L'ANSE AUX MEADOWS (EjAv-01): AN ARCHAEOLOGICAL AND ETHNOHISTORICAL INVESTIGATION OF BIRD USE DURING THE RECENT INDIAN PERIOD IN NEWFOUNDLAND AND LABRADOR

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Abstract

This thesis explores Native American bird hunting and consumption in Newfoundland and Labrador from 2000 years ago to the nineteenth century. Ethnohistorical records of Beothuk and Innu bird use inform an archaeological interpretation of the Recent Indian period at L'Anse aux Meadows National Historic Site. This investigation of hunter-gatherer bird exploitation supplements research of Late Holocene mammal hunting in order to provide a broadened perspective of pre-contact ecology in the North Atlantic.

Birds were attractive resources to many northern hunter-gatherers because of the predictability and availability of various bird species throughout the year. At the time of European contact, many Newfoundland Beothuk harvested seabirds while the Labrador Innu relied on ptarmigan and grouse. Based on ethnohistorical records, birds played prominent roles in the ecological systems of both Native peoples and an array of tools were utilized to capture and process them.

A synopsis of the province's archaeological record reveals that birds commonly appear in faunal assemblages from Newfoundland Recent Indian and Beothuk coastal sites while hunting blinds are the most visible refuse of bird use in Labrador. Geographic and temporal trends of avian exploitation are discussed with reference to ethnographic and archaeological examples of northern hunter-gatherers.

Archaeological research at L'Anse aux Meadows provides a case study of Recent Indian bird use in northern Newfoundland. Explanations are offered for the co-occurrence of a faunal record dominated by bird bone and a high relative frequency of large bifaces and scrapers. I argue that at L'Anse aux Meadows birds were hunted and tools were prepared for future activities in the seasonal round.

Acknowledgements

An appreciation for historical context was honed in Newfoundland by the rocky shores, the streets of St. John's, and the insightful conversation of faculty and students. Many people deserve thanks for the development of this thesis and its author. I would like thank my supervisor, Dr. M.A.P. Renouf, for her encouragement, patience, and guidance. It is to her that I owe my experience in Newfoundland and for that I am most grateful. Thank you to the following people for assistance, advice, and support: Birgitta Wallace, Jenneth Curtis, Peter Whitridge, Lisa Rankin, Reade Davis, Cathy Mathias, Mike Deal, Larry Nolan, Stephen Hull, Kevin McAleese, Donald Holly Jr., Peter Armitage, Scott Neilsen, Heather Proctor, Bill Montevecchi, Trevor Bell, Dominique Lavers, Eric Tourigny, Stéphane Noël, Brent Keufler, Patty Wells, and the staff of L'Anse aux Meadows National Historic Site. The following institutions provided funding without which this work would not have been possible; Memorial University School of Graduate Studies, the Social Sciences and Humanities Research Council, the Canada Research Chairs Program, the Provincial Archaeology Office of Newfoundland and Labrador, and the Marine Archaeology Society. Special thanks to Gregory Gan, Mike Donnelly, and Andie Wilson for all the humour and occasional enlightenment. Thank you to my wife Amy for being an emotional anchor that kept me from crashing on the rocks. Lastly, thank you to my family: to my mother and father for instilling a sense of wonder on an impressionable mind and for their steady encouragement; and to my siblings, Sherry and Kent, for maintaining a meaningful connection despite the physical and often emotional distance that this thesis work introduced to our relationship.

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CHAPTER 1

INTRODUCTION

This thesis explores Native American bird use in Newfoundland and Labrador from the Late Holocene to the nineteenth century. Ethnohistorical data concerning Beothuk and Innu bird hunting provides a contextual basis for investigating pre-contact bird consumption during the Recent Indian Period from 2000 to 500 BP (before present). The archaeological detection of bird exploitation employs analyses of faunal records, lithic assemblages, features, and local ecology. Both ethnohistorical and archaeological evidence suggest that birds were important resources to Newfoundland and Labrador hunter-gatherers during the Recent Indian Period.

Excavations were conducted in 2008 at L'Anse aux Meadows National Historic Site (EjAv-01) in northern Newfoundland (Figure 1.1) (Kristensen and Renouf 2009). Data gathered in 2008 and from previous research at the site from 1961 to 2002 (Wallace 1989, Wallace 2006) were compiled in an effort to investigate Recent Indian ecology on the province's Northern Peninsula. I argue that the Recent Indian record at L'Anse aux Meadows represents a series of short term warm weather occupations during which time birds were hunted. The faunal record is dominated by bird bones including those of cormorant, guillemot, and unidentified waterfowl. The lithic assemblage includes large bifaces and scrapers, which I hypothesise were more appropriate for mammal hunting and processing. Three explanations are offered to reconcile the faunal and lithic assemblages: 1) mammal hunting occurred at L'Anse aux Meadows to a greater degree than the faunal record indicates, 2) large bifaces and scrapers were used on birds, and 3) Recent Indian occupants predominantly hunted birds but prepared mammal hunting and processing tools

for use elsewhere. The latter explanation is investigated in a temporal context of hunter-gatherer resource use. Ethnohistorical records of Beothuk and Innu seasonal hunting practices shortly after European contact are utilized to demonstrate that birds were significant resources from spring to early autumn, after which time people directed more attention to mammal hunting in late autumn and early winter.

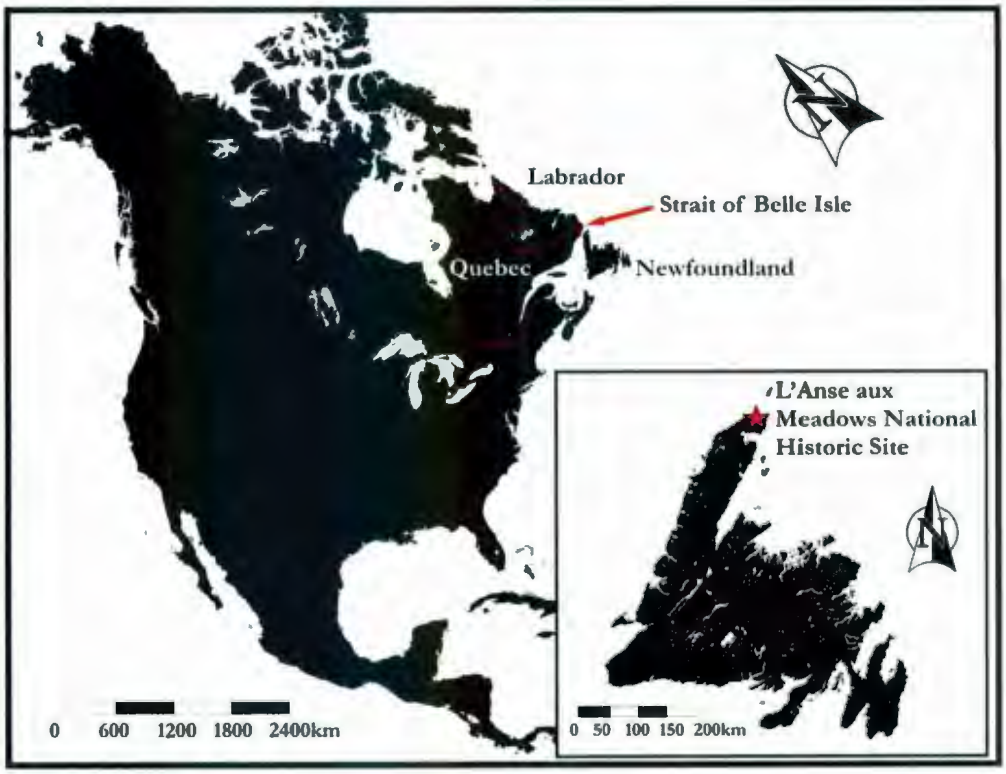

Figure 1.1: Location of Newfoundland, Labrador, and Québec. Inset shows location of L'Anse aux Meadows National Historic Site in northern Newfoundland.

This thesis examines the diverse ways that birds were incorporated into northern hunter-gatherer subsistence strategies. The discussion of pre-contact and historical bird use in Newfoundland and Labrador supplements ethnographic and archaeological research of northern hunter-gatherers that has focused more on the role of sea mammals and caribou (Burch 1972; Henriksen 1973; Hodgetts 2005; McCartney and Savelle 1993;

Woollett *et al.* 2000). A growing body of evidence indicates that birds were essential resources for northern hunter-gatherers from the Late Pleistocene to modern times (Bovy 2007; Causey *et al.* 2005; DePuydt 1994; Dincauze and Jacobson 2001; Dirrigl 1998; Fiedel 2007; Gotfredsen 1997; Mannermaa and Storå 2006; Milne and Donnelly 2004; Moss and Bowers 2007; Sadler and Savage 2003; Serjeantson 1997; Yesner 1977). The evidence presented below points to a broad range of resource use by Late Holocene hunter-gatherers of Newfoundland and Labrador. Birds and mammals made seasonally variable contributions to Innu and Beothuk diet and these dynamics are extended into pre-contact times to aid the interpretation of Recent Indian ecology.

Cultural and ecological background

Figure 1.2 depicts the chronology of pre-contact and historical hunter-gatherers of Newfoundland, Labrador, and the Québec Lower North Shore. This thesis concerns the Recent Indian Period from approximately 2000 years ago to European contact. In Newfoundland, the Recent Indian Period is divided into three complexes based on lithic tool typologies: Cow Head, Beaches, and Little Passage (Erwin *et al.* 2005:49; Hartery 2007; Holly 2002). Many similarities exist with contemporary complexes in adjacent portions of Labrador (Hull 2002). Direct relationships have been established between pre-contact Recent Indian complexes and historical Newfoundland Beothuk and Labrador Innu based on material continuities and settlement patterns (Gilbert 2002; Holly 2002; Pastore 1993; Rowley-Conwy 1990; Schwarz 1994; Tuck and Pastore 1985). The connection between Recent Indian ancestors and Beothuk/Innu descendants legitimizes their treatment together in this study of hunter-gatherer ecology although it does not pre-

suppose a complete uniformity of behaviours through the Late Holocene and into modern times.

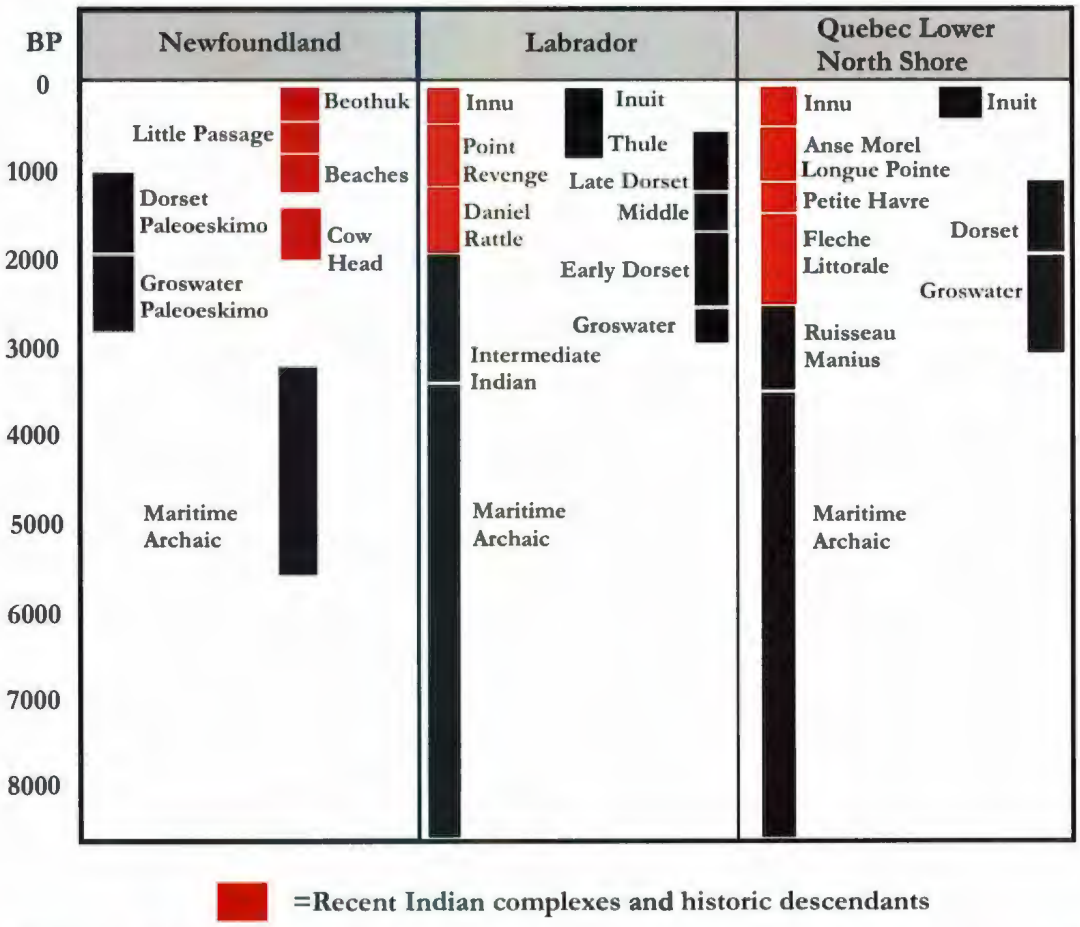

Figure 1.2: Pre- and post-contact Native history of Newfoundland, Labrador, and the Québec Lower North Shore (adapted from Hartery 2007). Breaks between complexes (*e.g.*, between Beaches and Little Passage) are only intended to illustrate the general temporal extent of a complex and do not represent temporal gaps or cultural discontinuities.

Newfoundland Recent Indian people subsisted on resources procured from four major ecological zones: the outer coast, inner coast, near coast, and deep interior (Pastore 1986:58; Schwarz 1994:63). The outer coast encompasses islands, headlands, and exposed coastlines while the inner coast includes sheltered locations along deep bays and complex, indented coastlines (Pastore 1986:58). Whales, several species of seal, birds,

and fish are the major animals that inhabit the outer coast. Shellfish, anadramous fish, shallow water bird species, and seal occupy the inner coast. The near coast is defined as the terrain within 30 km of the ocean beyond which stretches the deep interior (Schwarz 1994). Major animals in the near coast and deep interior include beaver, caribou, waterfowl, anadromous fish, ground dwelling birds, hare, and bears. It is thought that Recent Indian sites were strategically situated to exploit this variety of habitats and resources (Bell and Renouf 2008; Hartery 2007; Holly 2002; Hull 2002; Renouf 1999, 2003). Recent Indian people are hypothesised to have relied on caribou and harp seal although a variety of faunal remains from archaeological sites (*e.g.*, beaver, birds, and molluscs) suggests their resource base was broad (Cridland 1998; Gilbert 2002; Stewart 1999). The Beothuk and Innu at the time of European contact also exploited a variety of interior and coastal habitats. Historical records supplement archaeological finds and indicate that fish, birds, plants, and small mammals were important foods (Cumbaa 1984; Howley 1915; Loring 1992; Marshall 1996).

