle origin and insertion points on the limb bones of Skeleton #1 and #2, both adult males, can be accurately described as musculoskeletal stress markers given the high scores associated with these traits according to the methodology described by Merbs and Hawkey (1995). On the upper limbs, the definition of the deltoid tuberosity on the humerii and radial tuberosity of the radii of both individuals signify the recurrent stress placed on the *deltoideus*, *pectoralis major*, and *brachialis* muscles. This group of muscles predominantly controls the flexion and rotation of the arms and may become injured through the repetition of lifting and hauling heavy loads (Bowden and Bowden 2005; Petilon et al. 2005; Stirland and Waldron 1997; Weiss et al. 2012). The rugosity of the linea aspera on their femorii,

and soleal line and anterior tuberosity of their tibiae, suggests the repetitive use of the *gluteus maximus*, *rectus femoris*, *biceps femoris* and *adductor* muscle group, all of which are responsible for the flexion, rotation, and extension of the legs (Bowden and Bowden 2005). Overuse, tension and stress of these muscles is connected with sports injuries involving running, climbing, jumping and even kicking actions (Bowden and Bowden 2005; De Paulis et al. 1998; Weiss et al. 2012). The lateral alignment of the head and osteophytosis of the lateral malleolus exhibited by Skeleton #3 may also have to do with the repeated pulling or torsion experienced by the *biceps femoris* and *fibularis longus* muscles, with the latter helping to steady the walking or running gait of an individual (Bowden and Bowden 2005).

Osteoarthritis, vertebral osteophytosis, Schmorl's nodes and musculoskeletal stress markers are all often cited as evidence in the reconstruction of activity patterns and postures repetitively performed by persons within archaeological populations. Moreover, intrapopulation discrepancies in the frequency or severity of these lesions have been used to argue for lifestyle or labour differences in those of differing age, sex, gender and social status categories (Jurmain 1990; Jurmain and Kilgore 1995; Molnar et al. 2011; Stirland and Waldron 1997; Weiss and Jurmain 2007; Weiss et al. 2012). However, it should be remembered that the etiology of each of these conditions is multifactorial, making the reconstruction of activity patterns based on both biological and social aspects of identity an extremely daunting task. In fact, it has been suggested that variations in pathological or skeletal features, such as musculoskeletal markers, may have more to do with body size and sexual dimorphism than actual differences in activity patterns within a population (Mok et al. 2010; Waldron 2009; Weiss et al. 2012).

Furthermore, the complexity of the human body, especially the concept of the body in motion, must be considered. Many different activities will require the use of the same muscles or muscles group, and will affect regions of the human skeleton, such as the spine, in a similar manner. In this way, it is considered impossible to link certain pathological features with specific types of behaviour or action. On the other hand, room for generalized interpretations can be made if one takes on a broader biocultural perspective when discussing such features in connection with patterns of activity. Therefore, though direct connections between the pathological features exhibited on the Old Mission adults and specific forms of biomechanical behaviour cannot be made, the ethnohistoric and skeletal evidence does allow for possible causative factors for these features to be explored.

The French writers explain that from an early age Mi'gmaq children began to assume adult social roles, and consequently, adult activity patterns. Specifically, little boys began making hunting and fishing tools for themselves in order to capture and kill small animals and fish, just like their adult counterparts (Denys 1908: 414; LeClercq 1910: 97). Mi'gmaq boys could not become men until they had shown their prowess as hunters and providers (LeClercq 1910: 232). Mi'gmaq girls learned to run the household from older women, with their chores including crafting and cooking activities, as well as strenuous physical labour in the form of hauling in food resources from the forest that the men had already slaughtered (Denys 1908: 404; LeClercq 1910: 119). The accounts of the French further mention that girls and women were responsible for packing up and carrying all of the possessions of their families, including the parts of the wigwam, in baskets and bags when it was deemed time to move (Denys 1908: 405). Therefore, the

ethnohistories clearly indicate that both juveniles and adult persons within Mi'gmaq society lived an active lifestyle typical of other hunter-gatherer populations. More so, the accounts of the French writers point to the performance of gendered activity patterns, potentially elucidating some of the causative factors of the pathology seen on the bones of the Old Mission Point adults. Though the skeletal evidence presented in this study attests to the physically active nature of these individuals during life, any possibility of extending the notion of sex and gender-based activity patterns coinciding with the prevalence of differing forms of pathology in males and females is nullified due to the small number of individuals within the sample.

What is highlighted by trying to connect the pathology in the assemblage with what is known about the lifeways of the Mi'gmaq people is the relationship between age and socialization, and the bearing these factors have on health later in life. It has already been mentioned that age is a major contributing factor to the presence and severity of pathological conditions like dental attrition, osteoarthritis, Schmorl's nodes and mucsculoskeletal stress markers in osteological assemblages. It would therefore make sense that an earlier onset of biomechanical stress on the body, specifically the still growing bodies of young children, would increase the likelihood of observing such conditions in older individuals within a population. Though the bodies of children are known to have a much more plastic and adaptable response to stress than those of adults, arduous physical activity can still curb juvenile growth and development, especially when combined with other variables such as malnutrition or infection (Bogin 1999; Weiss et al. 2012). As part of the transition from child to adult, Mi'gmaq children were required to learn and mimic the behaviours of adults through the process of socialization, which

included practicing physical actions and activities denoted by age, sex and gender. These actions and activities described in the ethnohistorical accounts can be considered strenuous, and if repetitively performed by the growing body, could be seen as a potential precursor to forms of bodily trauma and degeneration experienced later on in adult life. Thus, the incorporation of children into adult society at an early age sets up a framework involving biological versus social trade-offs. Children were valued by Mi'gmaq society because they were seen as the next generation of adults, carrying on their lineages as well as cultural customs and practices into the future. The early socialization of children thereby denotes their respected status within Mi'gmaq society. However, this respected social status likely came at a biological cost, calling attention to the complicated bonds between health and biosocial aspects of identity.

9.2 Identity and Death

The skeletal and ethnohistorical evidence presented thus far has revealed the importance of investigating both biological and social aspects of identity for individuals as well as groups of persons. It has also been shown that cultural norms can mold the health of individuals for good or ill, while also having an impact on social status. The same is true of biological aspects of self, with variables such as sex and age determining social roles, activities and even possible access to food resources. It is this multiplicity of factors that shaped and transformed individual and collective identities for the Mi'gmaq over time and throughout the life course.

Did this metamorphosis of identity for Mi'gmaq persons continue into death? The answer to this question, as provided by the archaeological, ethnohistorical and skeletal evidence, is quite a contradiction. From one perspective the identities of the dead seem to

have been upheld even in death through social memory and the performance of burial rites. At the same time, the written evidence tells us that the dead were feared, supporting the idea that upon death a person's identity did change, taking on a more supernatural or ominous tone. Furthermore, the ethnohistorical accounts state that, ideally, the dead were buried in cemeteries separated from their communities for this very reason. Specifically, the dead were supposed to be buried on islands, with water acting as a barrier between the living and dead, allowing the living to forget about those they had buried (LeClercq 1910: 302-303; Lescarbot 1914: 293; Wallis and Wallis 1955: 266-267). However, the findings of this research contradicts the accounts of the authors in some respects, while also drawing attention to forms of burial for juvenile individuals that has not yet been discussed in any other work on Mi'gmaq funerary rites to-date.

The paucity of information recorded during the 1972 recovery efforts at Old Mission point has made it difficult to devise the actual size and layout of the burial area in question. When Turnbull returned to the site in the summers of 1972 and 1973, his excavation units were placed only a small distance from where the burials had been located, on the other side of the gravel pit (refer back to Figure 3.6, p. 45). It is in these units that Turnbull found evidence of a more domestic nature, such as the ceramics and other artifacts used to establish a relative date sequence for the site. From this information it would seem that there was a close spatial proximity between the domains of the living and the burial space of the dead. The radiocarbon dates further suggest that many generations of Mi'gmaq persons were buried in this vicinity for several hundred, if not several thousand years, with burials taking place long before and shortly after European contact. The oldest uncalibrated date, BP 2405 +/- 15, derived from the remains of

Skeleton #3, though seemingly an outlier within the dating sequence should not be considered surprising given the importance of the area within Mi'gmaq oral histories, as well as Turnbull's artifactual finds spanning the length of the Woodland period. Old Mission Point thereby represents what was once likely a large-scale long term-use cemetery for the northern Mi'gmaq peoples. Evidence for how and in which capacity these burials may have been performed is also communicated in the form of Turnbull's 1972 photos documenting some aspects of the recovery which were provided by Albert Ferguson in the early stages of this study.

Figure 9.2 Possible bundle burial from Old Mission Point, phototaken by Turnbull (1974)

These photos have proven to be integral as they are the only forthright documentary evidence of how the adult remains were found. Several of these photos, including a few close-up shots of the remains, may explain why the assemblage was recovered and bagged according to skeletal element, as well as the commingling of the

sample. One photo of a set of adult remains *in situ* shows that the bones, mostly ribs, are fragmented and not in correct anatomical position for what would expected to be a primary flexed or extended burial (Figure 9.2). Instead, the bones appear jumbled, they are positioned awkwardly, and while they obviously may have been damaged by the heavy machinery that discovered them, this does not explain their misalignment in regards to anatomical position. What the photos likely document are bundle burials, secondary burials in which the bones of an individual are collected after the decomposition of the body, cleaned, and then reburied. This fits with ethnohistorical passages which detail Mi'gmaq mortuary practices associated with scaffold or tree-burials (Denys 1908:439; Lescarbot 1914: 283, 302). Burials of this sort were usually performed during the winter months, when digging a grave through snow and frozen ground would have proved difficult. The accounts say that when the remains of such persons were collected in the spring or summertime, the bones were subsequently cleaned by Mi'gmaq women, bundled in furs and leathers, and afforded the same funerary rites and goods as any other member of the community upon death (Denys 1908: 439; Lescarbot 1914: 284, 302).

The presence of bundle burials at the site of Old Mission Point points to the notion that the season-of-death for these individuals was in the wintertime. LeClercq (1910: 110-113) emphasizes in his work that during the time of his stay among the northern Mi'gmaq, starvation took many lives over the winter months with families turning to desperate measures to stay alive, including cannibalism. It is very hard for this researcher to believe that the Mi'gmaq living in or near *Tjigog* would have succumbed to starvation during the winter months, given their resource-rich environment even in the

wintertime and their ability to survive off the land for centuries before the coming of the Europeans. Food may not have been as plentifuls in the winter as it was in the summer or springtime, but it still would have been in season to ice-fish, hunt sea mammals, and take down large terrestrial mammals like moose.

From an epidemiological perspective, while a lack of food may certainly have contributed to the risk of morbidity and death, the winter season may have been potentially fatal for the Mi'gmaq people for other reasons. For example, if the majority of time was spent inside the wigwam, and if family units consisted of ten to upwards of twenty people, a single person with some sort of infection or illness could have spread pathogens easily amongst this group. If these individuals were already weak and susceptible to illness because of a lack of food, exposure to the cold, possible unhygienic living conditions or various other reasons, then the chance of multiple individuals dying during the winter season in such closed conditions would have certainly increased. The cause of death for the Old Mission Point individuals though unknown is likely much more complex than merely starving to death in the wintertime.

The writings of the French also mention that women and men were buried with grave goods reflective of their activities and duties in life, carrying them on into the afterlife in order to continue performing those same social roles in death (LeClercq 1910: 301). Such statements give credence to the notion that the identity of the deceased did not change so much upon the occurrence of death. Grave goods like shell and copper beads, an iron trade axe, and a harpoon head were all found with the human remains from Old Mission Point as attested to in Turnbull (1981). Yet, no interpretation involving the validity of the ethnohistorical gendered grave good claims can be made in light of the fact

that access was not granted to see these objects. The burial artifacts recovered during the course of this research have revealed a link between other archaeological sites in the Maritimes where juvenile remains have been found and buried in a particular manner. The context of these juvenile burials may be indicative of the connection between certain forms of mortuary practice and Mi'gmaq cosmological beliefs.

In the Mi'gmaq legends collected by Rand (1894) and Whitehead (2006), as well as the ethnohistorical accounts, there are multiple references to woven plant-fibre and leather bags that can take on supernatural abilities, allowing them to hold objects and persons of power. For instance, in Whitehead's (2006: 101-103) collected story entitled 'Medicine Bag', a magical deerskin bag is used by two brothers to kidnap a beautiful young girl from a neighbouring village so that she can become a bride. In order to persuade the girl to get in the bag, the younger brother fills it with colourful stones, berries, flowers, and other strange items, enticing her with the wonders that lay inside. The girl, naively, meets the younger brother alone in the woods, gets in the bag to look at the curious objects, and the boy quickly ties up the bag and takes off with the girl, still trapped inside, back to his own village. After he returns home and presents the girl as his would-be bride, the young brother mysteriously dies, and it is the older brother, who suggested the deerskin bag be used to capture a girl in the first place, that ultimately makes the girl his wife.

Mi'gmaq shamans and medicine-women were also known to keep their herbs and other items related to their healing or supernatural abilities in small bags or pouches. These items were known as *oüahich* to the Europeans, who thought of these bags as the

source of a *buoin's* devilry (LeClercq 1910: 90, 222). LeClercq (1910: 222) even boasts of the fact that he stole a *buoin*'s bag once so that he could look inside of it, with the bag's contents including,

…the juggler's Oŭahich*, a stone of the size of a nut wrapped in a box which he called the house of the devil. Then there was a bit of bark on which was a figurine, hideous enough, made from black and white wampum, and representing some monster…There was in addition, a little bow a foot long in length, together with a cord two fathoms long, interlaced with porcupine quills. It is with this fatal bow that they use to cause the death of little children in the womb of their mother…the bag contained also a fragment of bark, wrapped in delicate and very thin skin, on which were represented some children, birds, bear, beaver and moose. Finally, I found there a stick, a good foot in length, adorned with white and red porcupine quills; at its end were attached several straps of a half-foot in length and two dozen dew-claws of moose.*

Clearly, the items kept inside these bags, along with the bag itself, were considered precious to its owner.

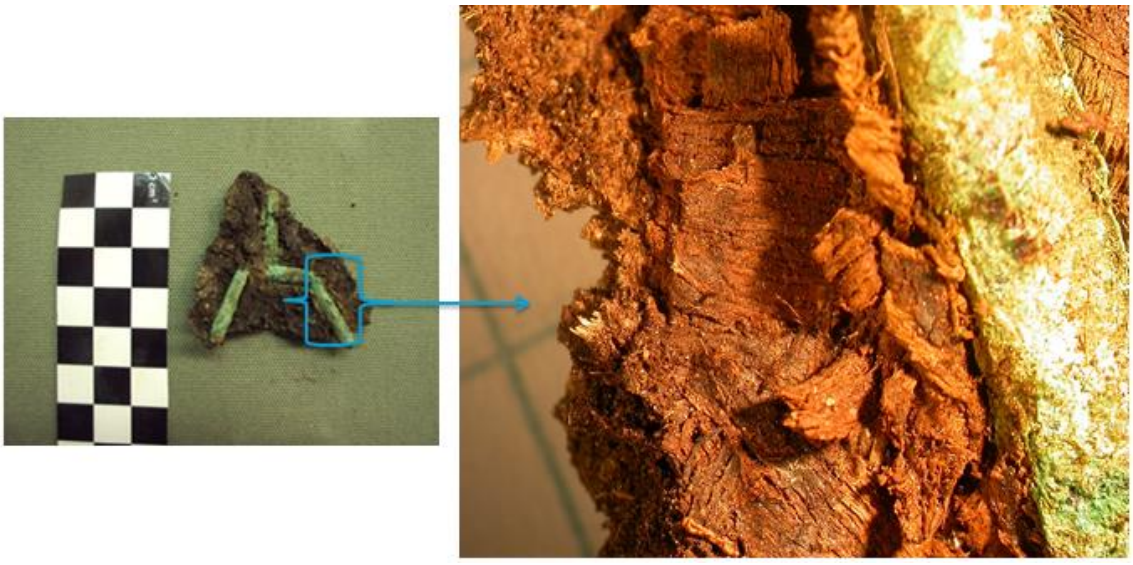

Figure 9.3 Twill-woven plant-fibre textile from Old Mission Point. (Left) Copper tube bead with insert, (Right) Close-up of bead with fragmented textile, photo by author. 30x.

It can also be argued that there is a connection between bags, pouches, and funerary ideology, as the bag holding the soul of the hunter's dead son is one of the main proponent's within the tale of Papkootparout and the Ghost World. The items found in

the Old Mission Point skeletal collection are associated with the myths surrounding the use of a bag as well, as all of the artifacts were found entangled in plant-fibre material that was identified as being a twill-woven bag or basket (Figure 9.3). Comparatively, the plant-fibre material used to construct this object, likely thinly cut strips of cattail leaves, matches closely with twine-woven cattail textile recovered from the Augustine Mound site (Figure 9.4). The remains of a juvenile, specifically the calcaneus and talus bones of an infant aged between 3 and 6 months, were also found embedded within this material.

Figure 9.4 Comparison of plant-fibre textiles. (Left) Twine-woven cattail textile from Augustine Mound, photo by A. Ferguson, taken from Gordon (1997). (Right) 50x. Twill-woven textile from Old Mission Point, photo by author

The identification of the twill-woven textile is important for several reasons: first, it classifies Old Mission Point as being one of only a handful of sites that plant-fibre textile has been recovered archaeologically in the Canadian Maritimes (Figure 9.5); secondly, it is one of only three locations where twill-woven textile has been found, with

twill-woven cedar-bark (*Thuja occidentalis*) mat fragments being recovered from the Newport and Augustine Mound sites; and third, it is only the second site where a bag comprised of plant-fibre material has been directly associated with the burial of juvenile human remains (Gordon 1995, 1997; Harper 1957; Whitehead 1987). At the Hopps site, the remains of a young child were found bound within a birch-bark bag at the bottom of Burial Pit #2 (Harper 1957). Much like at Old Mission Point, the remains of the Hopps site juvenile were buried alongside those of several adult individuals.

Figure 9.5 Mortuary sites in the Maritimes where plant-fibre textile has been recovered

Why bury a baby in bag or basket? From a practical point of view, the bodies of children are fragile and decompose at a faster rate than those of adults, as seen in the poor recovery rates of juvenile remains from excavated archaeological sites. Placing the body

of small child or infant in a bag or basket would have served to keep the body together, as well as provide a readily available burial container of acceptable size. However, the burial of the dead is seldom performed solely on a practical basis; part of what defines human societies, as opposed to the multitude of creatures that comprise the animal kingdom, is the sentimental, metaphorical, and often allegorical meaning behind our mortuary practices. If one takes into consideration how delicate and time-consuming the construction of this twine-woven cattail textile was, and keeping in mind that the written accounts state it was female members of Mi'gmaq communities who created such objects, one can interpret the burial of a child in this manner as deeply personal and symbolic. It would be reasonable to assume that a female member of this child's family painstakingly made this bag or basket either before or upon the death of this child, and that its inclusion in the child's grave served as reminder of that family's love for this little person. Like the contents of the *buoin's* bag described by LeClercq, other items of economic and potentially sentimental value were placed in the bag alongside the remains, such as those copper tube beads, which incidentally seem to match those found and photographed by Turnbull in 1972.

Moreover, though the writings of the French tell us that cradleboards for babies were made of wood, leather and sinew, and elaborately decorated with beads and paints, it would not be far-fetched to believe that plant-fibre textiles could have been included in their design. Or, that the twill-woven bag or basket in this case, took on the same function as a baby's cradleboard, to protect the child, in death. For other Native American culture groups, such as the Comanche and Kiowa tribes located in the American southwest, if a child died in its cradleboard, which was likely as babies were always in their traveling or

sleeping cradles unless they were being cleaned, fed, or played with, the cradleboard was buried with the child (Hail 2000: 32). Providing the child's cradleboard as a grave good reflects the notion of sending the dead to the afterlife with their best and most personal items, in order that they may continue their social existence in that place (Hail 2000: 32).

There are several other mortuary indications that the inclusion of Mi'gmaq children into adult society at an early age was fixed even after the occurrence of death. The Old Mission Point juveniles and adults were buried together, indicating that the location of burial for adults and juveniles did not differ. The wrapping of the twill-woven textile in birch bark and beaver fur would have further safeguarded against damage to this object. Adult human remains are also said to be wrapped in this manner (Denys 1908: 439; LeClercq 1901: 300). Though only skeletal elements from one juvenile individual were recovered in association with this textile, in this case, the only exception to differential burial practices between children and adults in the Old Mission Point assemblage is the actual inclusion of children's remains in this bag or basket. Without more information as to the burial context of the site nothing else can be said to distinguish the burials of the adults from those of children.

An alternate theory as to why a baby would be buried in this manner revolves around its connection with the tale of Papkootparout and the Ghost world, Mi'gmaq cosmology in general, and bags imbued with supernatural powers. In the tale of Papkootparout, the *skite'kmuj* of the hunter's dead child is placed in a bag to be transported back to the world of the living or Earth World (LeClercq 1910: 211). The hunter is told not to open the bag under any circumstances until the child's body has been prepared in a separate wigwam (LeClercq 1910: 211; Whitehead 2006: 212). The story

ends in tragedy, with the child's spirit fleeing back to the Ghost World, because the bag was left unsecured, forgotten about, and ultimately opened (LeClercq 1910: 213; Whitehead 2006: 212-214). The power that the bag holds, the choice between life and death, is clear. Additionally, the bag serves as vessel for the *skite'kmuj*, allowing it to travel back and forth between the worlds.

The implications of this interpretation of the tale of Papkootparout and the Ghost World in regards to the burial of this child is significant, for like the bag in the tale, the twill-woven bag or basket from Old Mission Point served to transport the spirit of the child between worlds; from the community of the living to the community of the dead. While this interpretation must be regarded as tenuous as it is only the second time this manner of burial for children has been identified, this researcher believes that the juvenile remains recovered with the twill-woven textile speaks to the ties between Mi'gmaq burial rites and cosmology, specifically the use of bags as vessels for worldly transitions and power.

The last issue of interpretation associated with identity and death is this concept of the Mi'gmaq preferentially burying their dead in secluded areas, usually bounded by some expanse of water, such as an island, away from their living communities (Lescarbot 1914:283; Wallis and Wallis 1955: 266-267). Reasons for this separation of the dead are complex, and involve the fear and the belief that ghosts could not cross water, as well as to prevent the pillaging of the graves of the dead by European settlers (Wallis and Wallis 1955: 266-267; Whitehead 2006: 207). It is for this latter reason that the location of burying grounds was supposed to be kept a secret among the Mi'gmaq (Lescarbot 1914: 283; Wallis and Wallis 1955: 266-267). As has previously been stated, LeClercq (1910:

302-303) makes mention of the fact that before permanently settling at *Tjigog* the northern Mi'gmaq peoples most ancient cemetery was located on *Tisniguet*, known today as Heron Island. Knowing the location of this cemetery, LeClercq (1910: 303) sought the place out and writes that he found a box burial replete with different funerary items. Such an action on the part of the LeClercq seems to substantiate the Mi'gmaq peoples' fear of the European settlers disturbing their dead. Yet, LeClercq's admission of grave pillaging is the only evidence that suggests burials were ever present on Heron Island.

Like at Atholville, artifacts and bones have been known to wash out around the shorelines of Dalhousie, New Brunswick, the closest modern town to Heron Island, indicating that potential prehistoric and protohistoric burials are located in and around this vicinity (Clarke 2000; Martijn 1968). However, no reliable archaeological find of a potential cemetery, or even single burial, has been found on Heron Island. In fact, with only a few exceptions, there is a paucity of reliable archaeological evidence for Mi'gmaq burials on islands in the Maritimes region in general. One such exception is the Late Woodland burials discovered by and incorporated into the research of Leonard (1996) on Skull Island. Yet, even here, there is evidence to suggest that living persons inhabited the islands of Shediac Bay at the time of these burials and that they were not solely used as cemeteries (Leonard 1996; personal communication, Dr. Michael Deal). While the effects of coastal erosion, which seems to be substantial in the Baie des Chaleurs area, could definitely have affected the preservation of such sites, there is simply not enough viable evidence to-date to support the idea that the dead were buried away or excluded from the communities of the living. The viability of such a claim is further denied by the fact that all of the major mortuary sites discovered in the Maritimes, such as those from

which textile has been recovered (refer back to Figure 9.5), are located on the mainland. The dates of these sites run the gamut from the Late Archaic Period up and until the Early Historic era. The close proximity of the Old Mission Point burials to the settlement of *Tjigog* further dispels this notion purveyed in the writings of the French that the dead were segregated from the living and buried on solitary islands. Instead, these findings support the idea that the living had a much closer relationship with the dead than communicated in any of the ethnohistorical or ethnographic material pertaining to the Mi'gmaq.

To deny the dead a landscape in close spatial proximity to the living is to deny their role in shaping identities. Our conceptualization of the lives of the dead provides the basis for aspects of collective identity involving ethnicity, lineage, and ancestry. In this way the identities of the dead do not change, but provide a stabilizing force in the identities of the living. The dead also remind the living of both their bodily and social limitations, and how biosocial aspects of identity are formed in relation to environmental pressures. These limitations, especially those of the body, create the basis for the fear of the dead. The dead body no longer resembles our perception of what a body is, what a person should look like, in our memories. This image of the dead body, combined with superstitions, and the foreboding landscape of the cemetery, which speaks to the inevitability of death for all persons, may be reason enough to separate communities of the living and communities of the dead. Such circumstances irrevocably change our perceptions, and the identities, of the dead. Though they may have feared the dead, the people of Old Mission Point clearly chose to bury their dead close-by, possibly in favour of claiming and providing a home for the ancestors and themselves.

This idea of any given landscape being a mix between public and private, the profane and sacred, the living and the dead has been discussed widely in the fields of philosophy, architecture, environmental ecology, and bioarchaeology, for many years (Foucault 1986; Parker Pearson and Richards 1994; Worpole 2003). While sharing space with the dead is often thought of as taboo, the designation of areas or communities of the dead close to living populations serves as a reminder of the time that has passed, and will continue to pass in the future. The communities of the dead document the successes and failures of humanity's efforts to make a difference, to improve the quality of living, in the world. Without the dead nearby the living cannot seek to rectify the mistakes of the past. There is also no action more powerful than the burial of the dead in a certain place, as the presence of the dead rules the landscape and proclaims the identity of a specific group of people. Therefore, to think of the separation of the dead from the living is to disassociate the identity and landscape of the ancestors with that of their descendants. Therefore, for cultural continuity and identity to persevere, the dead must be present within the landscapes of the living, as pointed out by Worpole (2003: 21-22) when he states,

Landscapes of the dead are always simultaneously landscapes of the living. It is the coterminousness of life and death that gives the burial site its salience and emotional power. Different societies, at different times, renegotiate the relationship between what anthropologists call 'life space' and 'burial space', depending on settlement patterns and the nature of livelihood. Indeed, it is salutary to remember that in some cities of the world, even today, burial space takes up almost as much ground as open space for the living.

Lastly, the burying ground speaks to the possibility of the afterlife, the last unknown. For some people the afterlife is a paradise, for others a place of rest and reflection. For the Mi'gmaq, the afterlife was simply another place to **be**; physically, spiritually, and with the same identity. The Mi'gmaq Ghost World as described in the tale

of Papkootparout directly mirrors that of the living world, the Earth World. There are wigwams, there are good and bad people, and these people go about doing and fulfilling those activities and roles they were accustomed to in life. There is no place better for the dead to continue those actions, to continue their identities, then alongside the living. The Mi'gmaq living at *Tjigog* certainly had a close spatial, biological, and social relationship with their dead, continuing to bury them, generation after generation in the same place. And why should this be surprising? The modern-day First Nations communities of Canada have made it a priority to protect and respect the lives and graves of their ancestors because of their ongoing close relationship with the dead. This is why the investigation into the burials from Old Mission Point is such a rare opportunity for the bioarchaeological community, and one that this researcher is particularly grateful for.

CHAPTER 10: CONCLUSIONS

The objectives of this study were to investigate the biological and social identities of the persons buried at Old Mission Point from a bioarchaeological perspective. Additionally, this thesis was intended to examine changes in identity after the occurrence of death in respect to funerary rites and mortuary behaviours. It has been made clear through this research effort that understanding how identities are formed, maintained, and transformed over the course of life and beyond is a difficult task that can only truly be explored by using a biocultural approach.

Incorporating a biocultural framework into the research design of this thesis allowed for multiple tendrils of information pertaining to identity to be pulled out of the various osteological, ethnohistorical, and archaeological sources consulted. This resulted in a great deal of information about the lifeways and deathways of the Mi'gmaq, with both similarities and discrepancies cropping up between these differing lines-of-evidence. Rectifying and interpreting this data proved daunting. Though each source of information is valuable unto itself, it is only when they are combined that a broad picture of biosocial aspects of identity can emerge. Such a conclusion warns researchers to be wary when favouring one line-of-evidence over another, and suggests fault in only taking a direct historical approach to such studies. By including several sources of information this project has elucidated on the relationships between biosocial identities, health, and burial practices among the Mi'gmaq.

10.1 Biological and Social Identity

The human remains from Old Mission Point are of Native American ancestry, with their being a minimum of 14 individuals within the skeletal assemblage. Of these individuals there are 5 adults and 9 juveniles, with sex only able to be identified for 3 of the adults (2 males, 1 female) in the sample. The results of the stable isotope analysis show the individuals living at the site of Old Mission Point were primarily marine resource hunter-gatherers. A marine-based diet is further confirmed by the dental pathology seen on the teeth of the adult individuals within the assemblage. While there appears to be variation in diet among the identified males and identified female in the skeletal collection, the small number of individuals in the sample does not allow for an interpretation regarding gendered variation in diet for the Mi'gmaq as a whole. In fact, evidence from the isotopic signatures of the juveniles, which exhibit the trophic level effect associated with the consumption of breastmilk, suggests a similarity in diet for males and females within the living population. The $\delta^{13}C$ and $\delta^{15}N$ values of the juveniles in the sample, though they appear to have been breastfed shortly before death, are much more similar to the $\delta^{13}C$ and $\delta^{15}N$ values of the adult male individuals. This indicates that their mothers and these identified males likely ate the same foods. Therefore, while the ethnohistories allude to differential dietary patterns among the Mi'gmaq according to social role and notions of female bodily uncleanliness, the results of this study cannot support those descriptions.

Juvenile weaning practices also differ between the results of the stable isotope analysis and the written accounts of the French. The isotopic evidence further suggests that weaning began at an early age, possibly as early as 6 months to 1 year of age, with

children being fully weaned by 3 to 4 years of age. However, it is likely that the timing and duration of weaning was highly variable. Weaning practices among the Mi'gmaq may have influenced juvenile morbidity and mortality rates, leaving children susceptible to new pathogen loads, as well as female social status and reproductive behavior. Weaning practices may have also been part of the early socialization of Mi'gmaq children. The written accounts describe that children were regarded as full members of society, although this acceptance was conditional upon mimicking and completing adult social roles and actions at an early stage of the life course. These social roles and actions were often linked with strenuous physical activities differentiated according to sex and gender. Biomechanical pressure on the growing and ageing body likely predisposed Mi'gmaq individuals to poor health and development of pathology, such as degenerative joint disease, later on in life. In building their identities, Mi'gmaq individuals were confronted with a series of biological versus social trade-offs throughout the life course.

10.2 Identity and Death

The graves discovered at Old Mission Point appear to be in the form of bundle burials, secondary burials in which the bones of the deceased are collected after the body has been allowed to decompose, subsequently cleaned and then reburied with full funerary ritual. This may indicate the season-of-death for these individuals was during the wintertime, when the isolation inside the wigwam and harsh conditions of the external environment may have exacerbated poor health within the population. Adult and juvenile persons were seemingly all buried together and in the same manner, though the specifics of individual grave locations and deposits are unknown. In this case, the only differentiation in mortuary behavior among adults and juveniles was the remains of an

infant being discovered inside the remnants of a twill-woven plant fibre bag or basket. Plant-fibre textile fragments have rarely been recovered from archaeological sites in the Maritimes, and this is only the second instance in which juvenile remains have been directly associated with such. The inclusion of a child's remains inside a bag or basket bears a striking resemblance to descriptions found in the ethnohistories and in Mi'gmaq legends of these same objects acting as vessels for carrying and holding special items and persons of power. Therefore, there may be a link between such a burial practice and Mi'gmaq cosmological beliefs, as such objects are said have supernatural abilities that allow them to travel between worlds.

The close spatial proximity of the Old Mission Point burials to the archaeologically-attested to features of the site of *Tjigog* suggests that there was a personal relationship between the communities of the living and the dead in this place. This contradicts the ethnohistorical accounts which state that the Mi'gmag purposefully separated the dead from the living by creating their cemeteries on secluded islands. Very little valid evidence of large-scale Mi'gmaq cemeteries being present on faraway islands exists in the Maritimes, with all major mortuary sites actually being located on the mainland close to established prehistoric and protohistoric settlements. Perhaps this is an indication that the identities of the dead were inherently merged with those of the living because of the relationship between ancestors, descendants, and the surrounding landscape.

10.3 Importance of Research and Future Directions

This research represents the first *biocultural* study of Mi'gmaq human remains in the Maritimes. It clearly shows the complexity in establishing the relationships between

different factors of identity over the life course, and how alternative perspectives on cultural, social, and biological behaviours can enrich, but also contradict, the study of the past. With due diligence, more archaeological fieldwork and attention to site reports will add to our understanding of how the Mi'gmaq have celebrated life and honoured their dead over the centuries, with their cultural traditions and ties to the Maritimes' landscape continuing today. Other avenues of osteological and biomolecular research, such as ancient DNA analyses, used in correspondence with the methods discussed here will further contribute to linking the peoples of the past and present.

More importantly this study represents the collaboration between several stakeholders interested in learning more about the site of Old Mission Point. The amount of information amassed by this study carries academic and ethical weight in relation to how osteological assessments are carried out in the future. The analysis of human remains, specifically of those that are Native American in ancestry, continues to be a delicate subject within the realm of bioarchaeology. Researchers must be willing to pull from various strands of knowledge, whether these be anthropologically, scientifically, or traditionally-based, to justify their study of the dead, and more so, must do this in a manageable amount of time. To give any less is a disservice to all involved. This project proves that cooperation is possible for the sake of uncovering and preserving the past, encouraging stewardship within the archaeological community. Finally, this study exemplifies the idea that even with a poorly preserved skeletal collection and misleading, if not entirely absent, information regarding burial environments, that bioarchaeological investigations of identity can be done and completed successfully.

REFERENCES

Adler, N.E. and J.M. Ostrove. 1999. Socioeconomic Status and Health: What We Know and What We Don't. *Annals New York Academy of Sciences* 896: 3-15.

Agarwal, S.C. 2012. The Past of Sex, Gender, and Health: Bioarchaeology of the Ageing Skeleton. *American Anthropologist* 114(2): 322-335.

Agarwal, S.C. and B.A. Glencross. 2011. *Social Bioarchaeology*. Blackwell Studies in Global Archaeology 14. Oxford:Wiley-Blackwell.

Albanese, J. and S.R. Saunders. 2006. Is It Possible to Escape Racial Typology in Forensic Identification? In *Forensic Anthropology and Medicine: Complementary Sciences from Recovery to Cause of Death*, eds. A. Schmitt, E. Cunha, and J. Pinheiro, pp.281-318. Totowa, NJ: Humana Press Inc.