Study area

L'Anse aux Meadows National Historic Site is located on the tip of the Northern Peninsula in an outer coast environment (Holly 2002:87). Much of the surrounding area is composed of exposed headlands although a series of small bays dot the adjacent coastline (Gimbarzevsky 1977). The site lies at the outlet of a small freshwater creek (Black Duck Brook) that flows into Épaves Bay. The area of L'Anse aux Meadows is generally characterized by low faunal diversity (Northcott 1976). Species typical of interior and inner coast habitats such as caribou are rare or absent. Harp seal migrate in great numbers

off the Northern Peninsula but their migratory paths are generally difficult to access from L'Anse aux Meadows because of offshore topography and ice conditions (Northcott 1976:53). Harbour seal, ringed seal, and several species of whale feed offshore during the summer months. Salmon once inhabited Black Duck Brook although populations were likely small for lack of spawning habitat. With over 300 islands in the neighbouring shallow bays, L'Anse aux Meadows was, and is, home to many nesting birds in summer and moulting birds in late summer/early autumn. Perhaps the most noteworthy influx of animal biomass are migratory birds that move up and down the Atlantic coast in large numbers (Lamberton and Maunder 1976:11,43). The North Atlantic flyway constricts over L'Anse aux Meadows where freshwater ponds and saltwater bays swell with migratory birds that stop off en route to northern waters in spring and southern locales in autumn. Birds in this area were likely a reliable and predictable resource for millennia.

Excavations began at L'Anse aux Meadows in 1961 (Figure 1.3) in an effort to identify a Norse settlement (Ingstad 1977, Wallace 2006). The discovery of Norse material and an extensive body of academic research led to a UNESCO world heritage designation (Davis *et al.* 1988; Dawson 1976; Gimbarzevsky 1977; Gleeson 1979; Grant 1975; Henningsmoen 1977; Ingstad 1977; Lamberton and Maunder 1976; Northcott 1976; Pollett *et al.* 1975; Rick 1977; Smith 1978). In addition to the brief Norse occupation, pre-contact hunter-gatherers intermittently occupied L'Anse aux Meadows for 6000 years (Figure 1.4) (Wallace 1989, 2006). This thesis discusses the Recent Indian Period at L'Anse aux Meadows, which extends from 1300 to 500 years BP.

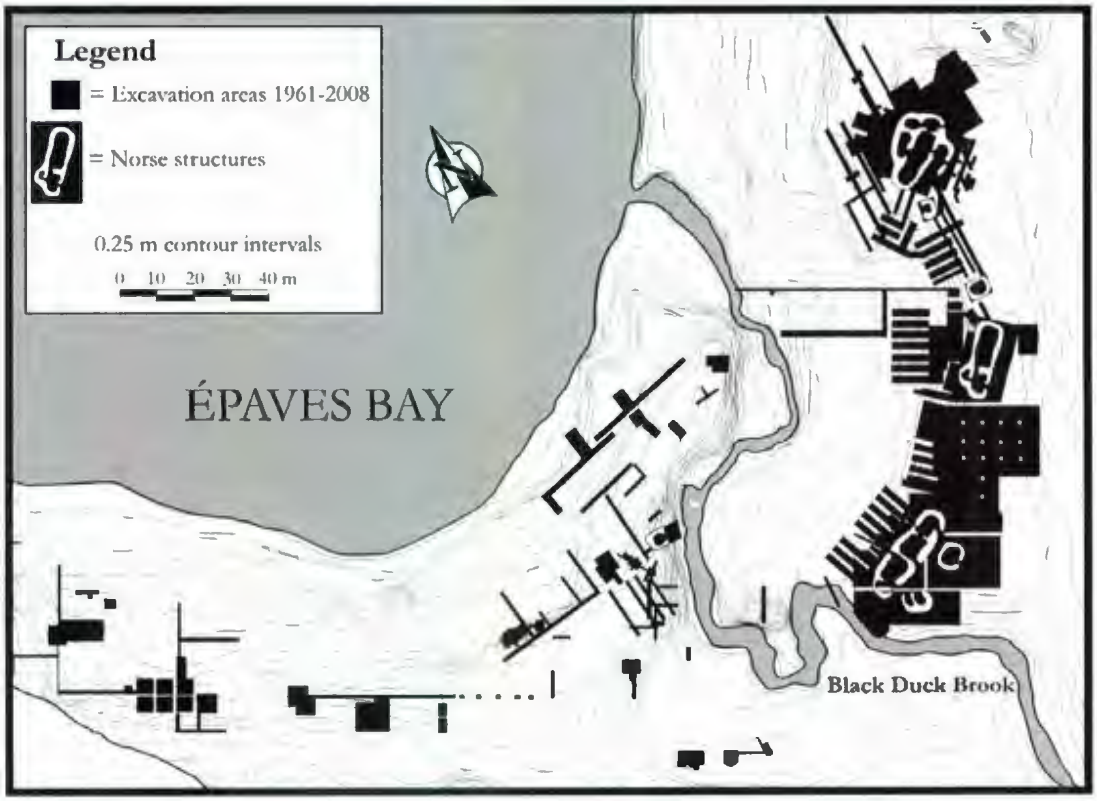

Figure 1.3: Excavated areas at L'Anse aux Meadows National Historic Site (adapted from Wallace 1989).

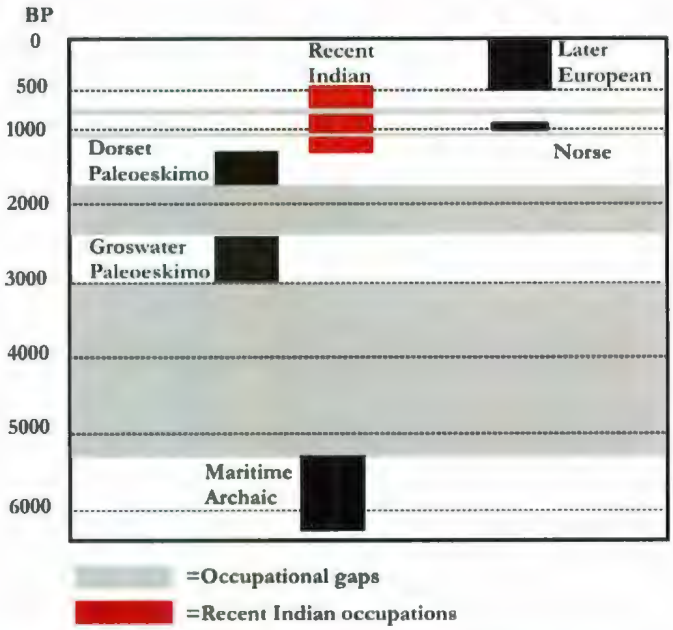

Figure 1.4: Human chronology of L'Anse aux Meadows (based on Wallace 2006). The grey bands represent time periods when there is no record of human occupation at the site.

Wallace (1989) synthesised the Recent Indian archaeological record at L'Anse aux Meadows and argued on the basis of lithic tools, features, and site location that the site was occupied for short periods of time during warm seasons. According to Wallace (1989:67-68), the principal resource exploited at L'Anse aux Meadows was sea mammal, particularly whale. A more in-depth synopsis of Wallace's research is presented in Chapter Seven. The lithic collection of L'Anse aux Meadows was re-analysed and Wallace's interpretations are re-visited in light of two decades of research of Recent Indian, Beothuk, and Innu adaptations (Bell and Renouf 2008; Cridland 1998; Erwin *et al.* 2005; Gilbert 2002; Hartery 2007; Holly 2002, 2005, 2008; Hull 2002; Loring 1992; Marshall 1996; Rast 1999; Renouf 1999, 2003; Renouf *et al.* 2000).

Research questions

The general research objective of this thesis is to reconstruct the potential significance of birds in the ecology of Recent Indian people and their Beothuk and Innu descendants. Specific research questions are:

1) Did Recent Indian people exploit birds and, if so, how important were avian resources?

2) How were birds incorporated into northern hunter-gatherer subsistence (Chapter Two)?

3) What information exists in historical records about Beothuk and Innu bird use prior to, and shortly after, European contact and what do these records suggest about Recent Indian bird use (Chapters Three and Four)?

4) How can ethnographic data regarding bird use be combined with principles of taphonomy to predict the archaeological signature of bird hunting in the province (Chapter Five)?

5) Do birds appear in the Recent Indian, Beothuk, and Innu archaeological record (Chapter Six)?

6) Is there evidence for Recent Indian bird hunting at L'Anse aux Meadows (Chapter Seven)?

Thesis outline

The thesis explores bird ecology and Beothuk/Innu ethnohistory before proceeding to the archaeology of bird exploitation. Chapter Two summarizes biological traits of Newfoundland and Labrador birds, particularly those that the ethnographic literature demonstrates were important to hunter-gatherers. Birds could be hunted year round in a variety of habitats and the behaviours of certain species were often geographically and temporally predictable. Historical and pre-contact bird hunters developed economic patterns to exploit a wide array of avian ecological traits. The dietary importance of birds likely varied geographically, temporally, and relative to the availability of other game including caribou, fish, sea mammals, shellfish, and other small game.

Ethnohistorical evidence of Beothuk and Innu bird use are the subjects of Chapters Three and Four, respectively. These people are the descendants of Recent Indian complexes in Newfoundland and Labrador and serve as ethnographic analogues for the interpretation of pre-contact activities in the province in general, and at L'Anse aux Meadows in particular. The strait separating northern Newfoundland and southern Labrador is narrow (18 km) and likely served as a human transportation corridor (Hull 2002) which means that L'Anse aux Meadows was geographically within the cultural sphere of the Newfoundland Beothuk and Labrador Innu. The direct historical approach

here employed is guided by the principle that historical documents of ethnographic interest are valuable data sources in anthropology and archaeology, particularly to those studying past human-animal relationships (Arnold 2003:66; Binford 1978a; Galloway 2006; Gifford-Gonzalez 1991; Holt 1996; Sheehan 2004). Connecting historical documents to pre-contact people is justified by the demonstrated ancestral relationship between Recent Indian people and the Beothuk and Innu (Gilbert 2002; Holly 2002; Loring 1992; Marshall 1996; Rowley-Conwy 1990). This direct historical approach investigates only a general continuity of ecological practices while acknowledging that local patterns shifted through time based on decisions of flexible human actors. The benefit of this approach is the use of historical records that offer glimpses of perishable and non-tangible aspects of human behaviour normally beyond the realm of archaeology. The importance of early European observations increases in Newfoundland and Labrador where soils are generally not favourable for organic preservation; non-archaeological data sources can fill voids to help interpret subsistence strategies of past hunter-gatherers. Historical records pertaining to the economic importance of birds, bird hunting technology, and the ideology of birds among the Beothuk and Innu are discussed in Chapters Three and Four.

Chapter Five combines ethnohistorical evidence from previous chapters with taphonomic research to posit the archaeological signature of bird hunting activities in northern landscapes. This forms a predictive framework tested in Chapter Six with a summary of Recent Indian, Beothuk, and Innu archaeological sites with bird bone and/or bird hunting/processing features. A case study of Recent Indian and Beothuk site

distribution is presented in Chapter Six as evidence that islands and the bird resources on them were attractive to Newfoundland's hunter-gatherers.

Chapter Seven examines archaeological evidence from L'Anse aux Meadows gathered from 1961 to 2002 and by Kristensen and Renouf in 2008. Faunal remains, lithics, and features from Recent Indian components as well as local ecology and historical records point to seasonal bird hunting by small groups in ephemeral camps. Explanations are offered for the appearance of what I hypothesise were mammal hunting/processing tools at L'Anse aux Meadows in the relative absence of mammal bone. Future research may uncover mammal remains in association with Recent Indian artifacts at the site but I argue that stone tools may have been manufactured for later use elsewhere at mammal hunting sites.

Chapter Eight concludes with a research summary and discussion of the relevance of this study for archaeological investigations of hunter-gatherer ecology in the North Atlantic.

CHAPTER 2

BIRDS AND HUNTER-GATHERERS

The importance of game to pre-contact and historical hunter-gatherers of Newfoundland and Labrador was influenced by spatial and temporal availability of animals and ideological conceptions of them (Armitage 1992; Fitzhugh 1972; Harpending and Davis 1977; Loring 1992; Renouf 2003; Whitridge 2001; Woollett 2003). Because of avian ecological diversity, different bird species were available throughout the year in varying concentrations: certain species seasonally congregated in large numbers at predictable locations while others were solitary and more evenly dispersed. Birds and their eggs could be exploited at various stages of the seasonal round as primary or secondary resources depending on the subsistence choices of hunter-gatherers.

This chapter explores aspects of avian ecology, reproductive behaviour, and migration patterns that influenced when and where birds were present, how they could be hunted, and their potential importance in northern hunter-gatherer diet. The biological traits presented below were selected based on ethnographic data of northern people (Armitage 1990, 1992; Birket-Smith 1929; Marshall 1996; Tanner 1979), optimal foraging theory (Winterhalder 1981), and biological research of Newfoundland and Labrador birds (Austin 1932; Cairns *et al.* 1989; Montevecchi and Tuck 1987; Peters and Burleigh 1951; Threlfall 1983; Todd 1980). The province's pre-contact and historical hunter-gatherers adapted to diverse avian traits in innovative ways, which will be examined in subsequent chapters.

Avian biology

Avian traits of potential significance to human hunters vary from bird behaviours to nutritional value. Table 2.1 presents an hypothesis of culturally important traits of three bird groups exploited by Newfoundland and Labrador hunter-gatherers: 1) waterfowl; 2) seabirds; and 3) ptarmigan/grouse. These bird categories are ecological groups not distinct taxa. The distinction between the three bird categories as well as criteria for the selection of certain bird species and their culturally important traits are discussed below. Only common species in the province are presented. Data were gathered from Austin (1932), Dean (1993), Montevecchi and Tuck (1987), Peters and Burleigh (1951), Threlfall (1983), and Todd (1980).

Group	Family	Species	Culturally significant biological traits
Waterfowl	Anatidae	Canada geese (*Branta canadensis)*	Shallow water feeder (*e.g.*, marshes, bays), high meat yield, gregarious, lured by calls and decoys, vertical leap when threatened, abundant in interior, breeds on coastal islands
		Black Duck (*Anas rubripes*)	Shallow water feeder, common in interior marshes, ponds, and near coast, favourable taste
		Green winged teal (*Anas crecca*)	Common in interior shallow waters, large autumn congregations, difficult to shoot except during moult
		Common Goldeneye (*Bucephala clangula*)	Common on streams and wooded ponds, one of first ducks to arrive in spring, some winter on rivers, swift flier, wary
		Red breasted merganser (*Mergus serrator*)	Common in interior ponds, rivers, and on coast, slow escape flight, strong diver
		Harlequin Duck (*Histrionicus histrionicus*)	Nests along interior rivers, used to be common in interior, strong diver, attractive feathers
		Common pintail (*Anas Acuta*)	Common in autumn, breeds on islands
	Gaviidae	Common loon (*Gavia immer*)	High meat yield, visible nests, vocal, common on ponds, lakes, and coastal bays, slow escape flight, arrive early in spring, stay late in autumn, attractive feathers

Table 2.1a: Newfoundland and Labrador waterfowl and their ecological traits hypothesised to be of importance to hunter-gatherers.