Ambrose, S.H. 1990. Preparation and Characterization of Bone and Tooth Collagen for Isotopic Analysis. *Journal of Archaeological Science* 17(4): 431-451.

Ambrose, S.H. 1993. Isotopic Analysis of Paleodiets: Methodological and Interpretive Considerations. In *Investigations of Ancient Human Tissue*, ed. M.K. Sanford, pp.59-130. Langhorne, PA: Gordon and Breach.

Ambrose, S.H., J. Buikstra, and H.W. Krueger. 2003. Status and Gender Differences in Diet at Mound 72, Cahokia, Revealed by Isotopic Analysis of Bone. *Journal of Anthropological Archaeology* 22: 217-226.

Ames, K. A. 2001. Slaves, Chiefs, and Labour on the Northern Northwest Coast. *World Archaeology* 33 (1): 1-17.

Armelagos, G. J., T. Leatherman, M. Ryan, and L. Sibley.1992.Biocultural Synthesis in Medical Anthropology. *Medical Anthropology* 14: 35-52.

Aspin, C. and J. Hutchings. 2007. Reclaiming the Past to Inform the Future: Contemporary Views of Maori Sexuality. *Culture, Health & Sexuality* 9(4): 415-427.

Barrett, J.H. and M.P. Richards. 2004. Identity, Gender, Religion and Economy: New Isotope and Radiocarbon Evidence for Marine Resource Intensification in Early Historic Orkney, Scotland, UK. *European Journal of Archaeology* 7(3): 249-271.

Basgall, A.L. 2008. Northwestern Plains Indian Women: A Bioarchaeological Analysis of Changing Roles and Status. Unpublished M.A. Thesis, University of Wyoming.

Baxter, J.E. 2005. *The Archaeology of Childhood: Children, Gender, and Material Culture.* Oxford: Altamira Press.

Biggar, HP. 1922. *The Works of Samuel de Champlain*.6 vols. Toronto: The Champlain Society.

Binasco. M. 2007. Few, Uncooperative, and Endangered: The Troubled Activity of the Roman Catholic Missionaries in Acadia (1610-1710). *Royal Nova Scotia Historical Society* 10: 147-162.

Binford, L.R. 1971. Mortuary Practices: Their Study and Their Potential. *Memoirs of the Society for American Archaeology* 25: 6-29.

Bock, P. 1966. *The Micmac Indians of Restigouche: History and Contemporary Description*. Anthropological Series No. 77. Ottawa: National Museum of Canada.

Bogin, B. 1999. *Patterns of Human Growth*. Second Edition. Cambridge: Cambridge University Press.

Boone, J.L. and E.A. Smith. 1998. Is it Evolution Yet? A Critique of Evolutionary Archaeology. *Current Anthropology* 39, Supplement: 141-173.

Boulle, E.L. 2001. Evolution of Two Human Skeletal Markers of the Squatting Position: A Diachronic Study from Antiquity to the Modern Age. *American Journal of Physical Anthropology* 115:50-56.

Bourdieu, P. 1977. *Outline of a Theory of Practice*. Cambridge: Cambridge University Press.

Bourque, B.J. and R.H. Whitehead. 1985. Tarrentines and the Introduction of the European Trade Goods in the Gulf of Maine. *Ethnohistory* 32(4):327-341.

Bowden, B.S. and J.M. Bowden. 2005. *An Illustrated Atlas of the Skeletal Muscles.* Englewood, CO: Morton Publishing Company.

Bowman, S. 1990. *Interpreting the Past: Radiocarbon Dating*. Berkeley, CA: University of California Press.

Brickley, M. and J.I. McKinley. 2004. *Guidelines to the Standards for Recording Human Remains*. British Association of Biological Anthropology and Osteology and Institute of Field Archaeologists. Southhampton, UK: University of Southampton Press.

Brookes, T. 1972. The Physical Geography of the Atlantic Provinces. In *The Atlantic Provinces*, ed. A. G. McPherson, pp.1-45. Toronto: University of Toronto Press.

Brown, K. 2000. Ancient DNA Applications in Human Osteoarchaeology: Achievements, Problems and Potential. In *Human Osteology: In Archaeology and Forensic Science*, eds. M. Cox and S. Mays, pp.455-474. Cambridge: Cambridge University Press.

Brown, T. and K. Brown. 2011. *Biomolecular Archaeology: An Introduction*. Oxford:Wiley-Blackwell.

Brown, T.A., D.S. Nelson, J.S. Vogel, J.R. Southton. 1988. Improved Collagen Extraction by Modified Longin Method. *Radiocarbon* 30: 171-177.

Buikstra, J.E. 1977. Biocultural Dimensions of Archaeological Study: A Regional Perspective. Paper Presented at the 11th Annual Meeting of the Southern Anthropological Society.

Buikstra, J.E. and L.E. Beck. 2006. *Bioarchaeology: The Contextual Analysis of Human Remains.* Amsterdam: Elsevier.

Buikstra, J.E and D.H. Ubelaker. 1994. *Standards for Data Collection from Human Skeletal Remains*. Arkansas Archaeological Survey Research Series No 44, Fayetteville.

Burley, D.V. 1981. Proto-Historic Effects of the Fur Trade on MicMac Culture: Northeastern New Brunswick. *Ethnohistory* 28(3): 203-216.

Cardoso, H.F.V. 2007. Environmental Effects on Skeletal Versus Dental Development: Using a Documented Subadult Skeletal Sample to Test a Basic Assumption in Human Osteological Research. *American Journal of Physical Anthropology* 132(2): 223-233.

Chamberlain, A. F. 1891. Nanibozhu amongst the Otchipwe, Missisaugas, and other Algonkian tribes. *The Journal of American Folklore* 4 (14): 193 -213.

Chandler, R.F., L. Freeman, and S.N. Hooper. 1979. Herbal Remedies of the Maritime Indians. *Journal of Ethnopharmacology* 1:49-68.

Chute. J.E. 1998. Mi'kmaq Fishing in the Maritimes: An Overview. In *Earth, Water, Air and Fire: Studies in Canadian Ethnohistory*, ed. D.T. McNab, pp. 95-113. Waterloo, ON: Wilfrid Laurier University Press.

Claassen, C. 2001. Challenges for Regendering Southeastern Prehistory. In *Archaeological Studies of Gender in the Southeastern United States*, ed. J.M. Eastman.pp.10-26. Gainsville, FL: University Press of Florida.

Clarke, P.D. 1999. A la recherché de La Petite-Rochelle: Memory and Identity in Restigouche. *Acadiensis* XXVIII (2): 3-40.

Clarke, P.D. 2000. Land of East Wind: Mise en Forme d'une Memoire Mi'gmaq. *Canadian Review of Sociology* 37(2): 167-195.

Conkey, M.W. and J.D. Spector. 1984. Archaeology and the Study of Gender. *Advances in Archaeological Method and Theory* 7:1-38.

Cooley, C.H. 1902. *Human Nature and the Social Order*. New York: Schreiber.

Cox, M. 2000. Ageing Adults from the Skeleton. *In Human Osteology: In Archaeology and Forensic Science*, eds. M. Cox and S. Mays, p.61-82.

D'Abbeville, C. 1963. *Histoire de la Mission des Peres Capuciens en l'Isle de Maragnan et Terres Circonvoisins*, trans. by A. Metraux and J. Lafaye. Verlagsanstalt: Akademische Druck-u.

Daigneault, M., Bouchardon, J.-L., and B. Guy. 2004. Coastal Cliff Erosion Vulnerability on the Canadian East Coast (Baie des Chaleurs area): A Multi-parameter Visualization Tool. In *Coastal Chalk Cliff Instability*, ed. by R.N. Mortimore and A. Duperret, pp. 149-168. Geological Society Engineering Geology Special Publication No. 20. Bath, UK: The Geological Society.

Daniel, T.M. 2000. The Origins and Precolonial Epidemiology of Tuberculosis in the Americas: Can We Figure Them Out? *International Journal of Tuberculosis and Lung Disease* 4(5): 395-400.

Deal, M. 1990. Exploratory Analysis of Food Residues from Prehistoric Pottery and Other Artefacts from Eastern Canada. *Society for Archaeological Sciences Bulletin* 13 (1): 6-12.

Deal, M. 2008. Paleoethnobotanical Research in the Maritime Provinces. *North Atlantic Archaeology* Vol. 1: 1-23.

Deal, M., J. Morton, and E. Foulkes. 1991. The Role of Ceramics among the Prehistoric Hunter-Gatherers of the Maine-Maritimes Region: A View from the New Brunswick Interior. In *Prehistoric Archaeology of the Maritime Provinces*, ed. M. Deal and S. Blair, pp. 171-196. Reports in Archaeology No. 8 Fredericton: Council of Maritime Premiers.

DeNiro, M.J. 1985. Postmortem preservation and alteration of in vivo bone collagen isotope ratios in relation to palaeodietary reconstruction. *Nature* 317: 806-809.

DeNiro, M.J. and S. Epstein. 1981. Influence of diet on the distribution of nitrogen isotopes in animals. *Geochimica et Cosmochimica Acta* 45: 495-506.

Dennis,C. 1934. *Down in Nova Scotia*. Toronto: Ryerson.

Denys, Nicolas. 1908. *The Description and Natural History of the Coasts of North America,* trans. by W.F. Ganong. Toronto: The Champlain Society.

DePaulis, F.D., A. Cacchio, O. Michelini, A. Damiani and R. Saggini. 1998. Sports Injuries in the Pelvis and Hip: Diagnostic Imaging. *European Journal of Radiology* 27(1): S49- S59.

Deter, C.A. 2009. Gradients of Occlusal Wear in Hunter-Gatherers and Agriculturalists. *American Journal of Physical Anthropology* 138:247-254.

De Vos, G. 1975. Introduction. In *Ethnic Identity: Cultural Continuities and Change*, eds. G. De Vos and L. Romanucci-Ross, pp. 1-10. Los Angeles: Mayfield Publishing Co.

De Vos, G. and L. Romanucci-Ross. 1975. *Ethnic Identity: Cultural Continuities and Change*. Los Angeles: Mayfield Publishing Co.

De Vries, H. 1958. Variation in Concentration of Radiocarbon with Time and Location on Earth. *Proceedings Koninklijke Nederlandse Akademie van Wetenschappen*, Series B61: 94-102.

Donald, L. 1997. *Aboriginal Slavery on the Northwest Coast of America*. Los Angeles: University of California Press.

Drake, A. and M. Oxenham. 2012. Disease, Climate and the Peopling of the Americas. *Historical Biology: An International Journal of Paleobiology*, iFirst Article, p.1-33.

Dupras, T.L., H.P. Schwarcz, and S. I. Fairgrieve. 2001. Infant Feeding and Weaning Practices in Roman Egypt. *American Journal of Physical Anthropology* 115: 204-212.

Echo-Hawk, R.C. 2000. Ancient History in the New World: Integrating Oral Traditions and the Archaeological Record in Deep Time. *American Antiquity* 65(2): 267-290.

Elliot, M.and M. Collard. 2009. FORDISC and the Determination of Ancestry from Cranial Measurements. *Biology Letters* 23: 849-852.

Faccia, K.J. and R.C. Williams. 2008. Schmorl's Nodes: Clinical Significance and Implications for the Bioarchaeological Record. *International Journal of Osteoarchaeology* 18: 24-44.

Fahlander, F. and T. Oestigaard. 2008. *The Materiality of Death: Bodies, Burials, and Beliefs.* BAR International Series 1768. Oxford: Archaeopress.

Fetterman, D.M. 2008. Ethnography. In *The SAGE Encyclopedia of Qualitative Research*, ed. L.M. Given, pp.288-292. London. SAGE Publications.

Fogel, M.L., N. Tuross, and D.W. Owsley. 1989. Nitrogen Isotope Tracers of Human Lactation in Modern and Archaeological Populations. *Annual Report of the Director, Geophysical Laboratory, Carnegie Institute of Washington* 89: 111-117.

Forrest, C.L. 2010. *Iroquoian Infant Mortality and Juvenile Growth, 1250 to 1700 AD*. Unpublished Ph.D. Dissertation, University of Toronto.

Foucault, M.and J. Miskoweic. 1986. Of Other Spaces. *Diacritics* 16(1):22-27

Fowler, C. 2004. *The Archaeology of Personhood: An Anthropological Approach*. New York: Routledge.

Franks, D.D. and V. Gecas. 1992. Autonomy and Conformity in Cooley's Self-Theory: The Looking-Glass Self and Beyond. *Symbolic Interaction* 15: 49-68.

Fuller, B.T., T.I Molleson, D.A. Harris, L.T. Gilmour and R.E.M Hedges. 2006a. Isotopic Evidence for Breastfeeding and Possible Adult Dietary Differences from Late/Sub-Roman Britain. *American Journal of Physical Anthropology* 129:45-49.

Fuller, B.T., J.L. Fuller, D.A. Harris and R.E.M. Hedges. 2006b. Detection of Breastfeeding and Weaning in Modern Human Infants with Carbon and Nitrogen Stable Isotope Ratios. *American Journal of Physical Anthropology* 129: 279-298.

Fully, G. 1956. Une Nouvelle Methode de Determination de la Taille. *Année Medicine Legale* 35: 266-273.

Gamble, L.H., P.L. Walker and G.S. Russell. 2001. An Integrative Approach to Mortuary Analysis: Social and Symbolic Dimensions of Chumash Burial Practices. *American Antiquity* 66(2): 185-212.

Ganong, W.F. 1908. Introduction: Nicolas Denys, The Times, The Man, and The Book. In *The Description and Natural History of the Coasts of North America,* by Nicolas Denys, trans. by W.F. Ganong, pp.1-36. Toronto: The Champlain Society.

Ganong, W.F. 1910.Introduction: Father Chréstien LeClercq and His Gaspesian Work. In *New Relation of Gaspesia: With the Customs and Religion of the Gaspesian Indians,* by Chréstien LeClercq trans. by W.F. Ganong, pp.1-41. Toronto: The Champlain Society.

Garlie, T. N. 1992. *An Ethnohistorical and Archaeological Review regarding Aboriginal Mortuary Remains reported from Nova Scotia and New Brunswick and the Potential for Future Research.* Unpublished Honours Essay, Memorial University.

Geller, P.L. 2008. Conceiving Sex: Fomenting a Feminist Bioarchaeology. *Journal of Social Archaeology* 8: 113-138.

Genovés, S. 1967. Proportionality of the Long Bones and Their Relation to Stature Among Mesoamerican. *American Journal of Physical Anthropology* 26: 67-78.

Gilchrist, R. 2004. Archaeology and the Life Course. A Time for Age and Gender. In *Companion to Social Archaeology: A Reader*, eds. L. Meskell and R.I.Preucel, pp.142-156. Oxford: Blackwell Publishing.

Gill, G.W. 1998. Craniofacial Criteria in the Skeletal Attribution of Race. In *Forensic Osteology: Advances in the Identification of Human Remains,* eds. K.J. Reichs, pp.293-315. Springfield, Illinois: Charles C. Thomas Publishing.

Gillespie, S.D. 2001. Personhood, Agency, and Mortuary Ritual: A Case Study from the Ancient Maya. *Journal of Anthropological Archaeology* 20: 73-112.

Glencross, B.A. 2011. Skeletal Injury Across the Life Course: Towards Understanding Social Agency. In *Social Bioarchaeology*, eds. S.C. Agarwal and B.A. Glencross, pp.390-409. Oxford: Wiley-Blackwell.

Gordon, J. 1995. *Mi'kmaq Textiles: Sewn-Cattail Matting: BkCp-1Site Pictou, Nova Scotia.* Curatorial Report No. 80, Nova Scotia Museum, Halifax.

Gordon, J. 1997. *Mi'kmaq Textiles Twining: Rush and Other Fibres BkCp-1 Site Pictou, Nova Scotia.* Curatorial Report No. 82, Nova Scotia Museum, Halifax.

Gowland, R. 2006. Ageing the Past. Examining Age Identity from Funerary Evidence. In *Social Archaeology of Funerary Remains*, eds. R. Gowland and C.J. Knusel, pp.143-153. Oxford: Alden.

Grauer, A.L. and P. Stuart-Macadam. 1998. *Sex and Gender in Paleopathological Perspective*. Cambridge: Cambridge University Press.

Hail, B.A. 2000. *Gifts of Pride and Love: Kiowa and Comanche Cradles*. Studies in Anthropology and Material Culture No. 7. Haffenreffer Museum of Anthropology, Brown University.

Halcrow, S.E.and N. Tayles. 2008. The Bioarchaeological Investigation of Childhood and Social Age: Problems and Prospects. *Journal of Archaeological Method and Theory* 15: 190-215.

Halpin, M.M. and M. Seguin. 1990. Tsimshian Peoples: Southern Tsimshian, Coast Tsimshian, Nishga, and Gitksan. In *Handbook of North American Indians Vol. 7: Northwest Coast*, eds. W. Suttles and W. Sturtevant, pp.267-284. Washington, DC: Smithsonian Institution.

Hamilakis, Y., M. Pluciennik, and S. Tarlow. 2002. *Thinking Through the Body: Archaeologies of Corporeality*. New York: Kluwer Plenum.

Harper, J.R. 1957. Two Seventeenth Century Micmac "Copper Kettle" Burials. *Anthropologica* 4:11-36.

Harris, H. 2005. Indigenous Worldviews and Ways of Knowing as Theoretical and Methodological Foundations for Archaeological Research. In *Indigenous Archaeologies: Decolonizing Theory and Practice*, eds. C. Smith and H.M. Wobst, pp. 30-37. New York: Routledge.