Group	Family	Species	Culturally significant biological traits
Seabirds	Sulidae	Northern gannet (*Morus bassanus*)	Large, dense colonies, high meat yield, small clutch (lay single egg), only comes to land to nest, young rich in fat
	Phalacrocoracidae	Double-crested Cormorant (*Phalacrocorax auritus*)	Nests in colonies on fresh and salt water islands, feeds in salt water inlets and on coastlines close to shore, common
	Anatidae	Common Eider (*Somateria mollissima*)	Common summer and winter resident, strong diver, slow escape flight, gregarious, feeds near shore, large clutch (many eggs), nests in colonies, wary, high quality down
		Oldsquaw (*Clangula hyemalis*)	Common in winter flocks, vocal, strong diver
		Scoters (*Melanitta* spp)	Slow escape flight, migrating flocks stay close to shore, large clutch, hard to hunt except during moult, gregarious
	Laridae	Gulls	Plentiful on all coasts, large colonies, available year round
		Terns	Common on islands, multiple clutches, protective of eggs
	Sternocoriidae	Jaegers	Nests in colonies, swift fliers, only comes to land to nest, aggressive
	Alcidae	Black Guillemot (*Cepphus grille*)	Common, year round residents, stays close to shore, slow escape flight, small clutch, attractive bright red feet
		Common Dovekie (*Plautus alle*)	Common, large groups in winter, large colonies, strong divers, easily approached, small clutch
		Great Auk (*Pinguinus impennis*)	Formerly locally abundant, large colonies, flightless, awkward on land, high meat yield, rich in fat, large durable eggs, rich down, only came to land to nest, small clutch
		Northern Razorbill (*Alca torda*)	Large colonies, easily lured, strong diver
		Thick-billed Murre (*Uria lomvia*)	Nests in colonies, common winter resident, gregarious
		Common Murre (*Uria aalge*)	Nests in large colonies, gregarious, tame in colonies, awkward on land, small clutch, strong divers
		Atlantic Puffin (*Fratercula arctica*)	Large colonies, small clutch, fairly tame
	Scolopacidae	Eskimo curlew (*Numenius borealis*)	Formerly had massive autumn congregations, high in fat, tame
		Sandpipers and yellow-legs	Abundant in summer along streams and ponds, fairly tame, can be lured with calls, low meat yield

Table 2.1b: Newfoundland and Labrador seabirds and ecological traits hypothesised to be of importance to hunter-gatherers.

Group	Family	Species	Culturally significant biological traits
Ptarmigan and Grouse	Phasianidae	Ruffed grouse (*Bonasa umbellus*)	Short escape flight to nearby branches, tame, found along shorelines
		Spruce grouse (*Canachites canadensis*)	Abundant, short escape flight to low branches, tame, year round resident, population cycles
		Willow ptarmigan (*Lagopus lagopus*)	Common in interior, large winter flocks, short escape flight, rich in fat, tame, seasonal migrations, population cycles
		Rock ptarmigan (*Lagopus mutus*)	Relatively large clutch, common at high elevations

Table 2.1c: Newfoundland and Labrador ground dwelling bird species and their ecological traits hypothesised to be of importance to hunter-gatherers.

Waterfowl (ducks, geese, and loons)

Waterfowl are traditionally associated with freshwater habitats but commonly frequent shallow saltwater areas. They were important to many northern hunter-gatherers because of large seasonal bird congregations, relatively high meat yield, and ecological predictability (Bovy 2007; Cassoli and Tagliacozzo 1997:308; Mandelbaum 1979:69; Moss and Bowers 2007; Münzel 1983; Smith 1984:81-82). Ducks and geese were captured by many Native hunter-gatherers in Canada, the importance of which varied from a very significant animal resource among northern Cree (Scott 1987:49-51) to a secondary but seasonally important food among northern Athapaskans (Boudreau 1974:25-26). Newfoundland and Labrador hunter-gatherers captured waterfowl during spring and autumn migrations and harvested eggs and moulting waterfowl in summer.

Waterfowl migrations are a response to seasonal differences in aquatic biological productivity at high latitudes (Nichols *et al.* 1995). Large numbers of congregating ducks and geese arrive at rich northern waters in spring to feed and breed before flying south in autumn. The North Atlantic Flyway, one of four major bird migration corridors in North

America, passes over Newfoundland and Labrador (Figure 2.4). Of significance to the province's hunters is a flyway constriction over northern Newfoundland where birds meet in large concentrations before heading north along coastal Labrador in spring or before heading south along Newfoundland's east and west coasts in autumn (Austin 1932; Huettmann and Diamond 2000; Lamberton and Maunder 1976:43; Loring 1992:69; Todd 1980). Lamberton and Maunder (1976:47-49) note that at L'Anse aux Meadows in northern Newfoundland the highest bird concentrations occur during the autumn migration. Northern Newfoundland is also ecologically productive for birds due to relatively strong currents near the Strait of Belle Isle that cause nutrient upwelling and keep areas free of ice (Lamberton and Maunder 1976:11,50). Ice-free areas are attractive to early spring and late autumn migrants as well as winter residents. The majority of the province's waterfowl are summer residents although a number of species overwinter.

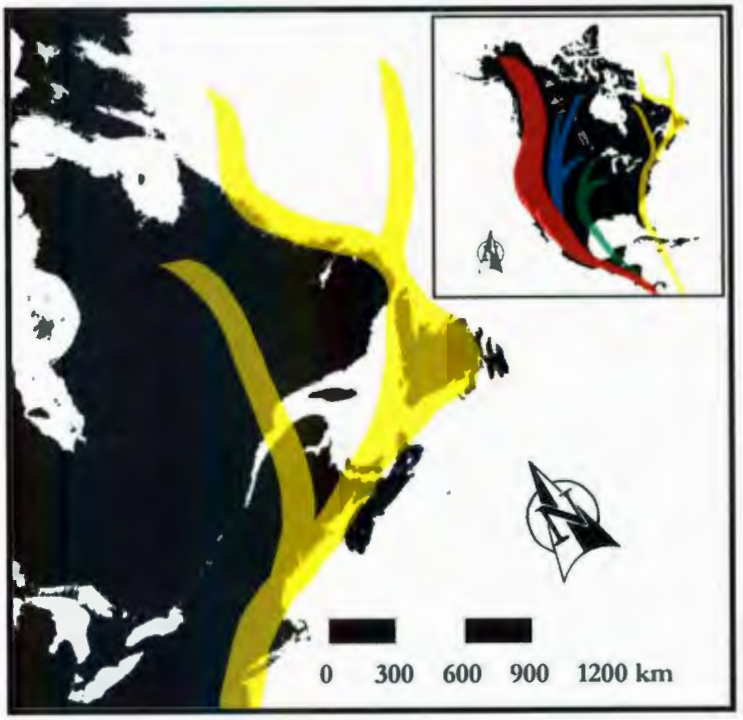

Figure 2.1: Migratory flyways of North America. Note the constriction over the northern portion of Newfoundland.

Waterfowl migrations were important to the Innu and Beothuk for their temporal and geographic predictability (Clément 1993:14, 22; Loring *et al.* 2003:65; Weiler 1989:11,32). Migratory bird paths are often relatively fixed as a result of wind patterns, topography (*e.g.,* mountain ranges and coastlines), and local resources. Waterfowl often return to specific migration resting areas annually (Avery and Underhill 1986:339; Berthold 2001:79). Northern hunters could therefore exploit waterfowl at predictable places and predictable time periods throughout the year.

Spring brought a concentrated biomass of birds to a nutritionally impoverished landscape in the province. Hind (1863:245), referring to the nineteenth century Innu of southern Labrador, claimed that the first goose call beckoned an end to winter starvation while Low (1896:51) stated that geese and ducks stocked the larder of northern Labrador Innu in spring and autumn. Nuñez and Okkonen (1999) suggest that the pre-contact importance of birds in northern latitudes was most pronounced in spring when other resources were limited. Spring arrivals are perhaps less wary of predators due to mating behaviour, nest construction, and habitat territoriality; however, based on physiology, waterfowl are best hunted in autumn when fat reserves are highest and congregations are the largest (Berthold 2001:89-92). Areas of water that were open early in spring such as river mouths, near-shore polynyas, and narrow channels were prime bird hunting grounds for many northern hunters (Mannermaa 2008:64-65) including those of Newfoundland and Labrador (Armitage pers. comm. 2009; Lamberton and Maunder 1976).

In summer, waterfowl eggs are abundant in coastal and interior marshes, ponds, and lakes, thousands of which were collected annually by the nineteenth century Barren Ground Innu (Turner 1894:115). Eggs are rich in protein, easily transported after boiling,

and, based on accounts of Beothuk egg use, can be stored for long periods of time (Marshall 1996:67-68). Eggs were collected for winter storage by many Arctic hunter-gatherers (Eidlitz 1969; Langsdorff 1814; Mannermaa 2008:59) and historical settlers in coastal Newfoundland (Montevecchi *et al.* 2007:105). Macaulay (1968:16) claimed that waterfowl eggs were a substantial summer dietary supplement for northern Native Americans who still practiced traditional hunting.

Waterfowl moulting season occurs in July and August when adult birds are flightless for short time periods after shedding their feathers. Fat reserves of moulting birds are relatively high and flightless waterfowl are easy to hunt (Birket-Smith 1929:114; Cassoli and Tagliacozzo 1997:308; Milne and Donnelly 2004:94, 97). Moulting periods of different species are staggered resulting in a relatively steady supply of easily obtainable meat through late summer (Dincauze and Jacobson 2001:122). Comeau (1923:273) provides an example of the magnitude of such harvesting when he stated that Innu on the St. Lawrence River captured over four hundred moulting ducks in one event.

Waterfowl species specifically targeted by the Innu during warm weather seasons include mergansers, harlequins, pintails, and teals (Comeau 1923:272; Le Jeune 2004:171) while overwintering waterfowl such as geese, black ducks, and loons (Threlfall 1983) were hunted year round. Geese, black ducks, teals, mergansers, and loons, are common throughout the province and a number of early naturalists noted that Newfoundland and Labrador's interior was a great breeding ground for Canada geese and other waterfowl (Anspach 1818:390; Millais 1907:33). Geese and loons may have been important pre-contact resources in Newfoundland because of their high meat yields and a relative scarcity of other interior game aside from caribou and beaver (Tuck and Pastore

1985:73; Schwarz 1994). Cormack (1873:142) traveled through the interior in autumn in search of Beothuk and stated that almost every lake had a pair of loons. The principal foods of his crew for two months were geese, ducks, beavers, and trout (Cormack 1873:30). Evidence of interior bird abundance at the time of European contact is found in the records of John Guy who set out on a long interior trek in Newfoundland for caribou in December, 1612, but returned instead with ducks, ptarmigan/grouse, and fox (Quinn 1979:166-167). Early explorers in Labrador also relied on waterfowl and commented on their abundance (Cabot 1912:233; Cartwright 1792; Hind 1863). On the brink of starvation in interior Labrador, Wallace wrote in autumn 1905 that upon capturing four moulting geese "our exultation knew no bounds" (Wallace 1990:48).

Certain behavioural traits make some waterfowl species particularly susceptible to human hunters. Those species that feed in shallow water (geese, black ducks, teals, mergansers, and loons) were attractive to Innu hunters waiting in blinds on shore or in canoes (Comeau 1923:273; Hind 1863:331). Also, most waterfowl spring vertically into the air when threatened before taking flight, which exposes their bodies to hunters (Bovy 2002:970; Todd 1980). I speculate that waterfowl (and seabirds) with slow vertical leaps and slow escape flights (geese, cormorants, loons, eiders, and scoters) would have been targeted by Newfoundland and Labrador's pre-contact hunters. Certain waterfowl are also susceptible to hunting because of their gregarious behaviour and attraction to decoys and calls. Historical hunter-gatherers in Newfoundland and Labrador used vocal mimics and decoys to hunt waterfowl like geese, loons, and mergansers (Comeau 1923:268, 273; Cormack 1873:52; Hind 1863:331) and coordinated group hunting efforts to capture flocks of gregarious birds (Comeau 1923:273).

Seabirds

Adult seabirds and eggs were collected in Newfoundland and Labrador during nesting season and moulting seabirds were hunted in late summer by the Beothuk, Innu, and coastal European settlers (Lamberton and Maunder 1976:33,41,42; Marshall 1996:137; Montevecchi *et al.* 2007:105). Newfoundland and Labrador support many seabirds because of an abundance of protected nesting sites on small islets, distant islands, and rocky cliffs combined with biologically rich waters formed by mixing offshore currents (Montevecchi and Tuck 1987; Rose 2007:138; Threlfall 1983). Nesting seabirds, especially those that inhabit colonies, are an ideal resource because many are geographically fixed to high quality nesting sites that were occupied during narrow and predictable time frames (Bovy 2007:224; Moniz 1997). Eggs and nesting adults could be relatively easily harvested in June and July and were crucial dietary supplements of Newfoundland's coastal communities for centuries (Montevecchi *et al.* 2007:105). As with waterfowl, seabird eggs are very nutritious and can be stored for months.

Isolated seabird colonies were rich hunting grounds for people because many bird species were naïve and ill-adapted to human predation (Milberg and Tyreberg 1993). Gannets, great auks, eiders, and murres were attractive species because they were relatively easily approached. Predator access likely influenced species composition and the size of seabird colonies. Colonies that were easy to reach by hunter-gatherers and other predators likely supported smaller populations of more resilient bird species (Montevecchi and Hufthammer 1990; Serjeantson 2001:51,53) such as terns and gulls. Examples include the abundant tern colonies on the near shore islands off L'Anse aux Meadows that were regularly egged by locals (Lamberton and Maunder 1976:33,41,42).

Colonies less accessible to predators supported larger populations of species less resilient to human exploitation such as gannets, auks, and razorbills. Humans and other predators may have influenced the distribution of seabird species in Newfoundland and Labrador.

Outside of the nesting season, a number of seabirds such as eider and scoter form large groups during the summer moult (Comeau 1923:273; Lamberton and Maunder 1976:32). Rafts of thousands of eiders were apparently once common off L'Anse aux Meadows (Lamberton and Maunder 1976:32). Aside from nesting and moulting season, adult seabirds were available year round as many species overwinter. Seabirds were also abundant in spring and autumn in locations such as the Strait of Belle Isle, which served as a seasonal migratory passageway (Montevecchi and Tuck 1987). Migrating seabirds were particularly plentiful in northern Newfoundland in autumn.

Seabird availability to hunter-gatherers was influenced by nest site selection, clutch size (number of eggs), and bird feeding behaviour. Seabirds that lived and nested in shallow bays and inner islands (*e.g.,* eider, gulls, terns, and cormorants) were readily available while pelagic species were harder to access outside the nesting season because they live offshore and dive when threatened. Eider was one of the most commonly exploited species in coastal Newfoundland and Labrador (Austin 1932:52, Chaulk *et al.* 2004:121; Loring 1992:69) perhaps owing to its abundance, the ease of hunting nesting females, their occurrence in shallow bays, and easy nest accessibility compared to cliff nesters (Mannermaa 2008:51).

Based on historical accounts (Cartwright 1826; Cormack 1873; Marshall 1996; Whitbourne 1971), seabirds appear to have been the most important avian resource to the Beothuk and were also important to coastal Innu (Comeau 1923:272; Townsend 1916:6).

Historical and archaeological evidence indicate that the Innu and Beothuk exploited auks, gulls, gannets, eiders, guillemots, cormorants, greater scaups, oldsquaws, scoters, harlequin ducks, sandpipers, jaegers, and murres (Cabot 1912:58; Cumbaa 1984; Hoffman 1963:14; Loring 1992:69; Marshall 1996:67-68; Whitbourne 1971).

Ptarmigan and grouse

Ptarmigan and grouse are terrestrial species that were eaten by Newfoundland and Labrador hunters from the contact period to the twentieth century (Dean 1993; Henriksen 1973:3; Loring 1992:70). Historical records suggest they were of great importance to the Innu and Beothuk, particularly during winter (Cartwright 1826:322; Turner 1894:11, 115). Widespread distribution, year round availability, and a number of other biological characteristics render grouse and ptarmigan valuable game animals to hunter-gatherers. Historical records indicate that ptarmigan and grouse were the most important avian resource to many Innu in the sixteenth to nineteenth centuries (Hind 1863; Le Jeune 2004; Turner 1894:11, 115).