Hawkey, D. E. and C. F. Merbs. 1995. Activity-induced Musculoskeletal Stress Markers (MSM) and subsistence strategy among ancient Hudson Bay Eskimos. *International Journal of Osteoarchaeology* 5(4): 324-338.

Hays-Gilpin, K. 2000. Beyond Mother Earth and Father Sky: Sex and Gender in Ancient Southwestern Visual Arts. In *Reading the Body*, ed. A.E. Rautmann, pp.165-186. Philadelphia: University of Pennsylvania Press.

Headlund, T. 1990. A Dialogue between Kenneth Pike and Marvin Harris on Emic and Etic. In *Emic and Etic: The Insider/Outside Debate*, eds. T. Headlund, K. Pike, and M. Harris. London: SAGE Publications.

Hedges, R.E.M., J.G. Clement, C.D.L. Thomas, T.C. O`Connell. 2007. Collagen Turnover in the Adult Femoral Mid-Shaft Modeled from Anthropogenic Radiocarbon Tracer Measurements. *American Journal of Physical Anthropology* 133 (2): 808-816.

Hefner, J.T. 2009. Cranial Non-Metric Variation and Estimating Ancestry. *Journal of Forensic Science* 54(5): 985-995.

Heilen, M.P. 2012. *Uncovering Identity in Mortuary Analysis: Community-Sensitive methods for Identifying Group Affiliation in Historical Cemeteries*. Walnut Creek, CA: Left Coast Press Inc.

Herdman, J.C. 1883. Sketches in Restigouche History. *The Daily Sun* newspaper, Saint John, NB., 10 January -14 February issue.

Hertz, R. 1960. *Death and the Right Hand*. New York: Cohen & West.

Hillson, S. 1996. *Dental Anthropology*. Cambridge: Cambridge University Press.

Hollimon, S.E. 1996. Sex, Gender and Health Among the Chumash: An Archaeological Examination of Prehistoric Gender Roles. *Proceedings for California Archaeology* 9: 205-208.

Hollimon, S.E. 1997. The Third Gender in Native California. In *Women in Prehistory: America and Mesoamerica*, eds. C. Claassen and R.A. Joyce, pp. 173-188. Philadelphia: University of Pennsylvania Press.

Hollimon, S. E. 2011. Sex and Gender in Bioarchaeological Research: Theory, Method and Interpretation. In *Social Bioarchaeology*, eds. S.C. Agarwal and B.A. Glencross, pp.149-182. Blackwell Studies in Global Archaeology 14. Oxford:Wiley-Blackwell.

Hornborg, A.C. 2006. Visiting the Six Worlds: Shamanistic Journey in Canadian Mi'kmaq Cosmology. *The Journal of American Folklore* 119(33): 317-336.

Hornborg, A.C. 2008. *Mi'kmaq Landscapes: From Animism to Sacred Ecology*. Burlington, VT: Ashgate Publishing Co.

Hosie, R.C. 1969. *Native Trees of Canada*. Ottawa: Canadian Forest Service, Queens Printer.

Hubert, J. 2000. *Madness, Disability, and Social Exclusion: The Archaeology and Anthropology of 'Difference'*. New York: Routledge.

Insoll, T. 2004. *Archaeology, Ritual, Religion*. New York: Routledge.

Insoll,T. 2007. *The Archaeology of Identities: A Reader*. New York: Routledge.

Jaenen, C.J. 1974. Amerindian Views of French Views in the Seventeenth Century. *The Canadian Historical Review* LV(3): 261-291.

James, K. 2006. Identity, Cultural Values, and American Indians' Perceptions of Science and Technology. *American Indian Culture and Research Journal* 30(3): 45-58.

Jones, S. 1996. Discourses of Identity in the Interpretation of the Past. In *Social Construction of the Past*, eds. G.C. Bond and A. Gillam, pp.62-80. London: Routledge.

Joyce, R.A. 2000. Girling the Girl and Boying the Boy: the Production of Adulthood in Ancient Mesoamerica. *World Archaeology* 31(3):473-483.

Joyce, R.A. 2001. Burying the Dead at Tlatilco: Social Memory and Social Identities. In *Social Memory, Identity, and Death: Anthropological Perspectives on Mortuary Rituals*, ed. M.S. Chesson, pp.12-26. Archeological Papers of the American Anthropological Association Number 10.

Julien, D.M., T. Bernard, L.M. Rosenmeier. 2008. Paleo is Not Our Word: Protecting and Growing a Mi'mawey Place. In *Archaeologies of Placemaking: Monuments, Memories, and Engagement in Native North America*, ed. P.E. Rubertone, pp. 35-58. Walnut Creek, CA: Left Coast Press Inc.

Jurmain, R. 1990. Paleoepidemiology of a Central California Prehistoric Population from CA-ALA-329: II. Degenerative Disease. *American Journal of Physical Anthropology* 81:83-94.

Jurmain, R. and L. Kilgore. 1995. Skeletal Evidence of Osteoarthritis: A Palaeopathological Perspective. *Annals of the Rheumatic Diseases* 54: 443-450.

Katzenberg, M.A, D.A. Herring, and S.R. Saunders. 1996. Weaning and Infant Mortality: Evaluating the Skeletal Evidence. *Yearbook of Physical Anthropology* 39: 177-199.

Keating, E. 2001. The Ethnography of Communication. In *Handbook of Ethnography*, eds. P. Atkinson, A. Coffey, S. Delamont, J, Lofland and L.Lofland, pp.285-301. London: SAGE Publications.

Keenlyside, D. 1980. Current Research in the Maritime Provinces 1978. In *Archaeological Survey of Canada Annual Reviews 1977-1979*, ed. R. Marois, pp.14-16. Mercury Series vol. 95. National Museum of Man, Ottawa.

Kelley, M.A. 1979. Sex Determination with Fragmented Skeletal Remains. *Journal of Forensic Sciences* 24(1): 154-158.

Key, C.A., L.C. Aiello, and T. Molleson. 1994. Cranial Suture Closure and Its Implications for Age Estimation. *International Journal of Osteoarchaeology* 4(3):193-207.

Klaus, H.D. 2008. *Out of the Light Came Darkness: Bioarchaeology of Mortuary Ritual, Health, and Ethnogenesis in the Lambayeque Valley Complex, North Coast Peru (AD 900-1750*). Unpublished Ph.D Dissertation, Ohio State University.

Knudson, K.J. and C.M. Stojanowski. 2008. New Directions in Bioarchaeology: Recent Contributions to the Study of Human Social Identities. *Journal of Archaeological Research* 16: 397-432.

Knudson, K.J. and C.M Stojanowski. 2009. *Bioarchaeology and Identity in the Americas*. Gainesville, FL: University Press of Florida.

LaRoche, C.J. and M.L.Blakey. 1997. Seizing Intellectual Power: The Dialogue at the New York African Burial Ground. *Historical Archaeology* 31(3):84-106.

Lacourt, J., D. St. Clair, P.K.Kokotailo, D. Wilson, and B. Chewing. 2005. 'Know Your Roots': Development and Evaluation of an Oral History Curriculum for Native American Middle-School Students. *American Indian Culture and Research* Journal 29(4):59-74.

Lambert, P.M. 1993. Health in Prehistoric Populations of the Santa Barbara Channel Islands. *American Antiquity* 58(3): 509-522.

Larsen, C.S. 2002. Bioarchaeology: The Lives and Lifestyles of Past People. *Journal of Archaeological Research* 10(2): 119-166.

Larsen, C.S. and P.L. Walker. 2005. The Ethics of Bioarchaeology. In *Biological Anthropology and Ethics: From Repatriation to Genetic Identity*, ed. T.R. Turner, pp.111-119. Albany, New York: State University of New York Press.

LeClercq, Father Chrestien. 1910. *New Relation of Gaspesia: With the Customs and Religion of the Gaspesian Indians,* trans. by W.F. Ganong. Toronto: The Champlain Society.

Leonard, K.J.M. 1996. *Mi'kmaq Culture during the Late Woodland and Early Historic Periods*. Unpublished Ph.D. Dissertation,University of Toronto.

Leonard, K. 2002a. *Archaeology of the Restigouche River, New Brunswick: A Summary*. Wesgijinua'luet Research Title Project, Mi'gmawei Mawiomi Secretariat.

Leonard, K. 2002b. *Archaeology of the New Brunswick Sites of Gespegewagij*. Wesgijinua'luet Research Title Project, Mi'gmawei Mawiomi Secretariat.

Lescarbot, M. 1907. *The History of New France*, Vol. I. trans. by W.L Grant and H.P> Biggar. Toronto: The Champlain Society.

Lescarbot, M. 1914. *The History of New France,* Vol.III, trans. by W.L. Grant and H.P Biggar. Toronto: The Champlain Society.

Lesure, R.G. 2005. Linking Theory and Evidence in an Archaeology of Human Agency: Iconography, Style, and Theories of Embodiment. *Journal of Archaeological Method and Theory* 12(3): 237-255.

Levi-Strauss, C. 1982. *The Way of Masks*. Seattle, WA: University of Washington Press.

Lieverse, A.R. 1999. Diet and the Aetiology of Dental Calculus. *International Journal of Osteoarchaeology* 9: 219-232.

Little, E.A. and M.J. Schoeninger. 1995. The Late Woodland Diet on Nantucket Island and the Problem of Maize in Coastal New England. *American Antiquity* 60 (2): 351-368.

Littleton, J. and B. Frolich. 1993. Fish Eaters and Farmers: Dental Pathology in the Arabian Gulf. *American Journal of Physical Anthropology* 92:427-447.

Lockerby, E. 2004. Ancient Mi'kmaq Customs: A Shaman's Revelations. *The Canadian Journal of Native Studies* XVIV (2): 403-423.

Lovejoy, C.O. 1985. Dental Wear in the Libben Population: Its Functional Pattern and Role in the Determination of Adult Skeletal Age at Death. *American Journal of Physical Anthropology* 68(1):47-56.

Lyman, R.L. and M.J. O'Brien. 2001. The Direct Historical Approach, Analogical Reasoning, and Theory in Americanist Archaeology. *Journal of Archaeological Method and Theory* 8(4): 303-342

Mack, M.E. and M.L. Blakey. 2004. The New York African Burial Ground project: past biases, current dilemmas, and future research opportunities. *Historical Archaeology* 38 (1): 10 – 17.

Mackowiak, P.A., V. Tiesler Blos, M. Anguilar, and J.E. Buikstra. 2005. On the Origin of American Tuberculosis. *Clinical Infectious Diseases* 14(4): 515-518.

Maillard, P. 1758. *An Account of the Customs and Manners of the Micmakis and Maricheets Savage Nations*. Ottawa: Canadian Institute of Microreproductions.

Maillard, P. 1863. 'Lettre de M. L'Abbé Maillard sur les Missions de l'Acadie et Particulièrement sure les Missions Micmaques'. In *Les Soirées Canadiennes*, Vol.3, pp. 315-320. Québec: Brosseau and Frères.

Maresh, M.M. 1970. Measurements from Roentgenograms, Heart Size, Long Bone Lengths, Bone, Muscle, and Fat Widths, Skeletal Maturation. In *Human Growth and Development*, ed. R.W. McCammon, pp.155-200. Springfield, IL: Charles C. Thomas.

Martijn, C. 1968. *An Archaeological Survey of the Northeast Coast of New Brunswick 1968 (Restigouche and Gloucester Counties)*. Ms. Historical Resources Administration, Fredericton, New Brunswick.

Martin, C. 1975. The Four Lives of a Micmac Copper Pot. *Ethnohistory* 22(2):111-133.

Martin, C. 1978. The War between Indians and Animals. *Natural History* 87(6): 92-96.

Martin, D.L., R.P.Harrod, and M. Fields. 2010. Beaten Down and Worked to the Bone: Bioarchaeological Investigations of Women and Violence in the Ancient Southwest. *Landscapes of Violence* 1(1): 1-19.

Mason, R. 2000. Archaeology and Native North American Oral Traditions. *American Antiquity* 65:239-266.

Mayes, A.T. 2010. Shades of Gray: Skeletal Analysis and the Repatriation Process. *American Indian Culture and Research Journal* 34(1):25-39.

Mays, S. 2000. New Directions in the Analysis of Stable Isotopes in Excavated Bones and Teeth. In *Human Osteology: In Archaeology and Forensic Science*, eds. M. Cox and S. Mays, pp. 435-438. Cambridge: Cambridge University Press

Mays, S. and M. Cox. Sex Determination in Skeletal Remains. In *Human Osteology: In Archaeology and Forensic Science,* eds. M. Cox and S. Mays, pp. 117-130.Cambridge: Cambridge University Press.

McLaughlin, S.M. and M.F. Bruce. 1986. The Sciatic Notch/Acetabular Index as a Discriminator of Sex in European Skeletal Remains. *Journal of Forensic Sciences* 31(4): 1380-1390.

Mead, G.H. 1934. *Mind, Self and Society: From the Standpoint of a Social Behaviourist*, ed. by C.W. Morris. Chicago: Chicago University Press.

Meindl, R.S. and C.O. Lovejoy. 1985. Ectocranial Suture Closure: A Revised Method for the Determination of Skeletal Age-At-Death based on the Lateral-Anterior Sutures. *American Journal of Physical Anthropology* 68(1): 57-66.

Meskell, L. 2001. Archaeologies of Identity. In *Archaeologogical Theory: Breaking the Boundaries*, ed. I. Hodder, pp. 187 -213. Cambridge, UK: Polity.

Meskell, L. 2002. The Intersections of Identity and Politics in Archaeology. *Annual Review of Anthropology* 31:279-301.

Miller, V.P. 1976. Aboriginal Micmac Population: A Review of the Evidence. *Ethnohistory* 23(2): 117-127.

Mizoguchi, K. 2000. The Child as a Nod of Past, Present and Future. In *Children and Material Culture*, ed. J.R. Sofaer Derevenski, pp.141-150. New York: Routledge.

Mok, F.P.S., Samartzis, D., Kappinen, J., Luk, K.D.K., Fong, D.Y.T, and K.M.C. Cheung. 2010. Prevalence, Determinants, and Association of Schmorl's Nodes of the Lumbar Spine with Disc Degeneration. *SPINE* 35(21): 1944-1952.

Molnar, P., Ahlstrom, T.P., and I. Leden. 2011. Osteoarthritis and Activity – An Analysis of the Relationship Between Eburnation, Musculoskeletal Stress Markers (MSM) and Age in Two Neolithic Hunter-Gatherer Populations from Gotland, Sweden. *International Journal of Osteoarchaeology* 21: 283-291.

Nielsen-Marsh, C. A. Gernaey, G. Turner-Walker, R. Hedges, A. Pike, and M. Collins. 2000. The Chemical Degradation of Bone. In *Human Osteology: In Archaeology and Forensic Science*, eds. M. Cox and S. Mays, pp.439-454. Cambridge: Cambridge University Press.

Nilsson-Stutz, L. 2008. More than Metaphor: Approaching the Human Cadaver in Archaeology. In *The Materiality of Death: Bodies, Burials, and Beliefs,* eds. F.Fahlander and T. Oestigaard, pp.19-28. BAR International Series 1768. Oxford: Archaeopress.

Nystrom, K.C. 2009. The Reconstruction of Identity: A Case Study from Chachapoya, Peru. In *Bioarchaeology and Identity in the Americas*, eds. K.J. Knudson and C.M. Stojanowski, pp.82-102. Gainesville, FL: University Press of Florida.

O'Connell, L. 2004. Guidance on recording Age-at-Death in Adults. In *Guidelines to the Standards for Recording Human Remains*, eds. M. Brickley and J.I. McKinley, pp. 14-17. British Association of Biological Anthropology and Osteology and Institute of Field Archaeologists. Southhampton, UK: University of Southampton Press

Orser, C.E. 1994. The Archaeology of African-American Slave Religion in the Antebellum South. *Cambridge Archaeological Journal* 4(1): 33-45.

Ortner, D.J. and G.J. Putschar. 1981. *Identification of Pathological Conditions in Human Skeletal Remains*. Washington, DC: Smithsonian Contributions to Anthropology 28.

Ousley, S.D. and R.L. Jantz. 2012. Fordisc 3 and Statistical Methods for Estimating Sex and Ancestry. In *A Companion to Forensic Anthropology*, First Edition, ed. D.C. Dirkmaat, pp.311-329. Oxford: Wiley-Blackwell.

Pacifique, P. 1934. *Le Pays de Micmacs*. Bulletin de la Société de Géographie de Québec. Montréal: Laval University.

Parker-Pearson, M and C. Richards. 1994. Ordering the World: Perceptions of Architecture, Space and Time. In *Order and Architecture: Approaches to Social Space*, eds. M. Parker-Pearson and C. Richards, pp.1-33. New York: Routledge Press.

Peebles, C.S. and S.M. Kus. 1977. Some Archaeological Correlates of Ranked Societies. *American Antiquity* 42(3): 421-448.

Perry, M.A. 2005. Redefining Childhood through Bioarchaeology: Toward an Archaeological and Biological Understanding of Children in Antiquity. *Archeological Papers of the American Anthropological Association* 15(1):89-111.

Petilon, J, D.R. Carr, J.K. Sekiya, and D.V. Unger. 2005. Pectoralis Major Muscle Injuries: Evaluation and Management. *Journal of the American Academy of Orthopaedics* 13(1): 59-68.

Pickard,R.P., Blair R.S. and J.L. Peppar. 1983. Habitat Spot-Check Surveys, Restigouche River System, 1981. *Canadian Data Report of Fisheries and Aquatic Sciences*, No. 378. Halifax, Nova Scotia, Fisheries Research Branch, Department of Fisheries and Oceans.

Pike, K. 1954. *Language in Relation to a Unified Theory of the Structure of Human Behavior*. The Hague, Netherlands: Mouton.