Grouse and ptarmigan are ecologically unique in northern landscapes because of their reproductive capabilities and winter ecology. Unlike other herbivores important to hunter-gatherers (*e.g.*, beaver, caribou, and moose), ptarmigan and grouse reproduce quickly by laying large clutches and are more resilient to ecological fluctuations. Ptarmigan and grouse also differ from other northern herbivores by increasing body weight and gregariousness through winter (Bergerud and Gratson 1988; Dean 1993:2; Mercer 1967; Mossop 1988:340; Speth and Spielmann 1983:3; Stopp 2002:312). While ungulates disperse and their winter fat reserves dwindle, ptarmigan gather in large coveys

that reach peak health in spring. This was a time when hunter-gatherer diet was generally at its worst (Hayden 1981; Outram 2004:84; Speth and Spielmann 1983:1-3): late winter and early spring were apparently the most common periods of Innu and Beothuk starvation (Cabot 1912:29; Hind 1863:244; Pedley 1863:340). Grouse and ptarmigan were crucial foods at this time as indicated by an account of December ptarmigan flocks pursued by every capable Innu man, woman, and boy (Comeau 1923:294). Some claimed that ptarmigan were primarily a starvation food owing to its leanness (Cabot 1912:195; Loring 1992:70) although birds in this family are much higher in fat content than species such as rabbit and have higher energy values per gram of meat than caribou, salmon, beaver, rabbit, and moose (Samson and Pretty 2006:28). Outside of winter, grouse are hunted in spring when males call loudly from visible sites, aggressively defend territories, and are in good physical condition (Bergerud and Gratson 1988; Davis 1986:180).

The escape mechanism of grouse and ptarmigan is generally either a short flight or scurry to neighbouring trees and shrubs, both of which leaves them vulnerable to hunters with arrows, slings, or nooses (Frison 2004:194). Ptarmigan and grouse regularly use trails and this predictability leaves them easy of capture by snare (Mannermaa 2008:64). Grouse were also predictable in spring and early summer when they congregated for their favourite food at young fir stands, which the Innu were keenly aware of (Armitage 1990:52).

Ptarmigan were particularly abundant in Newfoundland's interior and along some coastlines (Dean 1993). Of Newfoundland and Labrador ptarmigan, an ornithologist wrote that "For hours they hasten in many thousands through the sky so that their numbers cause astonishment" (Austin 1932:79). These birds were popular sport in the

province as early as the eighteenth century when it was common to shoot forty ptarmigan a day (Dean 1993:11).

Birds in time and space

A diversity of species and behaviours meant that birds could be incorporated into northern hunter-gatherer subsistence in a variety of ways. Certain species were spatially and temporally predictable and birds in general were available for human exploitation year round (Figure 2.2). Hunter-gatherer knowledge of migration resting areas, seabird colonies, feeding grounds of moulting adults, and terrestrial bird paths was likely transmitted from generation to generation and made birds relatively reliable resources.

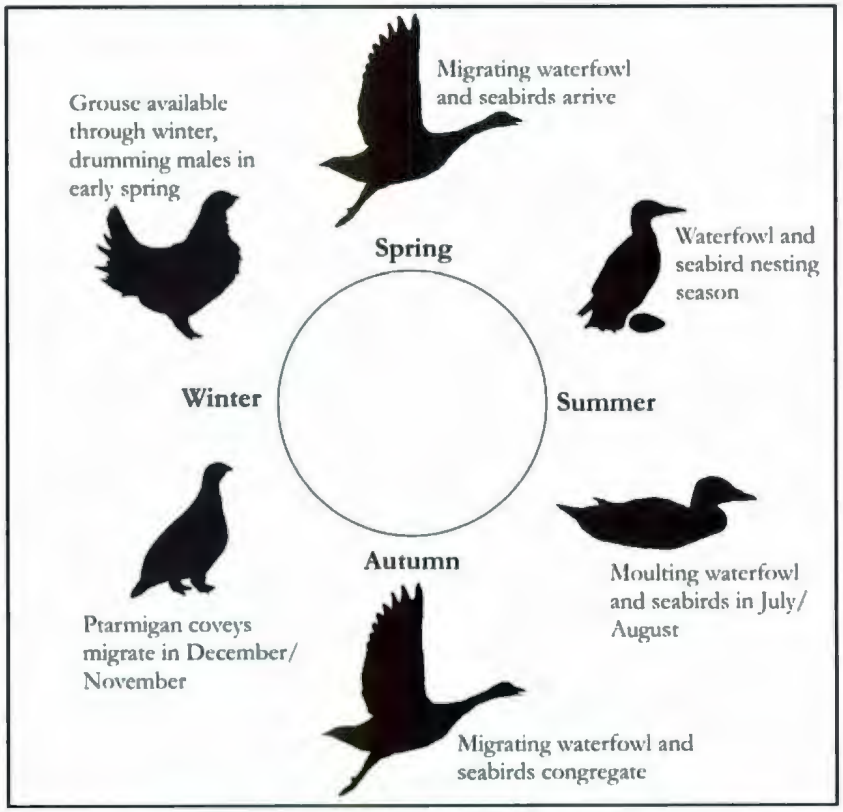

Figure 2.2: Annual bird availability in Newfoundland and Labrador. Spring to autumn bird congregations were spatially tied to aquatic resources while grouse and ptarmigan occupied a variety of interior habitats.

In spring, migrating waterfowl were likely a major resource for the Innu and Beothuk for short periods when human diet was poor. In summer, nesting adults and eggs were likely secondary resources that could be relied on to lesser or greater extents depending on the success of sealing, caribou hunting, fishing, and shellfish collecting. In late summer and autumn, moulting and migrating birds could be preserved and/or consumed by Newfoundland and Labrador hunter-gatherers during transitions from one camp to another. Prichard wrote in 1911 that the Labrador Innu hunted geese in August before pitching their tents deep in the interior to intercept migrating caribou (Prichard 1911). The Beothuk also dried and powdered eggs for storage into autumn (Marshall 1996:67-68). If autumn caribou hunts were poor, the importance of preserved birds would increase. In early winter, large ptarmigan coveys could have supplemented preserved caribou meat as an essential secondary resource. As meat reserves dwindled, winter grouse likely became a primary resource that sustained the province's hunter-gatherers until spring. In 1916, Gordon noted that Labrador ptarmigan, along with rabbit, were the main sources of winter food (Buckle 2003:74). The seasonal role of birds changed in response to local ecology and the availability of other game.

Conclusion

Avian ecology, reproductive behaviour, and migration patterns influenced when and where birds were available and provided biological parameters within which Newfoundland and Labrador hunter-gatherers developed subsistence strategies. Birds are traditionally classified by zooarchaeologists as one taxa which implies a uniform ecological relationship with past people. However, ecological diversity of waterfowl,

seabirds, and ptarmigan/grouse presented a wide variety of exploitation options. The Innu, Beothuk, and their Recent Indian ancestors developed strategies to utilize birds in ways that were likely dynamic and flexible. The resulting relationship between Newfoundland and Labrador's hunter-gatherers and birds was a combination of biological parameters discussed in this chapter and culturally-ascribed meaning, choice, technological innovations, and economic patterns, which will be the subjects of Chapters Three and Four.

CHAPTER 3

BEOTHUK BIRD USE FROM EUROPEAN CONTACT TO THE NINETEENTH CENTURY

This chapter uses ethnohistorical evidence from the sixteenth to nineteenth centuries to investigate the significance of birds to the Newfoundland Beothuk. Early European accounts of the Beothuk portray economic and social behaviours regarding birds that leave no material residue in the archaeological record. This research informs reconstructions of pre-contact subsistence in subsequent chapters. An introduction to the subject of ethnohistory precedes a discussion of three aspects of Beothuk life: 1) the use of birds as food, 2) bird hunting technology, and 3) the ideological role of birds.

Ethnohistory

Ethnohistory is the study of historical documents in order to pursue anthropological interests in past cultures (Galloway 2006; Sturtevant 1966; Trigger 1982). Theoretical parallels are found in ethnoarchaeology, which employs ethnographic data to explain preserved materials (Binford 1978a; David and Kramer 2006). Historical ethnographic data are used in this chapter to understand Beothuk/bird relationships. These data will be used in Chapters Five, Six, and Seven to aid the interpretation of Beothuk and Recent Indian archaeological records.

The link between historically observed people and pre-contact archaeology involves uniformitarian assumptions of human behaviour (Arnold 2003:66; Binford 1978a). This approach is justified here by both a direct ancestral relationship between Beothuk and Recent Indian people established by archaeologists (Gilbert 2002; Pastore

1993; Schwarz 1994) and a relatively stable ecology in much of the province over the past 1000 years (Bell *et al.* 2005; Davis *et al.* 1988; Lamb 1980).

An ethnohistorical approach requires critical analysis of source material that may contain misrepresentative portrayals of sixteenth to nineteenth century Native Americans (Axtell 1988:36; Galloway 2006:33; Loren 2008; Spores 1980; Trigger 1986). Historical ethnographic information can be local and synchronic, and when applied to archaeology, can overshadow existing cultural flexibility and diversity across regions and through time (Holly 2003; Wilson and Rogers 1993; Wobst 1978). Native American groups in Newfoundland were often dynamic, flexible entities that chose to incorporate European practices into traditional systems to further their own purposes. Despite this, researchers have noted that the Beothuk were often depicted as static, passive agents in cultural transformations (Holly 2008). Information and technology were undoubtedly exchanged both ways at European-Native contact and the nature of cultural change was likely complex. Regarding bird use, this chapter will utilize texts that mention Beothuk subsistence, technologies, and beliefs, both as they were believed to exist shortly before contact and in response to Europeans. A number of potential biases in some of these early historical accounts are identified below.

Historical documents that were meant to depict a traditional way of life may actually describe Beothuk practices in response to European presence. Fatal Old World diseases spread quickly in North America (Marshall 1981; Upton 1977; Zubrow 1990) and Native people responded to the resultant de-population with altered kinship relations and subsistence strategies (Kelton 2007; McGhee 1994; Verano and Ubelaker 1992). Many accounts also occurred after European practices, such as seasonal fisheries and

trapping, changed certain aspects of Native land use and social networks (Ceci 1990; Leacock 1987; Loren 2008; Loring 1992:161-165; Martin 1978; Richter 2001). New fire regimes, over-hunting by fur traders and fishermen, human de-population, and violent exchanges changed the local ecology of many northern hunter-gatherers (Cartwright 1792:7; Hind 1863:319; Howley 1915:226; Krech 1999; Millais 1907:273, 324; Montevecchi and Tuck 1987; Wilton and Evans 1974). Some of these factors likely changed the way the Beothuk utilized birds. For example, many historical accounts describe conflicts between Beothuk and Europeans over coastal resources (*e.g.,* salmon fishing sites, sealing locations, and egg collecting locales), which resulted in Beothuk avoidance of these traditional areas (Cartwright 1792:7; Holly 2002:133; Marshall 1996:67-68). In addition, Beothuk use of coastal resources including seabirds may be relatively well documented because of a European attraction to coastal areas; however, very little is known of Beothuk life in interior Newfoundland. Subsequently, their relationship with interior waterfowl and ptarmigan/grouse is poorly known. The above mentioned variables influenced which particular aspects of Beothuk subsistence and belief systems were recorded and how these behaviours were perceived by early writers. Despite limits of historical ethnographic research to inform archaeological interpretations, records of the Beothuk nevertheless offer invaluable insight into pre- and post-contact animal consumption.

Background

The Beothuk and their ancestors occupied Newfoundland from 2000 years ago to their nineteenth century demise (individuals may have joined Native groups that persist today).

The Beothuk lived on a geographically isolated island (Figure 3.1) but were in contact with Nova Scotia Mi'kmaq to the south and Labrador Innu and Inuit to the northwest. The Beothuk belong to the Algonkian family and evidence suggests genetic and linguistic affinities with the Mi'kmaq and Innu (Hewson 1968, 1978; Kuch *et al.* 2007).

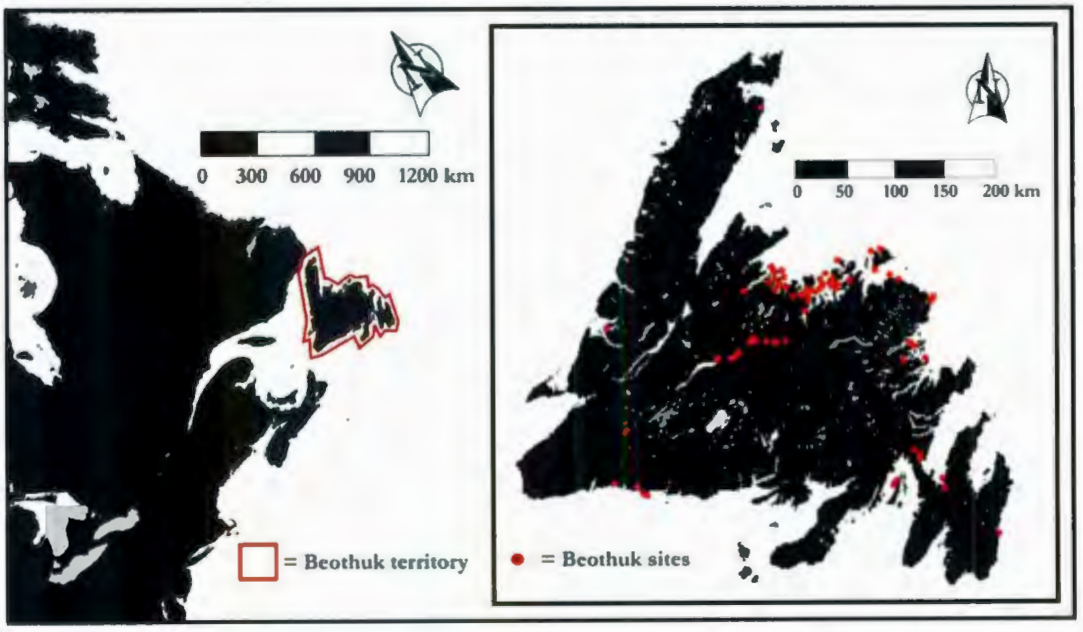

Figure 3.1: Study area and location of Beothuk archaeology sites (based on the Provincial Archaeology Office of Newfoundland and Labrador 2009 database).

European contact with Recent Indian people began when the Norse arrived around 1000 AD (Wallace 2003). More prolonged contact occurred from the sixteenth century onwards when whalers, fishermen, and explorers navigated Newfoundland's coasts. Year round European settlements were established by the seventeenth century (Howley 1915; Prowse 1896). Explorers such as Cabot, Cortereal, Cartier, and Jones provided the first written accounts of the Beothuk (Figure 3.2) (Howley 1915; Marshall 1996).

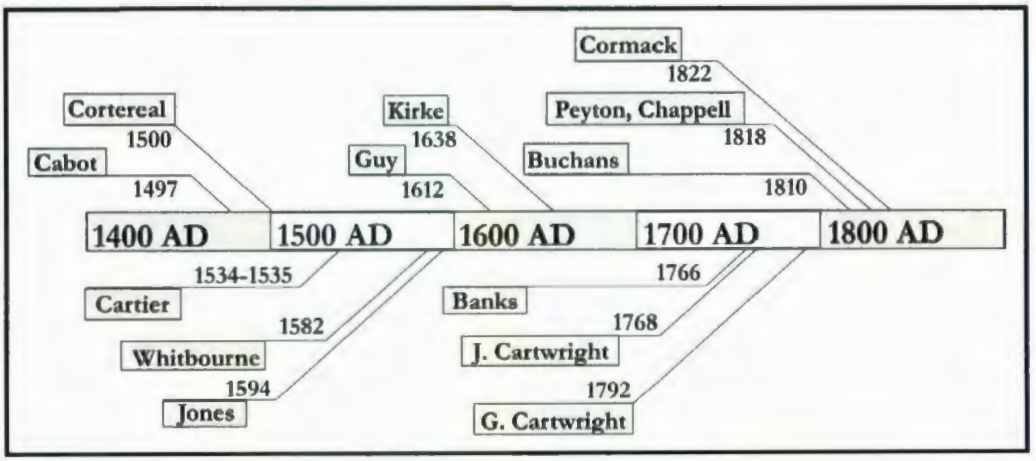

Figure 3.2: Chronology of explorers and historians mentioned in the text.

Based on historical records, faunal remains, and archaeological site locations, the Beothuk had a modified interior subsistence strategy; interior and coastal mammals, fish, birds, and plants were exploited through seasonal movements that shifted habitats (Figure 3.3) (Holly 2002; Rowley-Conwy 1990; Tuck and Pastore 1985). Beothuk ecology greatly varied from terrestrial to coastal environments. It is argued that the Beothuk began to inhabit the interior year round to avoid confrontation with European coastal settlers and the biologically impoverished landscape proved inadequate for survival (Holly 1998, 2008; LeBlanc 1973:155; Pastore 1993; Tuck and Pastore 1985:78).

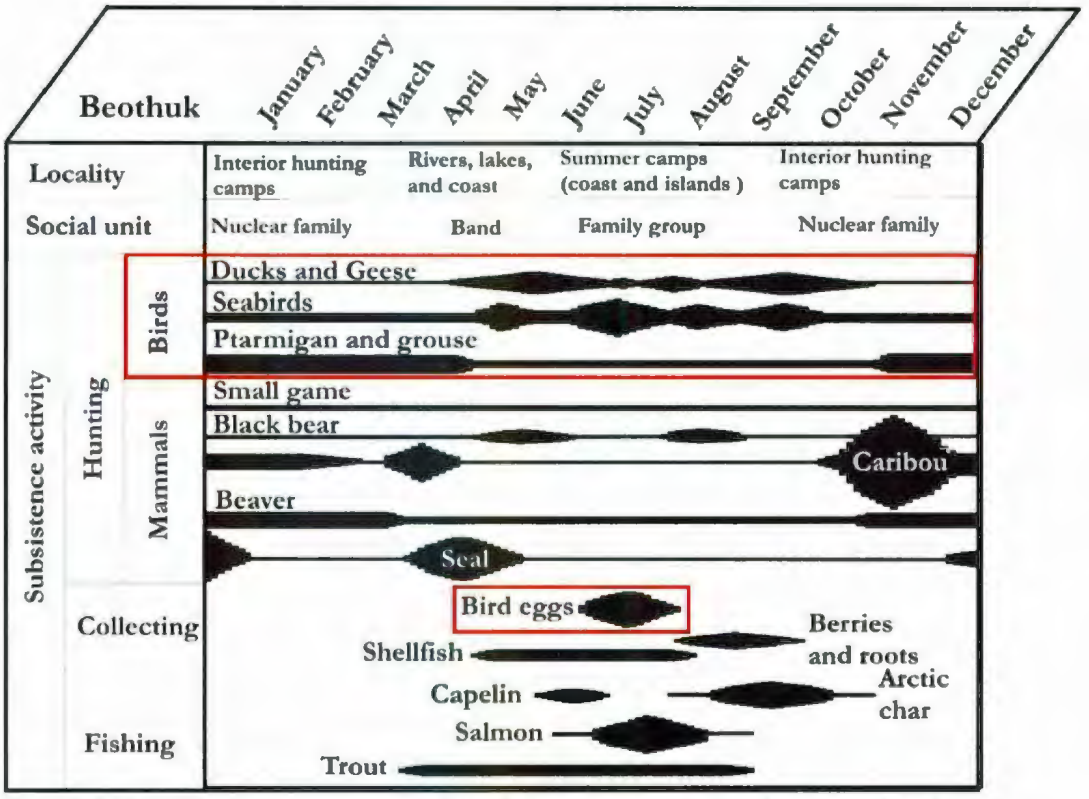

Figure 3.3: Hypothetical reconstruction of Beothuk subsistence shortly after contact based on archaeological and historical records (adapted from Hoffman 1955:153; Marshall 1996:300-301; Schwarz 1994). Bar thicknesses reflect inferred relative dietary importance. For example, four major periods of seabird exploitation are represented above by expanded bar thicknesses: 1) spring seabird congregations; 2) nesting adults and eggs; 3) moulting seabirds, and; 4) fall congregations.

Historical records from the sixteenth and seventeenth centuries indicate that in spring the Beothuk congregated and travelled to the coast to capture seal, birds, fish, and eggs (Marshall 1996). In summer, they remained on the coast and on islands. Seal, shellfish, and seabirds were likely the main source of food for island camps (Cartwright 1826:317). Early accounts and archaeological finds suggest that in autumn, the Beothuk gathered in the interior to build drive lanes and spear migrating caribou (Cartwright 1792:8; LeBlanc 1973:13, 18; Thomson 1983:). In winter dispersed Beothuk families likely spent most of their time in the interior hunting caribou and beaver and visited the coast during harp seal migrations (Cumbaa 1984; Howley 1915; LeBlanc 1973).

Marshall (1996:303-308) and Rowley-Conwy (1990) suggest that prior to European contact, the Beothuk adopted two subsistence patterns dependent on local ecology. In regions with abundant caribou, Beothuk aggregated in the interior from autumn through winter and dispersed on the coast in spring and summer. In regions with smaller caribou populations, Beothuk winter bands were small and more mobile and congregated at coastal camps from spring to autumn. The Beothuk probably altered their strategies according to local ecology so these patterns shifted diachronically as well as geographically (Holly pers. comm. 2009). The following section explores Beothuk ecology with specific reference to the documented and hypothetical seasonal role of birds. Ethnographic data concerning this disappeared lifeway has been pieced together from explorer and fishermen accounts and a handful of excavated sites (Howley 1915; Marshall 1996). Current knowledge of Beothuk subsistence is understandably limited.

Birds and the seasonal round

Winter

Based on historical accounts and bird physiology, I hypothesise that ptarmigan and grouse were primarily winter resources for the Beothuk, the importance of which was influenced by mammal availability. Cartwright (1826:322) stated that if few caribou were hunted, the Beothuk relied heavily on ptarmigan. Ptarmigan coveys could be tracked in the snow and grouse were likely snared around camp or taken by traveling hunters. This reconstruction is supported by accounts of northern hunter-gatherers, including neighbouring Innu, Inuit, and Mi'kmaq, that stress the importance of winter ptarmigan (Cabot 1912:195; Davis 1986; Eidlitz 1969:36-37; Lantis 1946:181; Nelson 1973:81;

Spencer 1959:36; Turner 1894:11, 115). Fat rich birds would be much sought after during nutritionally stressful periods when other Newfoundland animals such as caribou were depleted of fat. Ptarmigan and grouse may have been especially important sources of fat in regions where (or at times when) harp seal migrations were inaccessible. The degree of reliance on ptarmigan and grouse is difficult to gauge but Cartwright (1826:322) claimed they were as important to the Beothuk as chickens were to Europeans.

Spring

Archaeological and historical records hint at the importance of spring migratory waterfowl to the Beothuk. Geese are the most common birds recovered from Beothuk and Recent Indian sites and medullary bone from this species indicates late spring hunting (Cumbaa 1984:16). Very little is known of Beothuk consumption patterns in spring but the seasonal surge in interior biomass introduced by waterfowl was likely significant to interior hunters. Waterfowl could be hunted while the Beothuk traveled from interior winter camps to summer coastal camps and the use of rivers and lakes as human transportation corridors ensured ready access to spring and autumn waterfowl. Migrating birds could be exploited at innumerable lakes, marshes, and rivers. The most common waterfowl remains at Beothuk sites are geese and loon which have been found at Wigwam Brook (DfAw-01) (LeBlanc 1973), Indian Point (DeBd-01) (Stewart 1971), and Boyd's Cove (DiAp-03) (Cumbaa 1984).

Summer

Islands were commonly occupied in summer to hunt seabirds and other fauna based on historical accounts (Cartwright 1826:35; Howley 1915) and archaeological site distribution. Several explorers and ethnographers commented on Beothuk egg-collecting in early summer, for example, Cartwright (1826:314) wrote that in contrast to winter starvation the Beothuk "fed luxuriously during the egg season". Eggs were available on all of Newfoundland's coasts which are known for their abundant seabird colonies (Montevecchi *et al.* 2007; Rose 2007). A Beothuk woman was captured canoeing near Fogo Island in search of eggs, and a number of Beothuk canoe parties were encountered at the Wadham Islands and Funk Island (Figure 3.4) (Cartwright 1826; Chappell 1818 in Howley 1915:63; Marshall 1996:275; Whitbourne 1971). On Funk Island, flightless great auk were corralled into boats or dispatched with arrows and clubs. The Beothuk reportedly collected auk eggs by the boatload (Howley 1915). This 40 km open-water canoe trip testifies to the importance of summer seabirds to some Beothuk. Explorers who encountered Beothuk summer camps noted that seabird and duck meat were being prepared (Marshall 1996:295). Eggs and the meat from nesting adults and later moulting birds were relatively easy to acquire with the exception of isolated seabird colonies and these resources would not have been overlooked by summer hunter-gatherers.

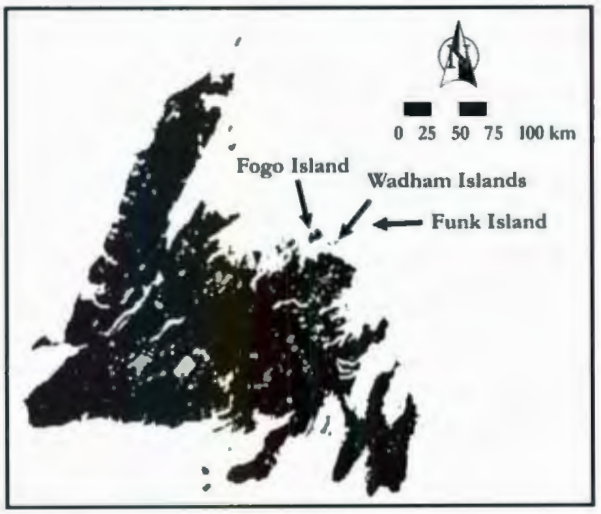

Figure 3.4: Examples of islands known to be used by Beothuk based on historic accounts.

Autumn

In autumn, migratory waterfowl and seabirds were likely hunted but historical and archaeological evidence is lacking. It is thought that the Beothuk moved along rivers and lakes in autumn to interior caribou hunting camps based on archaeological finds and historical records (Cartwright 1826:309-310; LeBlanc 1973; Marshall 1996; Thompson 1983). For example, Cormack (1873) noted that the Beothuk used the Exploits River in northeast Newfoundland as a major transportation corridor in autumn and spring, which has been supported archaeologically (Thompson 1983). As in spring, the Beothuk reliance on canoes for transportation in autumn provided ample opportunities to hunt aquatic birds. Waterfowl and seabirds could be consumed by traveling groups or stored for late autumn and winter consumption.

The Beothuk relationship with birds involved ecological adaptations that changed with the seasons. Just as the array of harvested species was diverse, so were the ways

these species were incorporated into Beothuk subsistence throughout the year. Additional information about the role of bird species in Beothuk diet lies in accounts of Beothuk material goods recording during encounters. The following section will explore the variety of Beothuk technologies used to harvest birds. The temporal and geographic context of this material use contributes to reconstructions of the ecology of bird hunting.

Technology

Ethnohistorical evidence is used here to elucidate the material aspect of bird exploitation, particularly the use of arrows, decoys, boats, and food preparation methods. This information re-emerges in Chapter Five to help with the prediction of the archaeological signature of bird harvesting.

Arrows

The most common hunting weapon was the arrow, with which the Beothuk were particularly adept at taking birds (Cartwright 1826:314). Two main types of arrow were used: a composite arrow with a wooden shaft and a stone, bone, or iron point; and a blunt arrow composed of a single wooden piece that expanded to a rounded knob (Cormack 1873:212). The two arrow types had different functional properties tailored to different prey: stone/bone/iron-tipped arrows were more aerodynamic and travelled long distances while blunt arrows were capable of stunning game at relatively short distances (Turner 1894:149). I argue below that Beothuk composite arrows were for killing large birds (and mammals) while blunt arrows were for small birds.

The use of composite arrows for large seabirds is confirmed by the discovery of stone arrowheads on Funk Island (Lloyd 1875). Adult great auk on Funk Island were probably not easily stunned by blunt arrows due to their thick subcutaneous layers of fat. This theory is supported by Cartwright (1792:155) who documented the Inuit use of stone-tipped darts to hunt great auk. As the Beothuk approached island seabird colonies by canoe, stone-tipped arrows could have been shot from long distances. Because of their long distance capabilities and the relatively quick death upon being shot, stone tipped arrows were also more suited for hunting ducks and geese that are difficult to approach closely. Blunt arrows would be less effective for killing large seabirds and waterfowl because stunned birds would have time to recover and escape before canoes arrived.

The range of Beothuk and Recent Indian projectile point sizes (1-32 mm basal width and 12-55 mm point length) has stirred debate over their function (Erwin *et al.* 2005). Pastore (1993:1) suggested that small Beothuk projectile points were toys and that only blunt arrows were used for bird hunting. In support of this, Labrador Innu boys commonly made toy bows and arrows (Speck 1935; Turner 1894:149) but the term 'toy' is misleading because they were used to hunt birds that contributed to Innu diet (Weiler 1989:11). Based on functional limitations of blunt arrows, I hypothesise that many small Beothuk points were used for bird hunting and that blunt arrows were reserved for smaller birds such as ptarmigan, grouse, and moulting seabirds/ducks that could be approached closely. The use of small projectile points for bird hunting is documented among other northern maritime hunter-gatherers (Lebedintsev 1998:308; Mannermaa 2008:66). Large Beothuk projectile points (>30 mm width), especially long spear heads (>60 mm

length), were used for mammals (Gilbert 2002; Marshall 1996:315-332) and were not likely employed for bird hunting.