Prins, H.E.L. 1996. *The Mi'kmaq: Resistance, Accommodation, and Cultural Survival.* Forth Worth: Harcourt Brace College Publishers.

Privat, K.L. and T.C. O'Connell. 2002. Stable Isotope Analysis of Human and Faunal Remains from the Anglo-Saxon Cemetery in Berinsfield, Oxfordshire: Dietary and Social Implications. *Journal of Archaeological Science* 29:779-790.

Proulx, G. 1999. *Fighting at Restigouche: The Men and Vessels of 1760 in Chaleur Bay*. National Historic Site, Parks Canada, Department of Canadian Heritage.

Rand, S.T. 1894. *Legends of the Micmacs*. New York: Longmans, Green and Co.

Redfern, R.C. and S.N. DeWitte. 2011. Status and Health in Roman Dorset: The Effect of Status on Risk of Mortality on Post-Conquest Populations. *American Journal of Physical Anthropology* 126(2): 197-208.

Restigouche River Watershed Management Council Fact Sheet. 2011. The Canadian Heritage Rivers System and Restigouche River Watershed Council.

Rhine, S. 1990. Non-Metric Skull Racing. In *Skeletal Attribution of Race*, eds. G.W. Gill and S. Rhine, pp.9-20. Maxwell Museum of Anthropology, Anthropology Papers, No.4.

Richards, M.P., P.B. Pettitt, M.C. Stiner, and E. Trinkaus. 2001. Stable Isotope Evidence for Increasing Dietary Breadth in the European Mid-Upper Paleolithic. *Proceedings of the National Academy of Sciences of the United States* 98(11): 6528-6532.

Richards, M.P., S. Mays and B.T. Fuller. 2002. Stable Carbon and Nitrogen Isotope Values of Bone and Teeth Reflect Weaning Age at the Medieval Wharram Percy Site, Yorkshire, UK. *American Journal of Physical Anthropology* 119: 205-210.

Riggs, C. 2002. Facing the Dead: Recent Research on the Funerary Art of Ptolemaic and Roman Egypt. *American Journal of Archaeology* 106(1):85-101.

Riggs, C. 2005. *The Beautiful Burial in Roman Egypt: Art, Identity, and Funerary Religion*. Oxford: Oxford University Press.

Robbins, P. 2008. Consciousness and the Social Mind. *Cognitive Systems Research* 9(1):15-23.

Rogers, T.L. 1999. A Visual Method of Determining the Sex of Skeletal Remains using the Distal Humerus. *Journal of Forensic Sciences* 44(1):57-60.

Roth, C.F. 2008. *Becoming Tsimshian: The Social Life of Names*. Seattle, WA: University of Washington Press.

Rubertone, P.E. 2000. The Historical Archaeology of Native Americans. *Annual Review of Anthropology* 29: 425-446.

Ruff, C. 2007. Body Size Prediction from Juvenile Skeletal Remains. *American Journal of Physical Anthropology* 133(1): 698-716.

Sanger, D. and M.J. Sanger. 1974. *The First 11, 000 Years: An Archaeologist's View of Maritime History*. Paper presented at the 1974 meeting of the Atlantic Provinces Historical Conference, Fredericton.

Saunders, S.R. 2008. Juvenile Skeletons and Growth-Related Studies. In *Biological Anthropology of the Human Skeleton*, Second Edition, eds. M.A. Katzenberg and S.R. Saunders, pp.117-148. Hoboken, NJ: Wiley-Liss.

Saunders, S.R. and R.D. Hoppa. 1993. Growth Deficit in Survivors and Non-Survivors: Biological Mortality Bias in Subadult Skeletal Samples. *American Journal of Physical Anthropology* 36(17): 127-151.

Saunders, S.R., R. D. Hoppa, and R. Southern. 1993. Diaphyseal Growth in a Nineteenth Century Skeletal Sample of Subadults from St. Thomas' Church, Belleville, Ontario. *International Journal of Osteoarchaeology* 3 (4): 265- 261.

Saxe, A.A. 1970. *Social Dimensions of Mortuary Practices*. Unpublished Ph.D. Dissertation, University of Michigan, Ann Arbor.

Schaefer, M., S. Black, and L. Scheuer. 2009. *Juvenile Osteology: A Laboratory and Field Manual*. Burlington, MA: Elsevier Academic Press.

Scheuer, L and S. Black. 2000. Development and Ageing of the Juvenile Skeleton. In *Human Osteology: In Archaeology and Forensic Science*, eds. M. Cox and S. Mays, pp.9-21.Cambridge: Cambridge University Press.

Schillaci, M.A., H.P.S. Sachdev, and S. K. Bhargava. 2012. Technical Note: Comparison of the Maresh Reference Data with the W.H.O. International Standard for Normal Growth in Healthy Children. *American Journal of Physical Anthropology* 147(3):493-498.

Schwarcz, H.P., J. Melbye, M.A. Katzenberg, and M. Knyf. 1985. Stable Isotopes in Human Skeletons of Southern Ontario: Reconstructing Palaeodiet. *Journal of Archaeological Science* 12(3):187-206.

Schurr, M.R. 1998. Using Stable Nitrogen-Isotopes to Study Weaning Behaviour in Past Populations. *World Archaeology 30* (2): 327-342.

Schwarcz, H.P. and M.J. Schoeninger. 1991. Stable Isotope Analyses in Human Nutritional Ecology. *American Journal of Physical Anthropology* 34(S13): 283-321.

Sciulli, P.W., K.N. Schneider, and M.C. Mahaney. 1990. Stature Estimation in Prehistoric Native Americans of Ohio. *American Journal of Physical Anthropology* 83:275-280.

Smith, B.H. 1984. Patterns of Molar Wear in Hunter-Gatherers and Agriculturalists. *American Journal of Physical Anthropology* 63: 39 -56.

Smith, B.H. 1991. Standards of Human Tooth Formation and Dental Age Assessment. In *Advances in Dental Anthropology*, eds. M.A. Kelley and C.S. Larsen, pp.143-168. New York: Wiley-Liss.

Sofaer, J.R. 1997. Engendering Children, Engendering Archaeology. In *Invisible People and Processes*, eds. J. Moore and E. Scott, pp.192-202. Leicester, UK: Leicester University Press.

Sofaer, J.R. 2006. *The Body as Material Culture: A Theoretical Osteoarchaeology.* Cambrdige: Cambridge University Press.

Sofaer, J.R. 2011. Towards a Social Bioarchaeology of Age. In *Social Bioarchaeology*, eds. S.C. Agarwal and B.A. Glencross, pp. 285-311. Blackwell Studies in World Archaeolgy 14. Oxford: Wiley-Blackwell.

Sofaer Derevenski, J.R. 2000. *Children and Material Culture*. New York: Routledge.

Speck, F.G. 1918. Kinship Terms and the Family Band among the Northeastern Algonkian. *American Anthropologist* 20(2): 143-161.

Stirland, A.J. and T. Waldron. 1997. Evidence for Activity Related Markers in the Vertebrae for the Crew of the Mary Rose. *Journal of Archaeological Science* 24: 329-335.

Stojanowski, C.M. 2009. Bridging Histories: The Bioarchaeology of Identity in Post-Contact Florida. In *Bioarchaeology and Identity in the Americas,* eds. K.J. Knudson and C.M. Stojanowski, pp.59-81. Gainesville, FL: University Press of Florida.

Stone, P.K. 2012. Binding Women: Ethology, Skeletal Deformations, and Violence Against Women. *International Journal of Paleopathology* 2(2-3):53-60.

Stuiver, M. and T.F. Braziunas. 1993. Modeling Atmospheric ^{14}C Influences and ^{14}C Ages of Marine Samples to 10, 000 BC. *Radiocarbon* 35(1):137-189.

Stuiver, M. and P.J Reimer. 1993. Extended ^{14}C Database and Revised CALib 3.0 ^{14}C Age Calibration Program. *Radiocarbon* 35(1): 215-230.

Tarlow, S. 1999. *Bereavement and Commemoration: An Archaeology of Mortality*. Oxford: Wiley.

Thomas, J. 2002. Archaeology's Humanism and the Materiality of the Body. In *Thinking Through the Body*, eds. Y. Hamilkais, M, Pluciennik, and S. Tarlow, pp.29-45. New York: Kluwer Plenum.

Thwaites, R.G. 1896 -1901. *The Jesuit Relations and Allied Documents*. 73Vols. Cleveland: Burrows Brothers, 1959.

Torres-Rouff, C. 2008. The Influence of Tiwanaku on Life in the Chilean Atacama: Mortuary and Bodily Perspectives. *American Anthropologist* 110(3): 325-337.

Trotter, M. 1970. Estimation of Stature from Intact Long Bones. In *Personal Identification in Mass Disasters*, ed. T. D. Stewart, pp.71-83. Washington, D.C.: Smithsonian Institution 2 (93).

Trotter, M. and G.C. Gleser. 1958. Estimation of Stature from Long Bones of American Whites and Negroes. *American Journal of Physical Anthropology* 10: 463-514.

Trubitt, M.B.D. 2003. The Production and Exchange of Marine Shell Prestige Goods. *Journal of Archaeological Research* 11(3): 243-277.

Turnbull, C.J. 1974. *Old Mission Point 1973: Report for an Archaeological Survey of Canada Salvage Contract*. Archaeological Survey of Canada, National Museum of Man, Mercury Series Paper, Ottawa.

Turnbull, C.J. 1976. The Augustine Site: A Mound from the Maritimes. *Archaeology of Eastern North America* 4:50-62.

Turnbull, C. J. 1981. *The Richibucto Burial Site (CeDf-18), New Brunswick*. Manuscript on file with Archaeological Services Unit, New Brunswick.

Turnbull, C.J. and S.W. Turnbull. 1973. *Preliminary Report of the 1973 Excavations at Old Mission Point (ClDq-1) New Brunswick*. Archaeological Survey of Canada, National Museum of Man, Mercury Series Paper, Ottawa.

Turner, B.L. and V.A. Andrushko. 2011. Partnerships, Pitfalls and Ethical Concerns in International Bioarchaeology. In *Social Bioarchaeology*, eds. S. C. Agarwal and B.A. Glencross, pp. 44-67. Oxford: Blackwell Publishing Ltd.

Tyrrell, A. 2000. Skeletal Non-Matric traits and the Assessment of Inter- and Intra-Population Diversity: Past Problems and Future Potential. In *Human Osteology: In Archaeology and Forensic Science*, eds. M. Cox and S. Mays, pp. 289-306. Cambridge: Cambridge University Press.

Ubelaker, D.H. and K.G. Grant. 1989. Human Skeletal Remains: Preservation or Reburial? *Yearbook of Physical Anthropology* 32:249-287.

Vance, V.L., M. Steyn, and E.N. L'Abbe. 2011. Non-Metric Sex Determination from the Distal and Posterior Humerus in Black and White South Africans. *Journal of Forensic Sciences* 56(3): 710-714.

van der Merwe, N.J. and J.C. Vogel. 1978. ^{13}C Content of Human Collagen as a Measure of Prehistoric Diet in Woodland North America. *Nature* 276: 209-215.

Waldron, T. 2000. Hidden or Overlooked? Where are the Disadvantaged in the Skeletal Record? In *Madness, Disability, and Social Exclusion: The Archaeology and Anthropology of 'Difference'*, ed. J. Hubert, pp. 29-45. London: Routledge.

Waldron, T. 2009. *Palaeopathology*. Cambridge: Cambridge University Press.

Walker, P.L., G. Dean, and P. Shapiro. 1991. Estimating Age from Tooth Wear in Archaeological Populations. In *Advances in Dental Anthropology*, eds. M. Kelly and C.S. Larsen, pp. 169 – 178. New York: Alan R. Liss.

Wallis, W.D. and R.S Wallis. 1955. *The MicMac Indians of Eastern Canada*. St. Paul, Minnesota: University of Minnesota Press.

Walters, J. 'No More Than A Boy': The Shifting Construction of Masculinity from Ancient Greece to the Middle Ages. *Gender and History* 5(1): 20-33.

Watkins, J. 2005. Through Wary Eyes: Indigenous Perspectives on Archaeology. *Annual Review of Anthropology* 34:429-449.

Webster, J. 1997. Necessary Comparisons: A Post-Colonial Approach to Religious Syncretism in the Roman Provinces. *World Archaeology* 28(3):324-338.

Webster, J. 2001. Creolizing the Roman Provinces. *American Journal of Archaeology* 105(2): 209-225.

Weiss, E. and R. Jurmain. 2007. Osteoarthritis Revisited: A Contemporary Review of Aetiology. *International Journal of Osteoarchaeology* 17 (5): 437-450.

Weiss, E., Corona, L. and B. Schultz. 2012. Sex Differences in Musculoskeletal Stress Markers: Problems with Activity Pattern Constructions. *International Journal of Osteoarchaeology* 22: 70-80.

White, T.D and P.A. Folkens. 2005. *The Human Bone Manual*. Burlington, MA: Elsevier Academic Press.

White, C.D., R. Storey, F.J. Longstaffe, and M.W. Spence. 2004. Immigration, Assimilation, and Status in the Ancient City of Teotihuacan: Stable Isotopic Evidence from Tlajinga 33. *Latin American Antiquity* 15(2):176-198.

White, C.D., F.J. Longstaffe, D.M. Pendergast, and J. Maxwell. 2009. Cultural Embodiment and the Enigmatic Lovers from Lanai. In Bioarchaeology and Identity in the Americas, eds. K.J. Knudson and C.M. Stojanowski, pp. 155-176. Gainesville, FL: University Press of Florida.

Whitehead, R.H. 1982. *Micmac Quillwork*. Halifax: Nova Scotia Museum.

Whitehead, R.H. 1987. *Plant Fibre Textiles from the Hopps Site: BkCp-1*. Curatorial Reports no. 59, Nova Scotia Museum, Halifax.

Whitehead, R.H. 2006. *Stories from the Six Worlds: MicMac Legends*. Halifax: Nimbus Publishing Lmtd.

Whiteley, P.M. 2002. Archaeology and Oral Tradition: The Scientific Importance of Dialogue. *American Antiquity* 67(3): 405-415.

Whittaker, D. 2000. Ageing from the Dentition. In *Human Osteology: In Archaeology and Forensic Science*, eds. M. Cox and S. Mays, pp. 83-100. Cambridge: Cambridge University Press.

Willey, G.R. 1953. Archaeological Theories and Interpretation: New World. In *Anthropology Today,* ed. A.L. Kroeber, pp. 361-385. Chicago: University of Chicago Press.

Williams, P.B. 2003. Raising the Dead: The Use of Osteo-Archaeology to Establish Identity at the Little Dutch Church, Halifax, Nova Scotia. *Material History Review* 57: 53-67.

Williams, B.A. and T.L. Rogers. 2006. Evaluating the Accuracy and Precision of Cranial Morphological Traits for Sex Determination. *Journal of Forensic Science* 51(4):730-735.

Wood, J.W., G.R. Milner, H.C. Harpending, K.M. Weiss, M.N. Cohen, L.E. Eisenberg, D.L. Hutchinson, R. Jankauskas, G.Cesnys, M.A. Katzenberg, J.R. Lukacs, J.W. McGrath, E.A. Roth, D.H. Ubelaker, and R.G. Wilkinson. 1992. The Osteological Paradox: Problems of Inferring Prehistoric Health from Skeletal Samples. *Current Anthropology* 33(4):343-370.

Worpole, K. 2003. *Last Landscapes: The Architecture of the Cemetery in the West*. London: Reaktion Books.

Yarrow, H.C. 1880. *Introduction to the Study of Mortuary Customs among the North American Indians*. Smithsonian Institution, Bureau of American Ethnology.

Yarrow, H.C. 1976. *Introduction to the Study of Mortuary Customs among the North American Indians*. First AMS Edition, after original from Smithsonian Institution, Bureau of American Ethnology. New York: AMS Press Inc.

Yeung, K.T. and J.L.Martin. 2003. The Looking Glass Self: An Empirical Test and Elaboration. *Social Forces* 81(3): 843-879.

Zuckerman, M.K. and G.J. Armelagos. 2011. The Origins of Biocultural Dimensions in Bioarchaeology. In *Social Bioarchaeology*, eds. S.C. Agarwal and B.A. Glencross, pp.15-43. Blackwell Studies in World Archaeology 14. Oxford: Wiley-Blackwell.