Several explanations for the use of Beothuk blunt arrows are offered below, none of which are exclusive. Firstly, large blunt knobs increase the impact surface area and improve the likelihood of successfully debilitating prey. Similar devices were recorded among the Comanche and Chumash who used an expanded point to increase the effective radius of its tip in order to hit birds (Hudson and Blackburn 1979:110-11; Kavanagh 2008:374). Secondly, Rogers (1967:68) wrote of the Mistassini Cree that blunt arrows did not penetrate game, thus avoiding damage to the pelts of fur bearers. Gendron (1995:54) similarly wrote that the Inuit preferred blunt tips for bird hunting to prevent damaging skins used for clothing (bird skin was apparently traded by the Beothuk [Howley 1915:18] but nothing is known of bird skin clothing). Generally, blunt arrows would minimize blood loss and not result in as much tearing of bird skin and meat. Nelson (1973:81) noted that Alaskan Natives preferred to shoot grouse in the head or neck (with bullets) to avoid damaging breast meat. Less blood would stain feathers used for padding, ornamentation, and on arrows: writing of the Amahuanca of Peru, Carneiro (1970:333) noted that blunt arrows prevented damage of plumage. Thirdly, Grayson *et al.* (2007:7) and Carneiro (1970:333) noted that blunt arrows were typically favoured in forested areas where they were less likely to become lodged in trees. They also may have been favoured for use in water because the wooden knob was more buoyant and arrows could be easily retrieved.

Howley (1915:270) interviewed local informants who testified to the Beothuk use of blunt arrows while hunting in bays. When trading with the Beothuk in 1612, John Guy

received an arrow that "lacked a head" (Howley 1915:16,18), which could be a blunt arrow since unfinished arrow shafts would probably not be considered a gift item. It is also thought that the headless arrow may represent a peace item (Gilbert 2002).

The bow and arrow were efficient for bird hunting because of the lower range of hunter mobility during use compared to spears and atlatl darts. This was appropriate for hunting in canoes, dense forests, and from behind blinds. The Inuit choice of bird darts for seabird hunting relates to their use of kayaks instead of canoes. Darts were fired with one hand, an important attribute when paddling in kayaks. The Beothuk used canoes in which passengers or resting paddlers could use two hands when hunting. The Inuit and Native hunters on the Pacific Northwest coast used bird prongs (Hawkes 1916:76, Suttles 1951:75-78) but these have never been recorded among the Beothuk although in design, they resemble Beothuk fish spears.

Feathers were an essential component of Native American projectiles for their use on fletching which refers to feathers fastened to an arrow shaft to create drag and maintain stability (Grayson *et al.* 2007:6). Goose or eagle feathers were used by the Beothuk for fletching (Cartwright 1792:10; Cartwright 1826:313; Cormack 1873:212). Geese feathers were available in spring through autumn although they were in best shape after the summer moult. Eagles are year round residents, but the Beothuk would have had most ready access to them in summer and autumn on the coast. Arrows could have been made in summer/autumn or feathers were stored for arrow manufacture in winter.

The Beothuk decision to use goose and eagle feathers was probably not purely functional because other northern hunter-gatherers used feathers from many other species (Bovy 2007:223; Dove *et al.* 2005:41-42; Grayson *et al.* 2007:182-195; McClellan

1975:283; Turner 1894:148). Feathers from strong and impressive fliers (geese and eagles) may have been chosen partly for spiritual reasons. Perhaps the revered hunting skill of eagles was hoped to be imparted to the arrows on which their feathers were attached. Geese are known for their long steady flying patterns, which may explain the use of their feathers given the role of fletching to maintain stability on long flights.

Decoys

Beothuk decoy use was witnessed by three independent informants in the nineteenth century (Howley 1915:270, 276-277, 283). According to one fisherman, in the summer the Beothuk attached a long line to seabird decoys and pulled it towards them to lure in prey to shooting distance. These same Beothuk carried both blunt and stone-tipped arrows suggesting either that different species were hunted and/or that birds were shot at from a variety of distances during a single hunting trip. Two informants identified the species mimicked with Beothuk decoys: one goose and one guillemot, both of which are gregarious birds effectively hunted with decoys. Cartwright (1826:323) claimed that the Beothuk also hunted birds of prey, which, based on ethnographic accounts of other Native Americans, could have involved decoys as well as baited traps and blinds (Morris 1990). In 1582, Whitbourne (1971:22) and his men stole 'targets' from a Beothuk camp that could have been decoys although Marshall (1996:422) suggests they were shields. Decoy construction materials are unknown but neighbouring Innu and Cree used boughs, saplings, feathers, and bird skins (Rogers 1967:84).

Boats

The Beothuk canoe was used for accessing island seabird colonies and was likely used on lakes and bays to hunt waterfowl and gather eggs. Seabird colonies may have been an impetus for the construction of sea-going canoes. Beothuk trips to Funk, Fogo, and the Wadham Islands indicate the importance of seabird meat and the willingness to invest in technology to safely transport the Beothuk to seabird colonies.

The Beothuk utilized two canoe types for interior and coastal movement (Marshall 1983:199-201). Smaller canoes were primarily for paddling rivers and lakes while larger sea-going canoes were involved in coastal hunting expeditions. Sea-going canoes are thought to have required ballast that could be replaced with bird meat and eggs on the return voyage (Marshall 1983).

Food preparation

Historical records of bird meat preparation are informative regarding Beothuk consumption practices. The Beothuk boiled, roasted, smoked, and dried bird meat. Whitbourne (1971:21) and Jones (in Howley 1915:12) both discovered Beothuk camps with pots full of ducks and plucked cormorant ready to be boiled. Shanawdithit, a Beothuk woman, stated that birch rind vessels were used to boil eggs in summer that were later dried in the sun (Howley 1915:246; Patterson 1891:139). Whitbourne (1971:21) found Beothuk buckets full of egg yolk that had been boiled, dried, and powdered. Once dried, eggs were mixed with fat and stuffed in intestines, mixed with caribou hair to make a pudding (which may have slowed digestion), or preserved as a powder for later use in broths (Cartwright 1826:314; Howley 1915:28). Eggs were therefore collected for

immediate consumption and storage. That all accounts of Beothuk summer camps mention bird meat and/or egg preparation suggests that avian resources were essential during this season.

Birds and Beothuk worldview

Hunter-gatherers often imbued animals with a spiritual significance. Lawrence (1997) wrote of bird symbolism that the cognitive image of a species, not its biological traits, often motivated the nature of their interactions with animals. Accounts of Beothuk ideology are sparse but evidence potentially indicative of the ideological dimension of bird-human relationships exists in the form of artifacts found in sacred contexts, historical records of decorative bird parts, and social patterns of bird hunting deduced from European observations.

Bird skulls and feet were commonly found in Beothuk burials (Howley 1915:331-333, Plate 35; Marshall 1996:566). The only animal skulls preserved in Beothuk graves are those of birds although beaver and seal teeth have been found. Marshall (1996:410) suggests these grave goods were hunting charms or amulets. Bird skulls could embody any aspect of a particular species such as good eyesight or hunting prowess (Krech 2009). Seabird feet may have embodied notions of safe passage by water or, as with ospreys and eagles, success in fishing. The only bird parts identified to species are guillemot feet, which were attached to a garment in a Beothuk grave (Marshall 1996:399). The choice of bright red guillemot feet coincides with the Beothuk's prolific use of red ochre. Colour symbolism of bird parts has been noted elsewhere in pre-contact and historical archaeological contexts (Jackson and Scott 2003; Jones and MacGregor 2002; Krech

2009; Mannermaa 2008:60). Serjeantson (1997) and Gál (2006) discussed the use of bird parts for social signalling by hunter-gatherers and the Beothuk may have advertised status or hunting skill through bird skulls, feet, and feathers.

Bird skulls and feet in Beothuk graves could relate to an association of birds and spiritual messengers that was relatively common among northern hunter-gatherers (Morrow and Volkman 1975:148). Birds were guides to supernatural realms and bird feet and feathers in graves represented symbolic means of transporting human spirits of the deceased to the afterlife (Jochelson 1975:178; Larsen and Rainey 1948:121-127; Mannermaa 2008:44). Waterfowl and seabirds were particularly adept guides that could move through water and air (Morrow and Volkman 1975:149) and their remains are commonly found in northern hunter-gatherer burial sites (Mannermaa 2008:62; Tuck 1976).

The Beothuk believed that spirits of the deceased were transported to a 'happy island' (Marshall 1996:379). Bird skulls and feet could therefore embody bird spirit messengers that were capable of conveying spirits to their island afterlife or could carry information from the deceased to the living in the form of omens or dreams. The notion that birds served as spirit messengers is supported by reports of bird skulls found in Beothuk "medicine or shaman bags" (Marshall 1996:293). Additionally, bone carvings found in Beothuk graves are thought to be abstractions of bird feet (Marshall 1996:388) and feathers (Figure 3.5), both of which are appropriate symbolic representations of avian transportation. The precise role of birds in Beothuk ideology is unknown but among the few records of animal representations, birds were prominent. I hypothesise that feet and feathers represented a belief in bird spirit messengers.

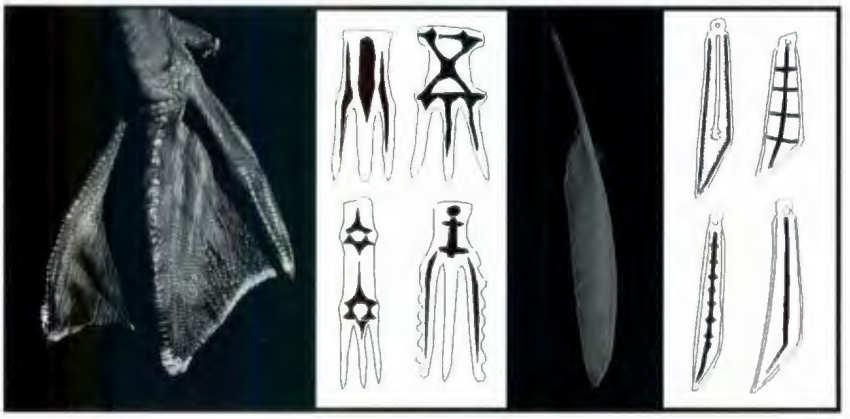

Figure 3.5: Depictions of Beothuk bone pendants from The Rooms Provincial Museum collection resembling bird feet (left) and feathers (right). Pendants range from approximately 50 to 90 mm long.

Egg collecting and bird hunting events may have been socially important for prestige acquisition (McGuire and Hildebrandt 2005; Suttles 1960). Long distance trips to Funk and Wadham Islands (Figure 3.4) could have represented a rite of passage and/or a means to acquire prestige based on endurance and skill. Summer is not considered a time of nutritional stress, therefore non-economic motivations may have existed for dangerous egg collecting trips including the 40 km paddle to Funk Island. A potential ethnographic parallel occurred on Easter Island off Chile where a perilous journey to collect eggs from a seabird colony was the central activity of an annual bird cult ceremony (Routledge 1917). Eggs were revered as symbols of re-birth and individuals who successfully acquired eggs were honoured with political power and spiritual respect. The social importance of eggs to the Beothuk is unknown; however, one of the only known Beothuk songs is dedicated to bird eggs (Howley 1915:230).

Feathers are lightweight and aesthetically pleasing decorative items that were worn by many Native Americans at the time of contact (Krech 2009). Cartier (in Howley

1915:10) noted that the Beothuk wore feathers but the significance and type of feathers are unknown. Down was reportedly used as tinder (Lloyd 1875) and the Beothuk, like many northern hunter-gatherers (Oakes 1992), likely used it for bedding and clothing. The preceding evidence reveals an importance of birds that extended beyond subsistence.

Beothuk/bird relationships through time and space

A number of ecological patterns can be deduced from early observations of the Beothuk. I hypothesise that in many areas of Newfoundland, Beothuk hunting behaviour of birds and mammals shifted seasonally as did their relative dietary importance. In winter dispersed ptarmigan and grouse were hunted locally while hunting parties targeted mammals at fixed geographic positions (such as seal and caribou hunting grounds). When caribou, beaver, and seal were scarce, birds probably increased in dietary importance. In summer geographically fixed seabird colonies were the focus of hunting parties in many areas, while dispersed mammals like harbour seal were probably hunted locally. In autumn migratory birds were available in many bays, lakes, and wetlands before attention shifted to specific caribou hunting locales at river crossings. I suggest that seasonal availability of summer seabird colonies and autumn caribou herds influenced Beothuk landscape movement. For example, Beothuk site distribution on the Exploits River and islands in northeast Newfoundland (Figure 3.6) suggests that at the time of contact the Exploits River was a transportation corridor between geographically tethered animal concentrations: caribou hunting grounds in autumn and seabird island colonies in summer.

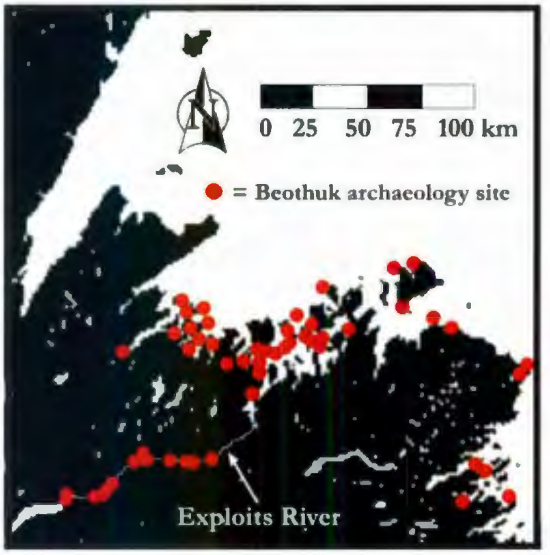

Figure 3.6: Beothuk archaeology site distribution along Exploits River and Newfoundland's northeast coast (based on the Provincial Archaeology Office of Newfoundland and Labrador 2009 database).

Shortly before European contact, humans occupied a relatively unique role in Newfoundland ecology as one of the only species that regularly exploited isolated seabird colonies. Predators, such as fox, weasel, and bear, only sporadically targeted colonies when ice conditions afforded access (Birkhead and Nettleship 1995). Because of their unique ecological niche, Newfoundland hunter-gatherers may have influenced seabird distribution. For example, great auks were likely once more widely distributed. Auk colonies probably experienced local extirpation during pre-contact times when humans and boat technology arrived. Distant islands (*e.g.,* Funk, Wadham, and Penguin Islands [Figure 3.4]) became more easily accessible with European boats and the few remaining great auk colonies perished (Gaston and Jones 1998).

Just as pre-contact people influenced the distribution of birds, access to avian resources may have influenced the survival of the island's hunter-gatherers. Birds played

a potentially significant role in the Beothuk demise. Denied access to seabird colonies threatened the Beothuks' summer survival (Marshall 1996:67-68). Seabird colonies were plundered by fishermen who reportedly shot at Beothuk egg-collecting canoe parties (Cartwright 1826; Marshall 1996:67-68). Cartwright (1826:314) noted that the Beothuk occupied the coast in summer and autumn to provide stock for the winter; therefore, winter diet may have been stressed without adequate provisions of seabirds and eggs. Holly (2008) wrote that Beothuk extinction may have been closely tied to winter starvation when the decision to stay in relatively large interior congregations for safety and cohesion led to ecologically unsupportable social units. Game animals are relatively sparse in Newfoundland's interior compared to Labrador and Nova Scotia (Rowley-Conwy 1990:24, Tuck and Pastore 1985:73). Moose, elk, deer, and porcupine were absent and caribou populations were smaller in Newfoundland than those of the mainland. The few existing winter resources could be easily over-hunted if group size was large and/or the Beothuk did not move camp as frequently as before contact. Insufficient stores of eggs and summer seabirds combined with local over-exploitation of winter species like ptarmigan and grouse may have hastened the Beothuk demise.

Conclusion

Ethnohistorical and archaeological records indicate that birds occupied a major dietary and ideological role in Beothuk life. A variety of species were exploited and an array of technologies were employed to hunt birds and collect eggs. Seabirds appear to have been the most heavily used bird group by the Beothuk, which reflects their seasonal coastal orientation. The value of seabirds surely varied in relation to the availability of other

game species such as caribou and seal. In addition to their dietary importance, birds were prominent figures in Beothuk ideology based on archaeological finds. Bird body parts and representations of them in Beothuk burials are associated with avian movement (feet and feathers), which may be correlated to a belief that birds acted as spiritual guides and messengers. It is probable that certain components of these human/bird relationships were also practiced by the Beothuks' Recent Indian ancestors. Ethnohistorical records are used in the following chapter to investigate the value of birds to the Labrador Innu before proceeding to the archaeological record of bird hunting in Late Holocene Newfoundland and Labrador.

CHAPTER 4

INNU BIRD USE FROM EUROPEAN CONTACT TO THE EARLY TWENTIETH CENTURY

This chapter explores the economic and ideological importance of birds to the Labrador Innu based on historical documents dating from European contact to the early twentieth century. A discussion of the ethnohistorical record in Labrador is followed by a background of Innu history and subsistence. The core of the chapter investigates three aspects of Innu life: the dietary role of birds, bird hunting technology, and the ideology of birds. This evidence will supplement archaeological interpretations of bird use by the Innu and their ancestors (Recent Indian people) in Chapters Five and Six.

Ethnohistory

Compared to the Beothuk discussed in Chapter Two, a larger body of ethnographic information exists regarding Innu bird use. However, some of these ethnohistorical records may not accurately portray Innu life. Fur trading and religious proselytizing were conducted to a much greater extent in Labrador than in neighbouring Newfoundland. Fur traders and missionaries may have embellished accounts that dramatized Native practices and/or promoted missionary efforts. Some early observations occurred after the Innu chose to incorporate certain fur trading practices into their economy (*e.g.*, the use of guns, winter trapping, and spring gathering at trading posts), which influenced resource choices and settlement patterns (Loring 1992:161-165). Some Innu chose to alter their movement and land use in response to Jesuit and Moravian missions. An additional concern with written documents is the potential misidentification of Innu, Cree, Mi'kmaq, Iroquois,

and Inuit along coastal Labrador and the St. Lawrence River (Bakker and Martijn 1990; Mailhot 1997:7; Martijn 2001, 2003; Taylor 1979). Despite these potential pitfalls, historical accounts resurrect vanished practices that have left no material residue and are therefore invaluable sources of data for the study of past people. The use of over 300 years of historical records to reconstruct a pattern of Innu bird hunting and consumption does not imply cultural stasis or uniformity over this time period. Innu practices were spatially and temporally variable and the following is only a generalized reconstruction of bird use. Many aspects of Innu subsistence and ideology were retained to modern times (Armitage pers. comm. 2009; Henriksen 1993; Van Stone 1985:43), which makes the study of nineteenth and twentieth century records relevant to a reconstruction of Innu/bird relationships shortly after European contact.

Background

The Innu dialect belongs to a branch of the Algonkian language family. Numerous linguistic and genetic traits as well as traditional customs are shared by the Innu and their Cree neighbours to the west. Speakers of the Innu-Aimun language were historically divided into Montagnais and Naskapi although the basis of this distinction is debatable (Harper 1964; Low 1896; Mailhot 1986). The Montagnais were thought to occupy the southern portion of Innu territory (Figure 4.1) including the St. Lawrence River drainage and southeast Labrador, while Naskapi generally inhabited the northern boreal forest and interior Barren Grounds. Local ecology differed but language, customs, and ideology were generally shared (Mailhot 1997:38).

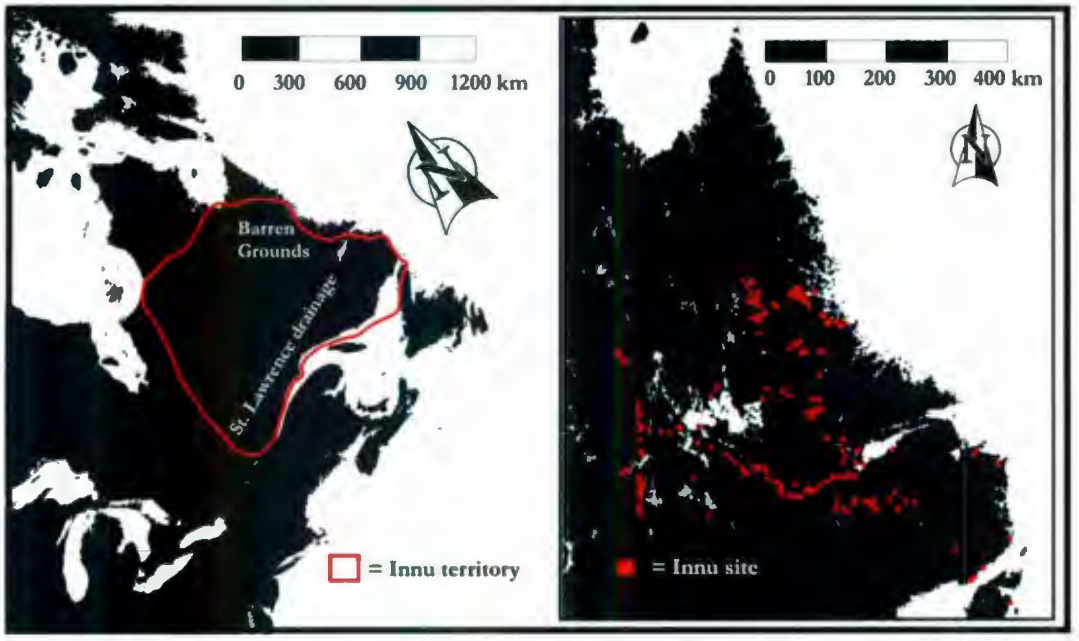

Figure 4.1: Study area and location of Innu archaeology sites in Newfoundland and Labrador (based on the Provincial Archaeology Office of Newfoundland and Labrador 2009 database).

European contact began in the sixteenth century with sporadic visits by fishermen, whalers, and explorers of coastal Labrador and the St. Lawrence River (Figure 4.2) (Gosling 1910; Mailhot 1997:10). The arrival of missionaries and fur traders in the seventeenth century marked the beginning of more sustained contact and richer accounts of Innu customs and beliefs.

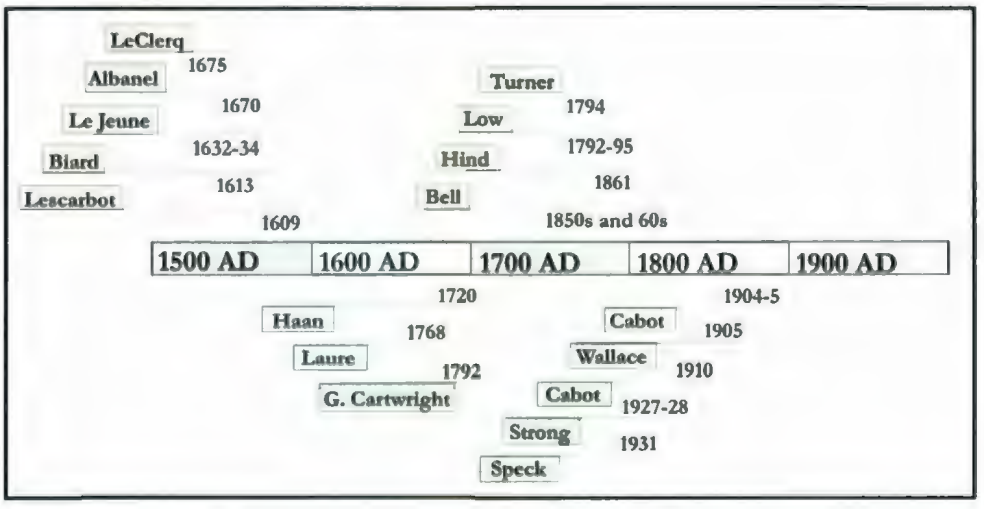

Figure 4.2: Chronology of explorers, missionaries, and ethnographers mentioned in the text.

The Innu are traditionally associated with caribou, the importance of which received much of early ethnographers' attention (Low 1896; Speck 1935; Turner 1894). Turner (1894:112) claimed that the Innu considered themselves starving without caribou meat regardless of the abundance of other foods. Moose, beaver, bear, porcupine, birds, and fish were viewed with lower regard despite their actual economic importance (Harper 1964:28; Henriksen 1973:3; Le Jeune 2004; Strong 1994:33). Archaeological finds, oral history, and ethnohistorical accounts suggest the Innu generally harvested of a variety of interior and coastal species (Figures 4.3 and 4.4).

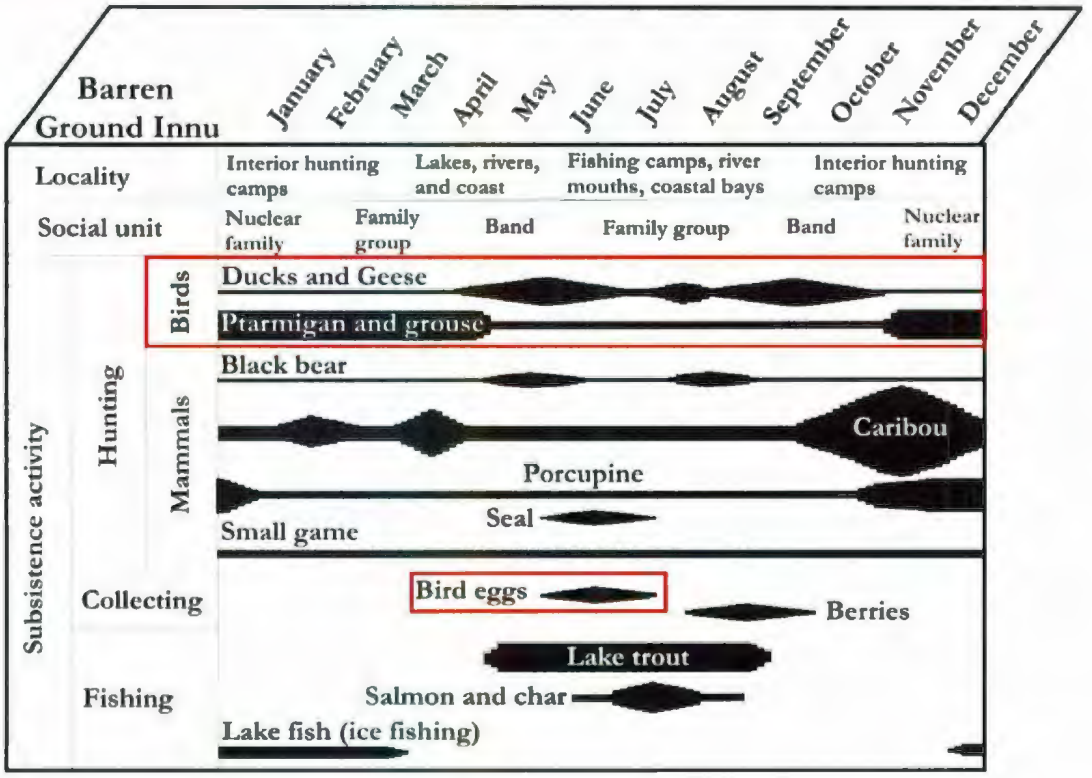

Figure 4.3: Hypothetical reconstruction of Barren Ground Innu subsistence strategy shortly after European contact based on archaeological records and historical accounts of subsistence strategies (adapted from Hoffman 1955:153; Loring 1992; Strong 1928; Turner 1894; Weiler 1989). Bar thickness reflects relative dietary importance.

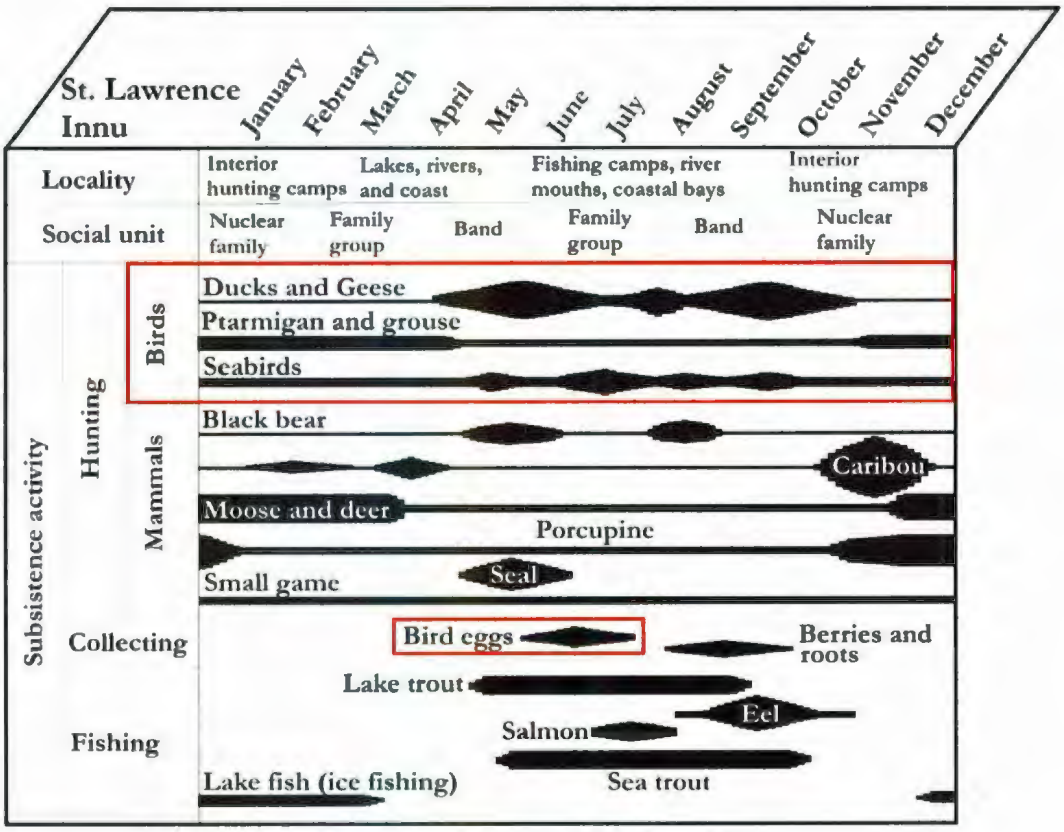

Figure 4.4: Hypothetical reconstruction of St Lawrence Innu subsistence strategy shortly after European contact based on archaeological records and historical accounts (adapted from Cabot 1912; Gadacz 1975; Hoffman 1955:153; Hind 1863; Le Jeune 2004; Loring 1992; Low 1896). Bar thickness reflects relative dietary importance.

According to historical records, when spring arrived, dispersed groups traditionally came together along rivers before descending to lakes or the coast (Low 1896:48). Spring diet included fish, birds, moose, caribou, and small mammals, as well as seal and bear in late spring. Summer groups were generally small although fishing camps could include multi-family aggregations (Loring 1992). Summer foods included fish, birds and bird eggs, moose, caribou, and porcupine. In autumn bands in the interior congregated at rivers and lakes along caribou migration paths (Loring 1992; Speck 1935). Some communities in the St. Lawrence drainage gathered large stores of eel (Lane 1952:10, Le Jeune 2004:32). Autumn diet was supplemented with porcupine, beaver,

waterfowl, and berries. In winter groups dispersed to small camps where the bulk of the diet consisted of hare, ptarmigan, grouse, and porcupine with the occasional addition of solitary caribou and moose (Gadacz 1975). Historical records will now be used to elucidate the specific role of birds in Innu subsistence.