APPENDIX A: MORPHOLOGICAL ASSESSMENT DATA

Old Mission Point (ClDq-1) - SKELETAL INVENTORY

Individual	Element (Pieces)	Side	Completion	Age	Sex
Box 1	Sacrum	Central	90%	Y. ADULT	MALE
Box 1	Sacral V. 1-4	Central	50-95%		
Box 1	Thoracic (3) 3-10	Central	45-85%		
Box1	Thoracic Frags.	Central			
Box1	Sacral V. 5	Central	60%		
Box 1	Metatarsals 1-5	L&R	90-100%		
Box 1	Phalanges	L&R	100%		
Box1	Innominate	Left	75%		
Box1	Innominate	Right	50%		
Box 1	Tibia	Right	90%		
Box 1	Tibia	Left	90%		
Box1	Femur	Left	95%		
Box1	Femur	Right	95%		
Box1	Fibula (3)	Right	100%		
Box 1	Fibula (2)	Left	90%		
Box 1	Calcaneus	L&R	100%		
Box 1	Talus	L&R	100%		
Box1	Navicular	L&R	100%		
Box1	Cuboid	L&R	100%		
Box 1	Cuneiforms	L&R	100%		
Box1	Radius (2)	Right	80%		
Box 1	Radius	Left	70%		
Box1	Ulna	Right	50%		
Box1	Humerus	Right	60%		
Box 1	Skull (Highly Fragmented)				
Box1	Frontal	Central	80%		
Box1	Temporal	Right	80%		
Box1	Temporal	Left	90%		
Box1	Parietals	L&R	80%		
Box1	Occipital	Central	65%		
Box1	Maxilla	Left	90%		
Box2	Skull (Highly Fragmented)			ADULT-Unknown Age	MALE
Box 2	Parietal	Left	75%		
Box2	Frontal	Central	20%		
Box2	Temporal	Right	40%		
Box 2	Temporal	Left	50%		
Box2	Innominate	Right	50%		

Box2	Femur	Right	85%		
Box2	Femur	Left	90%		
Box 2	Tibia	Left	60%		
Box 2	Fibula (3)	?			
Box2	Patellae	L&R	80-100%		
Box2	Humerus	Right	100%		
Box2	Radius	Right	95%		
Box2	Ulna	Right	95%		
Box3	Skull (Highly Fragmented)			M. ADULT	?
Box3	Frontal	Central	100%		
Box3	Zygomatic	Right	100%		
Box3	Temporal	Left	60%		
Box3	Occipital	Central	20%		
Box3	Ulna	Right	25%		
Box3	Humerus	Right	30%		
Box3	Pubis (2)	R&L			
Box3	Innominate	Left	40%		
Box3	Sacrum	Central	15%		
Box3	Phalanges (5)				
Box3	Thoracic V. (3)	Central	30-50%		
Box 3	Lumbar V. (4)	Central	60-90%		
Box3	Fibula (2)	Left	60%		
Box3	Fibula (2)	Right	40%		
Box3	Femur	Left	85%		
Box3	Femur	Right	75%		
Box 3	Lower Limb Frags	L&R			
Box 4	Cranium	Central	75-100%	M. ADULT	FEMALE
Box4	Mandible	Central	95%		
Box4	Maxilla/Palate	Central	80%		
Box4	Cervical V. (7)	Central	100%		
Box4	Thoracic V (8)	Central	80-100%		
Box4	Lumbar V. (2)	Central	75-90%		
Box 4	Scapula	Left	50%		
Box4	Humerus	Left	10%		
Box4	Humerus	Left	80%		
Box4	Humerus	Right	10%		
Box4	Radius	Right	95%		
Box4	Tibia	Left	20%		

Box4	Fibula	Left	60%		
Box4	Talus	Right	100%		
Box4	Carpals	R&L	80-100%		
Box4	Metacarpals	R&L	75-100%		
Box4	Phalanges	R&L	100%		
Box5	Femur	Right	50%	ADULT-Unknown Age	?
Box5	Fibula (4)	?	15%?		
Box5	Mandible (2)	Central	40%		
Box5	Temporal	Right	40%		
Box6	Metacarpals	R&L	100%	Y. CHILD 3-5yrs	N/A
Box6	Innominate (3)	Right	95%		
Box6	Innominate(2)	Left	100%		
Box6	Thoracic V. (9)	Central	75-100%		
Box6	Lumbar V. (1)		90%		
Box6	Sacral V. (1)	Central	60%		
Box6	Femur (3)	Right	100%		
Box6	Femur (1)	Left	30%		
Box6	Tibia	Left	90%		
Box6	Fibula (2)	Left	100%		
Box6	Tibia	Right	30%		
Box6	Scapula	Right	70%		
Box6	Humerus (2)	Right	80%		
Box6	Humerus	Left	10%		
Box6	Radius	Right	100%		
Box6	Ulna	Right	95%		
Box6	Radius	Left	100%		
Box 6	Ulna	Left	95%		
Box6	Calcaneus	Left	100%		
Box 6	Talus	Left	100%		
Box 6	Calcaneus	Right	100%		
Box 6	Talus	Right	100%		
Box 6	Temporal	Right	75%		
Box 6	Temporal	Left	90%		
Box 6	Mandible	Right	50%		
Box7	Tibia	Right	60%	Y. CHILD 3.5.-4.5yrs	N/A
Box8	Maxilla	Left	100%	INFANT <1yr 10-12m	N/A
Box8	Mandible	Right	40%		
Box8	Humerus	Right	80%		

Box8	Humerus	Left	80%		
Box8	Radius	Right	100%		
Box8	Ulna	Right	90%		
Box8	Ulna	Left	90%		
Box8	Femur	Left	80%		
Box8	Femur	Right	80%		
Box8	Tibia	Right	100%		
Box 8	Fibula	Right	100%		
Box8	Tibia	Left	100%		
Box8	Fibula	Left	100%		
Box8	Scapula	Left	80%		
Box8	Scapula	Right	80%		
Box8	Ilium	Right	100%		
Box8	Ilium	Left	100%		
Box9	Femur	Right	70%	Y. CHILD approx. 1yr	N/A
Box9	Femur	Left	70%		
Box9	Calcaneus	Right	50%		
Box10	Femur	Right	80%	Y. CHILD approx. 1yr	N/A
Box10	Femur	Left	70%		
Box10	Tibia	Right	90%		
Box10	Tibia	Left	50%		
Box11	Ilium	Right	60%	INFANT approx. 6m	N/A
Box11	Ilium	Left	60%		
Box11	Femur	Right	70%		
Box11	Femur	Left	70%		
Box11	Tibia	Left	90%		
Box11	Tibia	Right	90%		
Box11	Humerus	Right	80%		
Box11	Humerus	Left	40%		
Box12	Ilium	Left	50%	INFANT approx. 6m	N/A
Box12	Femur	Left	70%		
Box12	Femur	Right	70%		
Box12	Humerus	Right	60%		
Box12	Humerus	Left	60%		
Box12	Ulna	Left	100%		
Box12	Radius	Left	100%		
Box13	Rib Frags.	L&R	20-90%	NEONATE approx.1.5m	N/A
Box13	Scapula	Right	70%		
Box13	Radius	Left	90%		
Box13	Ulna	Left	90%		
Box14	Femur	Right	85%	INFANT 3-6m	N/A

Box14	Radius	Left	100%
Box14	Humerus	Right	70%

MISCELLANEOUS *COMMINGLED BONES ACCORDING TO ELEMENT AND AGE/SIZE*

Auditory Ossicles (1) Stapes, (4) Incus, and (3) Malleus

Adult Ribs

	#Left:	10
	#Right:	11
	#Undiscernable	62
	TOTAL=	83

Adult Right Temporal Bones (2)

Loose Teeth	Permanent Dent.	(1) fragmented maxillary molar, (1) mandibular RM1, (2) mandibular LM2's, (1) mandibular LM3, (3) mandibular P3's, (3) mandibular P4's, (1) maxillary LC, (1) maxillary LI2, (3) mandibular incisors (badly worn)
	Deciduous Dent.	(3) mandibular m2's, (1) maxillary m2, (1) maxillary m1, (2) unerupted molar crowns, (1) unerupted incisor crown, (2) mandibular incisors, (2) maxillary incisors

Juvenile Ribs

	#Left:	19
	#Right:	21
	#Undiscernable	50
	TOTAL=	80

Juvenile Vertabrae

	*All in process of fusing
	#Centra Unfused 41p.
	#Spines Unfused 46p.

Juvenile Left Calcaneus (1) and Talus (1)

*associated with copper bead find; less than 1 year of age (Schaefer et al. 2009)

Juvenile Left Temporal Bone (1)

Unidentified Long Bone/Bone Fragments TOTAL= 300+p.

ARTIFACTS ASSOCIATED WITH REMAINS (Found in Lab)

*Copper Tube Beads (4)

*Birch Bark Fragments

*Beaver Fur	*Wood Fragment (Toggle?) wrapped in beaver (*Castor canadensis*) fur
*Textile	*cordage within copper bead
	*possible mat/basketry surrounding/adhered to copper bead
*Shell Beads	*blue mussel/*Mytilus edulis* whole beads (2) and 12 fragments
	*white clam/Bivalvia whole beads(3) and 5 fragments
*Seeds	*1 staghorn sumac (*Rhus typhina)*

	*2 fungal fruiting bodies
*Quartz	*1 small pebble
*Ochre	*yellow/brown in colour

Old Mission Point (ClDq-1)- ESTIMATION OF ANCESTRY

Individual	Inventory#	Side/Element	Completion	Gill (1998) and Rhine (1990) Amerindian Traits
Skeleton1	27	Frontal	70-100%	*square/rhomboid shaped orbits *broad, sloping forehead *wide nasal region, large nasal bones *complex cranial sutures
Skeleton1	32	L. Maxilla	90%	*angled zygomaticomaxillary suture *winged projecting malars, with tubercle
Skeleton2	35	Frontal	20%	* square/rhomboid orbits
Skeleton3	49	Frontal	100%	*square/rhomboid shaped orbits *broad, sloping forehead *medium/large nasal area, nasal bones
Skeleton3	50	R. Zygomatic	100%	*angled zygomaticomaxillary suture *winged projecting malars, with tubercle
Skeleton4	67	Cranium	75-100%	*broad, medium-sized skull *sloping cranial vault *square rhomboid shaped orbits *large nasal area, with mediumélarge nasal bones *complex cranial sutures *wide, long mastoid process
Skeleton4	69	Palate	80%	*elliptic in shape *straight palatine suture
Skeleton4	68	Mandible	95%	*robust mandible *mild chin projection and form

Old Mission Point (ClDq-1) - ESTIMATION OF AGE

Individual	Side/Element	Completion	Method and Age Assessment
Skeleton 1	L.Maxilla		Lovejoy (1985) small pinpricks and small facets of wear B1/B2 -16-20 Meindl and Lovejoy (1985) Vault comp. #2= 30.5 +/-9.6 Lateral-anterior comp. #1= 32.0+/-8.3
Skeleton 3	C.Cranial Elements	40-100%	Meindl and Lovejoy (1985) Vault comp. # 3 = 34.7+/- 7.8
Skeleton 4	C.Cranial Elements	75-100%	Meindl and Lovejoy (1985) Vault comp. # 3 = 34.7+/- 7.8

Skeleton 4	C. Mandible *exhibits preferential chewing (see Adult Pathology)	95%	Lovejoy (1985) Left: E 24-30 Right: I 45-50
Skeleton 4	C.Maxilla/Palate *preferential chewing	80%	Lovejoy (1985) Left: E 24-30 Right: H 40-50 Mean: 37 years of age- Middle Adult
Skeleton 6	R. Mandible	50%	Ubelaker (1989), Smith (1991) rdm1 still present, rdm2 missing post-mortem as is rdc can see RM1 in process of erupting, but still in crypt RI2 also in first stages of erupting approx. 4-5
Skeleton 6	R.Fem., L.Tib. R.Hum., L.Rad.	80-100%	Maresh (1970)3-5 years of age
Skeleton7	R.Tibia	60%	Maresh (1970) 3.5-4.5 years of age
Skeleton8	C.Maxilla	40%	Ubelaker (1989) Smith (1991) rdm1 and ldm1 fully erupted
Skeleton8	C.Mandible	80%	Ubelaker (1989) Smith (1991)rdm2 and ldm2 still erupting approx. 1 year-18mnths
Skeleton8	L.Hum., R.Rad., L.Fem., L.Tib.	80-100%	Maresh (1970)6months and 1year of age
Skeleton9	L.Femur	70%	Maresh (1970)approx. 1 year
Skeleton10	R.Femur, R.Tibia	80-90%	Maresh (1970)approx. 1 year
Skeleton11	R.Femur, L.Tibia, R.Humerus	70-90%	Maresh (1970)approx. 6months
Skeleton12	L.Radius	100%	Maresh (1970)approx. 6months
Skeleton13	L.Radius	90%	Maresh (1970)approx. 1.5 months
Skeleton14	L.Humerus, R.Radius	70-100%	Maresh (1970)approx. 3-6months
Skeleton13	L.Radius	90%	Maresh (1970)approx. 1.5 months
Skeleton14	L. Humerus, R.Radius	70-100%	Maresh (1970)approx. 3-6months
Skeleton14	L.Humerus,R. Radius	70-100%	Maresh (1970)approx. 3-6months
Skeleton14	L.Humerus, R. Radius	70-100%	Maresh (1970)approx. 3-6months
Skeleton14	L.Humerus, R. Radius	70-100%	Maresh (1970)approx. 3-6months
Skeleton13	L.Radius	90%	Maresh (1970)approx. 1.5 months
Skeleton14	L. Humerus, R.Radius	70-100%	Maresh (1970)approx. 3-6months
Skeleton14	L.Humerus,R. Radius	70-100%	Maresh (1970)approx. 3-6months
Skeleton14	L.Humerus, R. Radius	70-100%	Maresh (1970)approx. 3-6months
Skeleton14	L.Humerus, R. Radius	70-100%	Maresh (1970)approx. 3-6months

Old Mission Point (ClDq-1) - ESTIMATION OF SEX

Individual	Side/Element	Completion	Method Used	Sex Assessment
Skeleton 1	L.Innominate		Buikstra & Ubelaker (1994)	Sciatic Notch -3/4

				Innominate is large and rugose
				more vertical, narrow
Skeleton 1	R.Innominate	50%	Buikstra & Ubelaker (1994)	Sciatic notch-4
				ilaic blade is larger and robust
				Male
Skeleton 1	C.Cranium	70%	Williams & Rogers (2006)	large and rugged overall
				small frontal eminence
				somewhat prominent brow ridges
				large nasals
				squarer orbits with thick margin
				zygomatic extension
				larger mastoid
				rugged occipital
			Walker (1994)	Nuchal crest-4
				Mastoid-3/4
				Supraorbital margins-4
				Supraorbital ridge-3
				P. Male
Skeleton 2	C.Cranium	25%	Walker (1994)	Supraorbital margin 4/5
				supraorbital ridge 5
				mastoid-3/4
			Williams & Rogers (2006)	mastoid large
				rugose zygomatic extension
				large robust supraorbital ridge
				thick supraorbital margin
				large nasals
				P. Male but lacking many features
Skeleton 2	L.Innominate	50%	Walker (1994)	sciatic notch= 5
				robust muscle attachments
Skeleton 2	R.Humerus	100%	Rogers (1999)	olecranon fossa more triangular
				slight epicondyle angle
				trochlear extension
				Male
Skeleton 3	C.Cranium		Williams & Rogers (2006)	minimal frontal eminence
				robust supraorbital ridge
				small nasals
				thick supraorbital margin
				mastoid on smaller side
				zygomatic extension subtle
				occipital condyles smaller

				zygomatic small, subtle malars
				?
			Walker (1994)	supraorbital margin-3
				supraorbital ridge-4/5
				mastoid-3
				?
Skeleton 3	R.Humerus	30%	Rogers (1999)	rounded olecranon fossa
				other features missing
				?
Skeleton 3	L.Innominate	40%	Walker (1994)	Sciatic notch-3
				?
Skeleton 4	C.Cranium	75-100%	Williams & Rogers (2006)	supraorbital ridges are minimal
				supraorbital margins are sharp and thin
				nasals small
				cranium overall small and gracile
				larger frontal eminence
				nuchal area is gracile
				mastoid small
				no zygomatic extension
				orbitals rounded
				occipital condyles small
			Walker (1994)	supraorbital ridges-2
				supraorbital margins-2
				mastoid-2
				nuchal crest-1/2
				P. Female
Skeleton 4	C. Mandible	95%	William & Rogers (2006)	small mandible
	*exhibits preferential			some flaring on gonial angle
	chewing (see Adult			small triangular chin
	Pathology)			Mental eminence- 1
Skeleton 4	L.Humerus	80%	Rogers (1999)	rounded olecranon fossa
				epicondyle missing
				trochlear symmetry
				Female?

Old Mission Point (ClDq-1)- PATHOLOGY

Individual	Element	Description
Skeleton1	L.Maxilla	*anterior portion of maxilla (area of LI1) missing postmortem, broken off during excavation.

		*pinprocked sized wear on protocone (mesiolingual), paracone (mesiobuccal), and metacone (distobuccal) of LM1. *LM2 developing wear facet on paracone (mesiobuccal) *no wear on LM3 but small amount of calculus along distobuccal CEJ. *LI2, LC1, LP3, and LP4 all missing postmortem, sockets empty with no sign of resorption. *all 3 molars showcase root exposure, some alveolar reaction/porosity
Skeleton1	R/L.Femorii	*linea aspera on posterior aspect of femorii is very pronounced, rugose. Hawkey and Merbs (1995) = 3
Skeleton1	R/L.Tibiae	* rugose muscle attachment sites. Anterior crest of both tibiae pronounced, as is soleal line on posterior superior aspect of both elements. Hawkey and Merbs (1995) = 3
Skeleton1	R/L.Fibulae	* interosseous crest, joining muscle tissue between tibiae and fibulae, on both fibulae well-defined.
Skeleton1	R.Humerus	* deltoid tuberosity (on lateral aspect) well-defined. Hawkey and Merbs (1995) =3
Skeleton1	R.Radius	*interosseous crest pronounced
Skeleton1	R.Ulna	*interosseous crest pronounced
Skeleton2	R.Humerus	*deltoid tuberosity (on lateral aspect) quite rugose. Hawkey and Merbs (1995) = 3
Skeleton2	R.Radius	*interosseous crest pronounced
Skeleton2	R.Ulna	*interosseous crest pronounced
Skeleton2	R/L.Femorii	*linea aspera (posterior aspect) on both femorii very rugose, though both elements long and slender in comparison to femorii from Skel.#1. Hawkey and Merbs (1995) = 2/3
Skeleton3	C.Lumbar V.	*L1-4. All most posterior portions of spinous processes, and most lateral portions of transverse processes, missing postmortem. *vertebral bodies are degraded and porous, with anterior margins featuring erosion. *all 4 lumbar vertebrae feature varying degrees of anterior marginal lipping/ostephytes, which stretch superiorly towards the inferior-anterior margins, crossing the intervertebral disc area, of the vertebral body located above. In some instances, because of anterior body erosion, osteophytes actually articulate with inferior-anterior margins of aforementioned vertebral bodies.
Skeleton3	R/L.Fibulae	*Distal end of the left fibula features a small expanse (7cm) of periosteal bone reaction/osteophytes,

		starting directly superior to lateral malleolus, which can be seen from both medial and anterior aspects. Joint surface of the medial malleolus slightly porous. *Superior-anterior portion of right fibula head also features periosteal bone reaction, as well as a slight bend in the posterior-lateral direction.
Skeleton3	L.Femur	*From the anterior aspect, the distal end of the femur features a severe periosteal bone reaction, that begins directly superior to patellar surface. Bony reaction has left the surrounding area very porous
Skeleton4	C.Cranium	*Right side of cranium suffers from a great deal of discolouration and scarring due to postmortem trowel/excavation trauma. * However, on frontal border of the right parietal is a depression 10cm in length and 4cm in width that runs antero-posteriorly into the right lateral-posterior border of the frontal bone.
Skeleton4	C.Mandible	*mandible in good condition, only missing right mandibular condyle and right coronoid process. *Right side: RI1, RI2, RC1, RP3, and RP4 all missin postmortem, empty sockets with no signs of alveolar resorption. RM1, RM2, and RM3 still present. RM1 features severe degree of tooth wear on hypoconid (distobuccal) and protoconid (mesiobuccal), with two smaller dental wear pits on metaconid (mesiolingual) and entoconid (distolingual). RM2, much like RM1, great deal of wear affecting hypoconid, protoconid, and entoconid, and smaller pitting on metaconid. RM3 shows developing wear facets/polishing distobucally, and small pit on mesiolingual cusp. All 3 molars show from root exposure with some bony alveolar reaction, as well as calculus built up on distobuccal and distolingual aspects of RM2 and RM3 along CEJ. *Left Side: LI1, LI2, LC1, LP3, and LP4 all missing post-mortem, empty sockets and no alveolar bone resoprtion. Area of LM1 and LM2 features alveolar abcess in the process of healing at the time of death, but no fully resorbed. LM1 and LM2 lost antemortem. Only LM3 still present. *LM3 shows some polishing of cusps associated with developing dental wear, but no pitting. *LM3 does feature great deal of dental calculus built up on distobuccal and distolingual surfaces, extending from CEJ to top of enamel crown.
Skeleton4	R/L.Maxilla/Palate	*Right side: RI1, RI2, RC1, RP3 all missing postmortem, empty sockets no signs of resorption. RP4, RM1, RM2, and RM3 all present, with great deal of dental wear and root exposure.

		RP4 features two large pits on both the buccal and lingual cusps.
		RM1 features extended pitting on all 4 cusps (protocone, hypocone, paracone, and metacone).
		RM2 shows extended pit enveloping protocone, hypocone and and metacone, only paracone (mesiobuccal) cusp has small polished dental wear pit.
		RM3 shows polishing on all cusp facets, as well as central pit .
		*Left side: LI1, LI2, LP3, and LP4 all missing postmortem. LC1 still present as are LM1, LM2, and LM3.
		LC1 features large dental wear pit on lingual cusp.
		LM1 shows plisihing of all four cusps with small pits, however, severity of attrition is nothing like what can be seen on right side of maxilla/palate.
		LM2 polishing on all cusp facets, with larger pit developing on mesiobuccal-distobuccal cusps.
		LM3 some polishing of cusps, but no dental wear pitting.
		All preserved teeth on left side show root exposure and some alveolar bone reaction.
Skeleton4	C.Cervical V.	*All 7 cervical vertebrae.
		*Feature heavily eroded and depressed vertebral bodies with great deal of porosity, signaling destruction of intervertebral discs between each. Anterior-inferior marginal lipping also exists on said vertebrae.
Skeleton4	C.Thoracic V	*8 vertebrae; T1, T3-9
		*Vertebral bodies are porous and degraded, with large osteophytes and anterior lipping extending inferiorly over intervertebral area, sometimes articulating with margins of vertebral body located below.
Skeleton4	C.Lumbar V	*L1 and L2
		*Anterior marginal lipping/large osteophytes that extend inferiorly. Possible Schmorl's node on

Old Mission Point (ClDq-1) - METRIC MEASUREMENTS

SKELETON #1	**Measurement (mm)**	**Genovés (1967) Stature Estimation (cm)**
Max. Cranial Length		
" " Breadth		
Bizygomatic Diameter		
Basion-Bregma Height		
Cranial Base Length		
Basion-Prosthion Length		
Maxillo-Alveolar Breadth		

" " Length
Biauricular Breadth
Upper Facial Height
Mini. Frontal Breadth
Upper Facial Breadth
Nasal Height
Nasal Breadth
Orbital Breadth
Orbital Height
Biorbital Breadth 21mm
Interorbital Breadth
Frontal Chord
Parietal Chord
Occipital Chord
Foramen Magnum Length
" " Breadth 38mm
Mastoid Length
Chin Height
Height of the Mandi. Body
Breadth " " " "
Bigonial Width
Bicondylar Breadth
Minimum Ramus Breadth
Maximum Ramus Breadth
MaximumRamus Height
Mandibular Length
Mandibular Angle
Clavicle Max. Length
Clavicle Sagittal Diameter
Clavicle Vertical Diameter
Scapula Height
Scapula Breadth
Humerus Max. Length
Humerus Vertical Diameter of Head
Humerus Max. Dia. At Midshaft
Humerus Minimum Diamater at Midshaft
Radius Maximim Length 22mm
Radius Ant/-Post. Diamter 21mm
Radius Med.-Lat. Diameter
Ulna Max. Length
Ulna Ant.-Post. Dia.

Ulna Med.-Lat. Dia.		
Ulna Physiological Length		
Ulna Mini. Circumference	116mm	
Sacrum Ant. Length	112mm	
Sacrum Super. Breadth	148mm	
Sacrum Max. Transverse Dia.	223mm	
Os Coxae. Height	155mm	
Os Coxae Iliac Breadth		
Os Coxae Pubic Length	86mm	
Os Coxae Ischium Length	435mm	
Femur Max. Length	430mm	164.689 +/-3.417
Femur Bicondylar Breadth	64mm	
Femur Epicondylar Breadth	46mm	
Femur Max. Head Dia.	56mm	
Femur Ant. - Post.	42mm	
Femur Med.-Lat.	54mm	
Femur Ant.-Post	29mm	
Femur Med.-Lat. Midshaft	93mm	
Femur Midshaft Circum.	374mm	
Tibia Length	55mm	167.056 +/- 2.812
Tibia Max. Prox.	46mm	
Tibia Max. Distal	56mm	
Tibia Max. Diameter	27mm	
Tibia Med/-Lat.	107mm	
Tibia Circumference at Nutrient Foramen		
Fibula Max. Length	28mm	
Fibula Max. Diamter	77mm	
Calcaneus Max. Length		
Calcaneus Middle Breadth		

SKELETON #2	**Measurement (mm)**	**Genovés (1967) Stature Estimation (cm)**
Max. Cranial Length		
" " Breadth		
Bizygomatic Diameter		
Basion-Bregma Height		
Cranial Base Length		
Basion-Prosthion Length		
Maxillo-Alveolar Breadth		
" " Length		
Biauricular Breadth		

Upper Facial Height		
Mini. Frontal Breadth		
Upper Facial Breadth		
Nasal Height		
Nasal Breadth		
Orbital Breadth		
Orbital Height		
Biorbital Breadth		
Interorbital Breadth	18mm	
Frontal Chord		
Parietal Chord		
Occipital Chord		
Foramen Magnum Length		
" " Breadth		
Mastoid Length		
Chin Height		
Height of the Mandi. Body		
Breadth " " " "		
Bigonial Width		
Bicondylar Breadth		
Minimum Ramus Breadth		
Maximum Ramus Breadth		
MaximumRamus Height		
Mandibular Length		
Mandibular Angle		
Clavicle Max. Length		
Clavicle Sagittal Diameter		
Clavicle Vertical Diameter		
Scapula Height		
Scapula Breadth		
Humerus Max. Length	R313mm	
Humerus Vertical Diameter of Head	R42mm	
Humerus Max. Dia. At Midshaft		R33mm
Humerus Minimum Diameter at Midshaft	R24mm	
Radius Maximum Length	R232mm	
Radius Ant/-Post. Diamter	R20mm	
Radius Med.-Lat. Diameter	R15mm	
Ulna Max. Length	R260mm	
Ulna Ant.-Post. Dia.	R20mm	
Ulna Med.-Lat. Dia.	R17mm	

Ulna Physiological Length	R235mm	
Ulna Mini. Circumference	R45mm	
Sacrum Ant. Length		
Sacrum Super. Breadth		
Sacrum Max. Transverse Dia.		
Os Coxae. Height		
Os Coxae Iliac Breadth	136mm	
Os Coxae Pubic Length		
Os Coxae Ischium Length		
Femur Max. Length	426mm	162.665 +/-3.417
Femur Bicondylar Breadth	416mm	
Femur Epicondylar Breadth	70mm	
Femur Max. Head Dia.		
Femur Ant. - Post.	44mm	
Femur Med.-Lat.	33mm	
Femur Ant.-Post	43mm	
Femur Med.-Lat. Midshaft	28mm	
Femur Midshaft Circum.	95mm	
Tibia Length		
Tibia Max. Prox.		
Tibia Max. Distal		
Tibia Max. Diameter		
Tibia Med/-Lat.		
Tibia Circumference at Nutrient Foramen		
Fibula Max. Length		
Fibula Max. Diamter		
Calcaneus Max. Length		
Calcaneus Middle Breadth		

SKELETON #3	**Measurement (mm)**	**Genovés (1967) Stature Estimation (cm)**
Max. Cranial Length		
" " Breadth		
Bizygomatic Diameter		
Basion-Bregma Height		
Cranial Base Length		
Basion-Prosthion Length		
Maxillo-Alveolar Breadth		
" " Length		
Biauricular Breadth		
Upper Facial Height		

Mini. Frontal Breadth	
Upper Facial Breadth	
Nasal Height	
Nasal Breadth	
Orbital Breadth	
Orbital Height	
Biorbital Breadth	
Interorbital Breadth	18mm
Frontal Chord	
Parietal Chord	
Occipital Chord	
Foramen Magnum Length	
" " Breadth	
Mastoid Length	
Chin Height	
Height of the Mandi. Body	
Breadth " " " "	
Bigonial Width	
Bicondylar Breadth	
Minimum Ramus Breadth	
Maximum Ramus Breadth	
MaximumRamus Height	
Mandibular Length	
Mandibular Angle	
Clavicle Max. Length	
Clavicle Sagittal Diameter	
Clavicle Vertical Diameter	
Scapula Height	
Scapula Breadth	
Humerus Max. Length	
Humerus Vertical Diameter of Head	
Humerus Max. Dia. At Midshaft	
Humerus Minimum Diamater at Midshaft	
Radius Maximim Length	
Radius Ant/-Post. Diamter	
Radius Med.-Lat. Diameter	
Ulna Max. Length	
Ulna Ant.-Post. Dia.	
Ulna Med.-Lat. Dia.	
Ulna Physiological Length	
Ulna Mini. Circumference	

Sacrum Ant. Length		
Sacrum Super. Breadth		
Sacrum Max. Transverse Dia.		
Os Coxae. Height		
Os Coxae Iliac Breadth		
Os Coxae Pubic Length		
Os Coxae Ischium Length		
Femur Max. Length	428mm	163.107 +/-3.417
Femur Bicondylar Breadth	420mm	
Femur Epicondylar Breadth	79mm	
Femur Max. Head Dia.		
Femur Ant. - Post.	41mm	
Femur Med.-Lat.	34mm	
Femur Ant.-Post	47mm	
Femur Med.-Lat. Midshaft	31mm	
Femur Midshaft Circum.	97mm	
Tibia Length		
Tibia Max. Prox.		
Tibia Max. Distal		
Tibia Max. Diameter		
Tibia Med/-Lat.		
Tibia Circumference at Nutrient Foramen		
Fibula Max. Length		
Fibula Max. Diamter		
Calcaneus Max. Length		
Calcaneus Middle Breadth		

SKELETON #4	**Measurement (mm)**	**Genovés (1967) Stature Estimation (cm)**
Max. Cranial Length	164mm	
" " Breadth	128mm	
Bizygomatic Diameter		
Basion-Bregma Height	131mm	
Cranial Base Length	102mm	
Basion-Prosthion Length		
Maxillo-Alveolar Breadth	60mm	
" " Length	58mm	
Biauricular Breadth	115mm	
Upper Facial Height		
Mini. Frontal Breadth		
Upper Facial Breadth	100mm	
Nasal Height		

Nasal Breadth	
Orbital Breadth	45mm
Orbital Height	
Biorbital Breadth	102mm
Interorbital Breadth	15mm
Frontal Chord	111mm
Parietal Chord	100mm
Occipital Chord	100mm
Foramen Magnum Length	36mm
" " Breadth	28mm
Mastoid Length	R28mm
Chin Height	27mm
Height of the Mandi. Body	29mm
Breadth " " " "	16mm
Bigonial Width	114mm
Bicondylar Breadth	121mm
Minimum Ramus Breadth	38mm
Maximum Ramus Breadth	47mm
MaximumRamus Height	60mm
Mandibular Length	102mm
Mandibular Angle	120 Degrees
Clavicle Max. Length	
Clavicle Sagittal Diameter	
Clavicle Vertical Diameter	
Scapula Height	
Scapula Breadth	
Humerus Max. Length	312mm
Humerus Vertical Diameter of Head	36mm
Humerus Max. Dia. At Midshaft	34mm
Humerus Minimum Diamater at Midshaft	24mm
Radius Maximim Length	R213mm
Radius Ant/-Post. Diamter	R20mm
Radius Med.-Lat. Diameter	R18mm
Ulna Max. Length	
Ulna Ant.-Post. Dia.	
Ulna Med.-Lat. Dia.	
Ulna Physiological Length	
Ulna Mini. Circumference	
Sacrum Ant. Length	
Sacrum Super. Breadth	
Sacrum Max. Transverse Dia.	

Os Coxae. Height		
Os Coxae Iliac Breadth		
Os Coxae Pubic Length		
Os Coxae Ischium Length		
Femur Max. Length	405mm	154.637+/-3.816
Femur Bicondylar Breadth	400mm	
Femur Epicondylar Breadth	55mm	
Femur Max. Head Dia.		
Femur Ant. - Post.	44mm	
Femur Med.-Lat.	34mm	
Femur Ant.-Post	41mm	
Femur Med.-Lat. Midshaft	30mm	
Femur Midshaft Circum.	91mm	
Tibia Length		
Tibia Max. Prox.		
Tibia Max. Distal		
Tibia Max. Diameter		
Tibia Med/-Lat.		
Tibia Circumference at Nutrient Foramen		
Fibula Max. Length		
Fibula Max. Diamter		
Calcaneus Max. Length		
Calcaneus Middle Breadth		

SKELETON #5	**Measurement (mm)**	**Genovés (1967) Stature estimation (cm)**
Max. Cranial Length		
" " Breadth		
Bizygomatic Diameter		
Basion-Bregma Height		
Cranial Base Length		
Basion-Prosthion Length		
Maxillo-Alveolar Breadth		
" " Length		
Biauricular Breadth		
Upper Facial Height		
Mini. Frontal Breadth		
Upper Facial Breadth		
Nasal Height		
Nasal Breadth		
Orbital Breadth		
Orbital Height		

Biorbital Breadth
Interorbital Breadth
Frontal Chord
Parietal Chord
Occipital Chord
Foramen Magnum Length
" " Breadth
Mastoid Length
Chin Height
Height of the Mandi. Body
Breadth " " " "
Bigonial Width
Bicondylar Breadth
Minimum Ramus Breadth
Maximum Ramus Breadth
MaximumRamus Height
Mandibular Length
Mandibular Angle
Clavicle Max. Length
Clavicle Sagittal Diameter
Clavicle Vertical Diameter
Scapula Height
Scapula Breadth
Humerus Max. Length
Humerus Vertical Diameter of Head
Humerus Max. Dia. At Midshaft
Humerus Minimum Diamater at Midshaft
Radius Maximim Length
Radius Ant/-Post. Diamter
Radius Med.-Lat. Diameter
Ulna Max. Length
Ulna Ant.-Post. Dia.
Ulna Med.-Lat. Dia.
Ulna Physiological Length
Ulna Mini. Circumference
Sacrum Ant. Length
Sacrum Super. Breadth
Sacrum Max. Transverse Dia.
Os Coxae. Height
Os Coxae Iliac Breadth
Os Coxae Pubic Length

Os Coxae Ischium Length	
Femur Max. Length	N/A
Femur Bicondylar Breadth	N/A
Femur Epicondylar Breadth	N/A
Femur Max. Head Dia.	38mm
Femur Ant. - Post.	41mm
Femur Med.-Lat.	35mm
Femur Ant.-Post	39mm
Femur Med.-Lat. Midshaft	26mm
Femur Midshaft Circum.	91mm
Tibia Length	
Tibia Max. Prox.	
Tibia Max. Distal	
Tibia Max. Diameter	
Tibia Med/-Lat.	
Tibia Circumference at Nutrient Foramen	
Fibula Max. Length	
Fibula Max. Diamter	
Calcaneus Max. Length	
Calcaneus Middle Breadth	

Juvenile Metric Measurements

SKELETON #6	**Measurement (mm)**	**Maresh (1970) -Long Bone Diaphyseal Length Age Estimation**
Femur Max. Diaphyseal L.	R231mm	4-4.5 years of age for both males and females
Femur Vertical Head Breadth	R28mm	
Femur Distal Breadth	R47mm	
Femur Midshaft Diameter	R57mm	
Tibia Max. Diaphyseal	181mm	3.5-4.5 years of age for both males and females
Tibia Proximal Breadth	41mm	
Tibia Distal Breadth	29mm	
Tibia Midshaft Diameter	57mm	
Humerus Max. Diaphyseal L.	R172mm	4.5-5 years of age for both males and females
Humerus Proximal Breadth	R22mm	
Humerus Distal Breadth	R35mm	
Humerus Midshaft Diameter	50mm	
Radius Max. Diaphyseal L.	127mm	4-5 years of age for both males and females
Radius Proximal Breadth	12mm	
Radius Distal Breadth	18mm	
Radius Midshaft Diameter	35mm	

SKELETON #7	Measurement (mm)	Maresh (1970) Long Bone Diaphyseal Length Age Estimation
Femur Max. Diaphyseal L.		
Femur Vertical Head Breadth		
Femur Distal Breadth		
Femur Midshaft Diameter		
Tibia Max. Diaphyseal	R178mm	3.5-4.5 years old for males and females
Tibia Proximal Breadth	N/A	
Tibia Distal Breadth	R26mm	
Tibia Midshaft Diameter	57mm	
Humerus Max. Diaphyseal L.		
Humerus Proximal Breadth		
Humerus Distal Breadth		
Humerus Midshaft Diameter		
Radius Max. Diaphyseal L.		
Radius Proximal Breadth		
Radius Distal Breadth		
Radius Midshaft Diameter		

SKELETON #8	Measurement (mm)	Maresh (1970) Long Bone Diaphyseal Length Age Estimation
Femur Max. Diaphyseal L.	115mm	approx. 6months for males and females
Femur Vertical Head Breadth	15mm	
Femur Distal Breadth	28mm	
Femur Midshaft Diameter	36mm	
Tibia Max. Diaphyseal	93mm	approx. 6months for males and females
Tibia Proximal Breadth	18mm	
Tibia Distal Breadth	15mm	
Tibia Midshaft Diameter	36mm	
Humerus Max. Diaphyseal L.	102mm	approx. 1yr for both males and females
Humerus Proximal Breadth	19mm	
Humerus Distal Breadth	23mm	
Humerus Midshaft Diameter	37mm	
Radius Max. Diaphyseal L.	R77mm	6months-1yr for both males and females
Radius Proximal Breadth	8mm	
Radius Distal Breadth	12mm	
Radius Midshaft Diameter	26mm	

SKELETON #9	Measurement (mm)	Maresh (1970) Long Bone Diaphyseal Length Age Estimation
Femur Max. Diaphyseal L.	128mm	approx. 1yr for males and females
Femur Vertical Head Breadth	16mm	

Femur Distal Breadth	35mm	
Femur Midshaft Diameter	40mm	
Tibia Max. Diaphyseal		
Tibia Proximal Breadth		
Tibia Distal Breadth		
Tibia Midshaft Diameter		
Humerus Max. Diaphyseal L.		
Humerus Proximal Breadth		
Humerus Distal Breadth		
Humerus Midshaft Diameter		
Radius Max. Diaphyseal L.		
Radius Proximal Breadth		
Radius Distal Breadth		
Radius Midshaft Diameter		

SKELETON #10	**Measurement (mm)**	**Maresh (1970) Long Bone Diaphyseal Length Age Estimation**
Femur Max. Diaphyseal L.	R138mm	approx. 1 year for males and females
Femur Vertical Head Breadth	R18mm	
Femur Distal Breadth	R27mm	
Femur Midshaft Diameter	R41mm	
Tibia Max. Diaphyseal	R114mm	approx. 1 year for males and females
Tibia Proximal Breadth	R25mm	
Tibia Distal Breadth	R19mm	
Tibia Midshaft Diameter	R41mm	
Humerus Max. Diaphyseal L.		
Humerus Proximal Breadth		
Humerus Distal Breadth		
Humerus Midshaft Diameter		
Radius Max. Diaphyseal L.		
Radius Proximal Breadth		
Radius Distal Breadth		
Radius Midshaft Diameter		

SKELETON #11	**Measurement (mm)**	**Maresh (1970) Long Bone Diaphyseal Length Age Estimation**
Femur Max. Diaphyseal L.	R102mm	3-6months of age for males and females
Femur Vertical Head Breadth	R16mm	
Femur Distal Breadth	N/A	
Femur Midshaft Diameter	R35mm	
Tibia Max. Diaphyseal	99mm	6months of age for males and females

Tibia Proximal Breadth	18mm	
Tibia Distal Breadth	N/A	
Tibia Midshaft Diameter	37mm	
Humerus Max. Diaphyseal L.	R92mm	6months of age for males and females
Humerus Proximal Breadth	R18mm	
Humerus Distal Breadth	R24mm	
Humerus Midshaft Diameter	R35mm	
Radius Max. Diaphyseal L.		
Radius Proximal Breadth		
Radius Distal Breadth		
Radius Midshaft Diameter		

SKELETON #12	**Measurement (mm)**	**Maresh (1970) Long Bone Diaphyseal Length Age Estimation**
Femur Max. Diaphyseal L.		
Femur Vertical Head Breadth		
Femur Distal Breadth		
Femur Midshaft Diameter		
Tibia Max. Diaphyseal		
Tibia Proximal Breadth		
Tibia Distal Breadth		
Tibia Midshaft Diameter		
Humerus Max. Diaphyseal L.		
Humerus Proximal Breadth		
Humerus Distal Breadth		
Humerus Midshaft Diameter		
Radius Max. Diaphyseal L.	72mm	6months of age for males and females
Radius Proximal Breadth	7mm	
Radius Distal Breadth	10mm	
Radius Midshaft Diameter	29mm	

SKELETON #13	**Measurement(mm)**	**Maresh (1970) Long Bone Diaphyseal Length Age Estimation**
Femur Max. Diaphyseal L.		
Femur Vertical Head Breadth		
Femur Distal Breadth		
Femur Midshaft Diameter		
Tibia Max. Diaphyseal		
Tibia Proximal Breadth		
Tibia Distal Breadth		
Tibia Midshaft Diameter		
Humerus Max. Diaphyseal L.		

Humerus Proximal Breadth		
Humerus Distal Breadth		
Humerus Midshaft Diameter		
Radius Max. Diaphyseal L.	57mm	1.5months of age for males and females
Radius Proximal Breadth	6mm	
Radius Distal Breadth	N/A	
Radius Midshaft Diameter	26mm	

SKELETON #14	**Measurement(mm)**	**Maresh (1970) Long Bone Diaphyseal Length Age Estimation**
Femur Max. Diaphyseal L.		
Femur Vertical Head Breadth		
Femur Distal Breadth		
Femur Midshaft Diameter		
Tibia Max. Diaphyseal		
Tibia Proximal Breadth		
Tibia Distal Breadth		
Tibia Midshaft Diameter		
Humerus Max. Diaphyseal L.	80mm	3-6months of age for males and females
Humerus Proximal Breadth	19mm	
Humerus Distal Breadth	N/A	
Humerus Midshaft Diameter	36mm	
Radius Max. Diaphyseal L.	R68mm	3-6months of age for males and females
Radius Proximal Breadth	R7mm	
Radius Distal Breadth	R12mm	
Radius Midshaft Diameter	R27mm	

Old Mission Point (ClDq-1)- NONMETRIC TRAITS

Individual#	**Nonmetric Trait**	**Present/Absent**	**Location & Number**
Skeleton1	metopic suture	yes-partial	M
	Supraorbital structure	N/A	
	Supraorbital foramen	N/A	
	Infraorbital suture	yes-partial	L
	Multiple Infraorbital foramina	N/A	
	zygomaticofacial foramina	N/A	
	parietal foramen	N/A	
	Sutural bones	N/A	
	inca bone	N/A	
	condylar canal	N/A	
	divided hypoglossal canal	N/A	
	flexure of superior sagittal sulcus	yes-bifurcate	

	foramen ovale incomplete	N/A	
	foramen spinosum incomplete	N/A	
	pterygospinous bridge	N/A	
	pterygoalar bridge	N/A	
	typanic dihiscence	N/A	
	auditory exostosis	N/A	
	mastoid foramen	N/A	
	mental foramen	N/A	
	mandibular torus	N/A	
	mylohyoid bridge	N/A	
	atlas bridging	N/A	
	accessory transverse foramina	N/A	
	septal aperture	N/A	
Skeleton2	metopic suture	yes-partial	M
	Supraorbital structure	Yes-< 1/2 occluded by spicules	
	Supraorbital foramen	N/A	
	Infraorbital suture	N/A	
	Multiple Infraorbital foramina	N/A	
	zygomaticofacial foramina	N/A	
	parietal foramen	N/A	
	Sutural bones	N/A	
	inca bone	N/A	
	condylar canal	N/A	
	divided hypoglossal canal	N/A	
	flexure of superior sagittal sulcus	N/A	
	foramen ovale incomplete	N/A	
	foramen spinosum incomplete	N/A	
	pterygospinous bridge	N/A	
	pterygoalar bridge	N/A	
	typanic dihiscence	N/A	
	auditory exostosis	N/A	
	mastoid foramen	N/A	
	mental foramen	N/A	
	mandibular torus	N/A	
	mylohyoid bridge	N/A	
	atlas bridging	N/A	
	accessory transverse foramina	N/A	
	septal aperture	N/A	
Skeleton3	metopic suture	yes-partial	M
	Supraorbital structure	yes-<1/2 occluded by spicules	

	Supraorbital foramen	Yes-1	L1
	Infraorbital suture	N/A	
	Multiple Infraorbital foramina	N/A	
	zygomaticofacial foramina	N/A	
	parietal foramen	N/A	
	sutural bones	N/A	
	inca bone	N/A	
	condylar canal	N/A	
	divided hypoglossal canal	N/A	
	flexure of superior sagittal sulcus	N/A	
	foramen ovale incomplete	N/A	
	foramen spinosum incomplete	N/A	
	pterygospinous bridge	N/A	
	pterygoalar bridge	N/A	
	typanic dihiscence	N/A	
	auditory exostosis	N/A	
	mastoid foramen	N/A	
	mental foramen	N/A	
	mandibular torus	N/A	
	mylohyoid bridge	N/A	
	atlas bridging	N/A	
	accessory transverse foramina	N/A	
	septal aperture	N/A	
Skeleton4	metopic suture	N/A	
	Supraorbital structure	Yes-multiple. <1/2 occluded by spicules	L
	Supraorbital foramen	Yes-1	R1
	Infraorbital suture	N/A	
	Multiple Infraorbital foramina	N/A	
	zygomaticofacial foramina	N/A	
	parietal foramen	yes	R parietal 1
	sutural bones	yes-	R parietal notch bone-1
	inca bone	Absent	
	condylar canal	N/A	
	divided hypoglossal canal	Absent	
	flexure of superior sagittal sulcus	Yes-bifurcate	
	foramen ovale incomplete	Absent	
	foramen spinosum incomplete	Absent	
	pterygospinous bridge	N/A	
	pterygoalar bridge	N/A	

	typanic dihiscence	N/A	
	auditory exostosis	Absent	
	mastoid foramen	Absent	
	mental foramen	Yes-2	R1/L1
	mandibular torus	Absent	
	mylohyoid bridge	Yes	L/R near mandibular foramen
	atlas bridging	Yes	Complete
	accessory transverse foramina	Absent	
	septal aperture	Absent	
Skeleton5	metopic suture	N/A	
	Supraorbital structure	N/A	
	Supraorbital foramen	N/A	
	Infraorbital suture	N/A	
	Multiple Infraorbital foramina	N/A	
	zygomaticofacial foramina	N/A	
	parietal foramen	N/A	
	sutural bones	N/A	
	inca bone	N/A	
	condylar canal	N/A	
	divided hypoglossal canal	N/A	
	flexure of superior sagittal sulcus	N/A	
	foramen ovale incomplete	N/A	
	foramen spinosum incomplete	N/A	
	pterygospinous bridge	N/A	
	pterygoalar bridge	N/A	
	typanic dihiscence	N/A	
	auditory exostosis	Absent	
	mastoid foramen	Absent	
	mental foramen	yes-2	L1/R1
	mandibular torus	N/A	
	mylohyoid bridge	N/A	
	atlas bridging	N/A	
	accessory transverse foramina	N/A	
	septal aperture	N/A	

APPENDIX B: STABLE ISOTOPE DATA

Old Mission Point (ClDq-1) -C&N STABLE ISOTOPE RESULTS

UCIAMS Ultrafiltered CN Isotope Results via Radiocarbon Dating

Individual	Element	Side	UCIAMS#	Collagen Yield (%)	$\delta^{15}N$ (‰)	$\delta^{13}C$(‰)	%N	%C	C/N (Atomic)
Skeleton2	Femur	R	125912	5.3	*11*	*-18.8*	15.8	43.2	3.2
Skeleton3	Femur	R	107245	4.1	*15.6*	*-14.1*	14.8	42.4	3.3
Skeleton4	Femur	R	107246	10	*18.1*	*-15.6*	15.3	43.6	3.3
Skeleton5	Femur	R	107247	4.1	*15.8*	*-12.6*	15	41.8	3.2
Skeleton6	Femur	R	125908	7.8	*13.1*	*-17.1*	15.4	42.7	3.2
Skeleton7	Tibia	R	125909	3.4	*14.1*	*-15.1*	15.1	41.6	3.2
Skeleton10	Tibia	L	125910	9.9	*17.1*	*-16.5*	16.2	44.7	3.2
Skeleton11	Tibia	L	125911	12.5	*14.4*	*-18.9*	16	43.8	3.2
Skeleton12	Humerus	R	125913	7.6	*13.9*	*-19.1*	16	44	3.2

TERRA CN Isotope Results

Individual	Element	Side	TERRA#	Collagen Yield (%)	$\delta^{15}N$ (‰)	$\delta^{13}C$(‰)	%N	%C	C/N	C/N (Atomic)
Skeleton1	Tibia	R	G7951	22.1	*13.0*	*-18.5*	16.7	48.4	2.9	3.3
Skeleton2	Femur	R	G7952	16.8	*11.0*	*-18.6*	15.8	44.0	2.8	3.2
Skeleton3	Femur	R	G7953	7.2	*16.5*	*-14.5*	14.4	41.8	2.8	3.2
Skeleton4	Femur	R	G7954	10.2	*15.9*	*-12.5*	15.5	43.5	2.8	3.2
Skeleton5	Femur	R	G7955	6.4	*16.1*	*-13.4*	16.5	46.4	2.8	3.2
Skeleton6	Femur	L	G7956	6.6	*13.0*	*-17.5*	15.7	43.9	2.8	3.2
Skeleton7	Tibia	R	G7957	11.2	*12.4*	*-17.3*	15.7	44.1	2.8	3.2
Skeleton8	Scapula	L	G7958	25.7	*14.3*	*-18.0*	15.6	44.3	2.8	3.2
Skeleton9	Femur	R	G7959	14.8	*17.5*	*-16.2*	15.0	41.7	2.8	3.2
Skeleton10	Femur	L	G7960	19.4	*13.8*	*-19.5*	14.9	42.7	2.9	3.3
Skeleton11	Femur	R	G7961	26	*14.3*	*-19.1*	12.3	34.7	2.8	3.2
Skeleton12	Femur	L	G7962	21.6	*15.0*	*-18.9*	15.7	44.4	2.8	3.2
Skeleton13	Scapula	R	G7963	21.7	*11.9*	*-20.2*	15.7	45.2	2.9	3.3
Skeleton14	Humerus	R	G7964	22	*14.7*	*-18.3*	12.2	34.8	2.9	3.3

APPENDIX C: RADIOCARBON DATING RESULTS

Old Mission Point (ClDq-1) – RADIOCARBON DATES

Old Mission Point Coordinates: Lat: 48.00 Lon: -66.73

Individual	Element	Side	UCIAMS#	Uncalibrated Date
Skeleton2	Femur	R	125912	BP 415+/-20
Skeleton3	Femur	R	107245	BP 2405+/-15
Skeleton4	Femur	R	107246	BP 740+/-20
Skeleton5	Femur	R	107247	BP 780+/-15
Skeleton6	Femur	R	125908	BP 620+/-15
Skeleton7	Tibia	R	125909	BP 725+/-15
Skeleton10	Tibia	L	125910	BP 665+/-15
Skeleton11	Tibia	L	125911	BP 565+/-15
Skeleton12	Humerus	R	125913	BP 525+/-15

Individual	Delta R*	Calibration Curve	% Marine Carbon	Calibrated Date-*1 sigma*	Prob. Dist.	Calibrated Date- *2 sigma*	Prob. Dist.
Skeleton2	90+/-50	Marine/INTCAL	50/50	AD 1674-1807	1	AD 1662-1827	89.8
Skeleton3	90+/-50	Marine/INTCAL	80/20	BC 151-30	1	BC 196-AD 35	1
Skeleton4	90+/-50	Marine/INTCAL	80/20	AD 1509-1620	1	AD 1471-1651	1
Skeleton5	90+/-50	Marine/INTCAL	90/10	AD 1519-1629	1	AD 1477-1661	1
Skeleton6	90+/-50	Marine/INTCAL	60/40	AD 1531-1628	1	AD 1492-1650	1
Skeleton7	90+/-50	Marine/INTCAL	60/40	AD 1444-1492	1	AD 1420-1533	99.8
Skeleton10	90+/-50	Marine/INTCAL	70/30	AD 1534- 1633	1	AD 1493-1658	1
Skeleton11	90+/-50	Marine/INTCAL	70/30	AD 1639- 1705	84.8	AD 1615-1815	96.7
Skeleton12	90+/-50	Marine/INTCAL	60/40	AD 1641 -1691	92.9	AD 1617-1808	95.8

*****Delta R established through CALIB v. 2.0 database, sample #861: Baie des Chaleurs, QC from oyster (*Crassotrea virginica*) 68km east of site. For % marine carbon reliance see ultrafiltered CN stable isotope results**.**