Birds and the seasonal round

Winter

Virtually all accounts of Innu subsistence from the sixteenth to early twentieth centuries mention grouse and ptarmigan as especially crucial winter resources (Cabot 1912:290; Le Jeune 2004:171; Lips 1947:24; Strong 1994:7; Townsend 1910:167; Turner 1894:112). Low (1896:100) commented on ptarmigan and hare abundance in winter, which were snared and shot by the Innu as required. Hind (1863:244) claimed that ptarmigan and grouse were often the only reprieve from winter starvation for the Innu and that the time between the disappearance of grouse in late winter and the arrival of geese was one of great suffering. Cabot (1912:290) similarly wrote that ptarmigan were of vital importance to the winter survival of Labrador Innu. Early missionaries who lived among the Innu through winter noted that they would have starved had it not been for ptarmigan (in Hind 1863:200). While the efficient exploitation of autumn caribou brought an intense period of food abundance, ptarmigan and grouse kept the Innu alive during the most vulnerable time of year.

Winter was a time of dietary deficiency in fat for many hunter-gatherer groups (Outram 2004:84; Speth and Spielmann 1983). The selective procurement of fat-rich ptarmigan and grouse could alleviate this stress in northern landscapes. That these

animals were rarely mentioned as important game by the Innu is not surprising given their ubiquity and relative ease of exploitation; Weiler (1989:11) wrote of the Innu that the perceived importance of game was defined not by its input to diet but by its culturally ascribed status. Terrestrial birds were not high-ranked prey but their harvest was reliable. Winterhalder (1981:94) wrote of Cree boreal forest hunter-gatherers that terrestrial birds were more important than is often depicted for "at the end of the day, it is sometimes better to have a few grouse than an abstract vision of an efficiently sought but elusive moose."

Spring

In spring birds replenished dwindled reserves that had been stretched through the final lean months of winter. Fresh bird meat in spring sustained congregating groups as they moved and settled at summer camps on lakes or the coast (Loring 1992:179; Henriksen 1973:5). Hind (1863:245) wrote that the spring arrival of geese and ducks was much anticipated by the Innu and the first goose call beckoned an end to winter starvation. Le Jeune (2004:59-60) similarly commented that migrating waterfowl broke the Innu's long winter famine while Low (1896:51) stated that waterfowl migrations stocked the Innu larder. Migratory spring waterfowl made a noteworthy seasonal contribution to Innu diet. The extent of their reliance on spring waterfowl at the time of European contact is unknown but for neighbouring Cree waterfowl were the most essential source of meat well into the twentieth century and the spring hunt was the most bountiful (Scott 1987:49-51,57; Smith 1984:81-82). Species eaten by the Innu include black duck, merganser, loon, scoter, teal, and geese (Comeau 1923:272; Hind 1863; Le Jeune 2004:171).

Summer

The Innu collected large amounts of bird eggs in early summer and harvested moulting geese and ducks in late summer. Turner (1894:115) wrote of the Barren Ground Innu that thousands of bird eggs and young were collected each year while Comeau (1923:272-273) wrote of the St. Lawrence Innu that hundreds of moulting ducks were harvested during single hunting expeditions. In addition, grouse were regularly snared in the vicinity of camps (Armitage 1990:54-57; Loring 1992:179; Low 1896:100; Turner 1882-1884:333-334).

An accurate reconstruction of pre-contact Innu seabird use is difficult as it is not known how their pattern of coastal occupation was influenced by European trading posts (Leacock 1987:96). Regardless of the impetus for occupying coastal sites, seabirds and eggs were gathered by the Innu throughout summer during the eighteenth and nineteenth centuries (Turner 1882-4:349 in Loring 1992:180). By the early twentieth century, Townsend (1916:6) claimed that in southern Labrador the Innu were contributing to the devastation of seabird populations.

Autumn

Mobility generally increased in autumn as many Innu bands moved in order to track migrating caribou. Autumn bird migrations were also hunted to provide provisions to last into winter (Stopp 2002). Prichard (1911) noted that waterfowl were hunted in early autumn prior to Innu departure from lakes and coastal camps. Stored goose and duck meat supplemented by ptarmigan and porcupine were heavily relied on in autumn, especially if caribou hunting was not successful. Once on the move, bands were in contact

with migrating waterfowl through the use of waterways as transportation routes to the interior and as kill sites for caribou crossings. As Winterhalder (1981) noted of the Cree, birds and other small game were secondary resources captured while traveling or near temporary camps for large mammal hunting (Armitage 1990:52).

Historical records indicate that Innu hunted birds year round. Certain species were important at different times of year and the dietary input ranged from a secondary resource in autumn to the only source of fresh meat in winter. Spring brought migratory waterfowl while summer eggs and moulting birds were relatively easily harvested. As a modern case study, Armitage (1990) calculated the weight of wild foods captured by the Sheshatshit Innu in 1987, who still practiced traditional modes of hunting and gathering. Over 4000 kg of edible wild bird meat were harvested in one year compared to 10 000 kg of caribou. Considering that the majority of caribou were killed during large, short term migration events, birds were likely important year round resources up to modern times.

Seasonal resource choices had socio-political implications for northern hunter-gatherers (Jochim 1976:22; Whitridge 2001:59) here illustrated by a comparison of autumn caribou hunting and summer bird harvesting. Innu caribou hunts were communal efforts that required leadership and group cohesion. Labour division could be pronounced; Innu men hunted and women processed meat and hides. Rituals helped locate game, improved hunting success, and ensured propitiation of caribou spirits (Armitage 1992). In contrast, bird hunting and egg collecting could be performed by anyone, were mostly individual activities, and involved few rituals (Turner 1894:115). Seasonal patterns of bird and mammal harvesting may have had social repercussions. The

autumn caribou hunt re-enforced hierarchies and gender division while summer hunting involved more balanced dietary contributions by all group members.

Technology

Ethnohistorical records and ethnographic collections reveal a number of technological adaptations that the Innu developed to harvest birds year round. These include snares, nooses, arrows, blinds, canoes, and hunting dogs (Cummins 2002; Hind 1863; Lane 1952; Turner 1894). Bird meat preparation methods are also included in the following section.

Snares and nooses

Innu men, women, and children set traps and snares around camps at all times of year to catch grouse, ptarmigan, and rabbits (Anderson 1985:50; Armitage 1990:51, 53; Comeau 1923:287, 294; Loring 1992:169; Low 1896:100; Strong 1994:7; Weiler 1989:11). They were generally made of bent boughs, sinew, string, and wire (Figure 4.5) (Comeau 1923:294; VanStone 1985:13).

Figure 4.5: Innu Canada jay snares. Specimen A108984 (right) reproduced with permission from the Field Museum. The left image is reproduced with permission from The Rooms Provincial Museum.

Several ethnographers mention a specific Innu snare for Canada jays (Strong 1994:82; VanStone 1985:13). Jays may have been hunted for food although the amount of useable meat was small. The Innu perceived jays as ill omens: their presence foretold unsuccessful hunting ventures and they were thought to warn other animals of human approach (Turner 1894:109). The destruction of jays around camps may have aided the capture of local game. Jays are notorious for scavenging food scraps and the Innu name for Canada jay is fat-eater, referring to their tendency to pick fat from butchered meat. Jay snares may have protected food caches and drying meat both for economic reasons and ideological concerns about the sanctity of meat (Holly pers. comm. 2010).

An additional form of snare used by the Innu was the pole noose. Ptarmigan and grouse could be approached close enough for a small noose at the end of a long pole to be slipped around their necks (Comeau 1923:287; Hind 1863:174). A variety of Native American groups used this method (LeClercq 1910:281; Nelson 1973:81) which has been retained by modern ornithologists (Zwickel and Bendell 1967).

Arrows

At the time of European contact the bow and arrow were the most common Innu hunting tool for seabirds, waterfowl, and ptarmigan/grouse. Many Innu preferred this technology for small game well into the twentieth century particularly if gun ammunition was low (Lips 1947:18). As with the Beothuk, two main types of Innu arrows were used for birds at the time of European contact: stone-tipped and blunt wooden arrows. According to Lane (1952:7) Innu stone projectile points were used to kill large birds such as geese and ducks. Stone-tipped arrows were the most aerodynamic type and were capable of

travelling the relatively long distances that geese and large ducks were hunted from. The second type of bird hunting arrow was blunt ended and particularly suited for killing grouse, ptarmigan, and smaller birds (Figure 4.6) (Comeau 1923:286; Lips 1947:15; VanStone 1985:68).

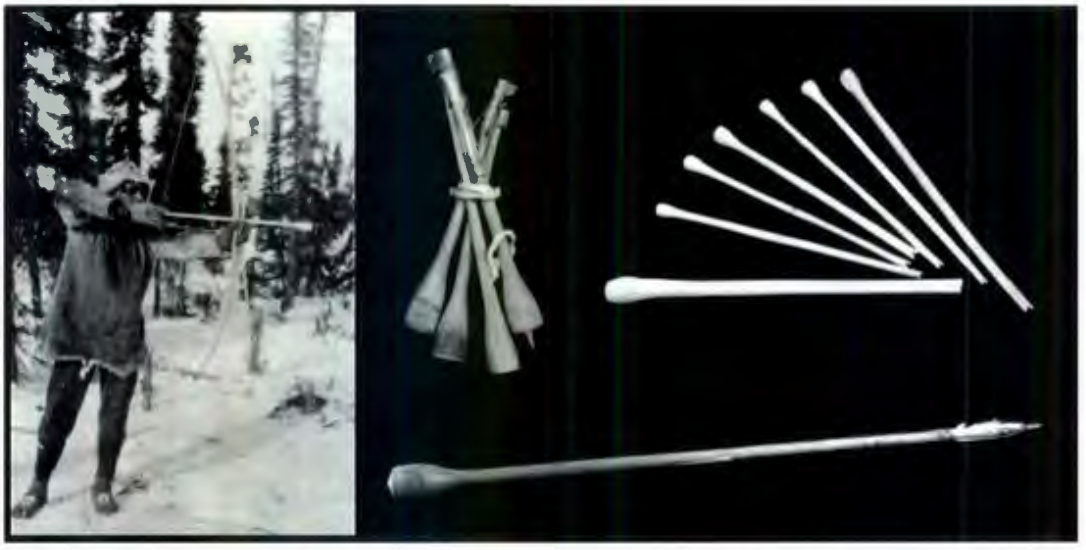

Figure 4.6: Innu man posing with blunt arrow (Image CSA62084, Strong Collection, 1928, reproduced with permission from the Field Museum) and blunt arrow specimens (reproduced with permission from The Rooms Provincial Museum).

In contrast to the Beothuk use of goose and eagle feathers for fletching, Innu arrows were fletched with grouse and ptarmigan although many blunt arrows lacked fletching (Strong 1994:114; Turner 1894:148). Hind (1863:247) claimed that the Innu made bows and arrows in winter, which is corroborated by the use of feathers from species available during this season. Whether or not ideological reasons motivated the selection of ptarmigan/grouse feathers over other birds is unknown. The lack of fletching on many blunt arrows implies that they were intended for short flights when stability was less important. In support of this, Turner (1894:149) stated that ptarmigan were

consistently hunted at distances less than 25 m. The difficulty of approaching close to most mammals, ducks, and geese, provides further evidence that blunt arrows lacking fletching were intended primarily for grouse, ptarmigan, and perhaps hare.

Blinds

Most blinds were likely constructed of boughs, grass, and driftwood but stone blinds provided concealment in tundra habitats and along rocky shorelines. A number of stone blinds have been found during archaeological surveys (Auger and Stopp 1986; Biggin and Ryan 1989; Hood 1995; Labrèche 1998; Neilsen 2007; Thomson 1997). They were typically tall enough to conceal a crouching or lying hunter and were located on promontories, spits, and knolls or along beaches overlooking duck and geese feeding areas.

Comeau (1923:273) mentions winter ice blinds near fast flowing, open water where an Innu hunter would lay concealed in white clothing. A white canoe located near the blind would be used to retrieve dead and dying ducks (eider, old squaw, and goldeneye). Canoes were painted white or covered in white canvas in spring to resemble floating ice (Neilsen pers. comm. 2009). The Innu also fashioned canoes into blinds using boughs (Comeau 1923:268; Hind 1863:331). Hind (1863) watched two Innu men hunt loons by approaching the waterfowl from a bough-covered canoe while imitating loon calls. Comeau (1923:268, 273) similarly claimed that the favourite Innu method of shooting ducks and geese was to lure them through calls from a canoe blind. Canoes were often used for bird hunting in association with dogs.

Hunting dogs

Historical records suggest that Innu dogs were an important pre-contact hunting tool (Cummins 2002:131; Le Jeune 2004:151). At the turn of the twentieth century, Innu hunters paddled canoes while dogs searched for game along shorelines (Grenfell 1913:204). Grouse, porcupine, and other small animals were either flushed and tracked by dogs or were treed until hunters arrived (Armitage pers. comm. 2009).

Decoys

Waterfowl are relatively gregarious during migration and perceive decoys as an indication of safe feeding grounds (Leffingwell 1888). Innu decoys from the nineteenth and early twentieth centuries consisted of bent boughs, leaves, grass, rotting wood, feathers, and occasionally bird skins (VanStone 1985:37).

Bird calls were used in combination with decoys and blinds to hunt waterfowl and seabirds (Comeau 1923:273; Hind 1863:331; Turner 1894:20). Bird call imitations lured protective mothers, attracted birds to feeding grounds, attracted drakes during mating season, and perhaps attracted raptors (owls, falcons, ospreys, and eagles were hunted by the Innu [Le Jeune 2004:171]). Turner (1894:20) suggested that goose call mimicking involved group coordination when different members of a hunting party imitated separate calls.

Boats

Canoes were a major means of transportation from spring to autumn and brought Innu in contact with many aquatic birds that lived along portage and paddling routes. Canoes

were also used to move along shorelines in search of nests and grouse (Armitage 1990:52; Turner 1894). Comeau (1923:272) provides an account of Innu bird hunting using multiple canoes. Five to six boats circled flocks of flightless scoters during their annual moult and the panicked birds dove until they were exhausted and unable to escape. Up to 400 scoters could be collected in a single chase.

Food preparation

Birds were usually roasted or boiled for immediate consumption, or smoked if the meat was to be stored (Le Jeune 2004:180). Le Jeune (2004:216) noted that the Innu boiled waterfowl in autumn and Townsend (1910:160) stated that the Innu split, dried, and smoked eider carcass in late summer. Eggs were cooked in water with boiling stones or roasted (Townsend 1910:153). The Innu, as well as other Native Americans, preferred to burn grouse/ptarmigan feathers off the carcass as opposed to plucking (Armitage pers. comm. 2009). Organs and unwanted parts could be removed by stepping on the wings and simultaneously pulling the feet. An entire grouse could be plucked, eviscerated, cooked, and eaten without a single processing tool.

A summary of bird hunting technologies that appear in early accounts highlights the complexity of tools and behaviours associated with bird harvesting. European observations depict non-material aspects of hunting and a multitude of organic tools, neither of which preserve in the archaeological record. The Innu learned bird calls, built decoys, trained dogs, fashioned weapons, and coordinated group efforts to pursue feathered prey. It is worth noting that many similar practices likely existed among the

Beothuk but have escaped preservation on account of the narrow window during which time the Beothuk were observed by Europeans.

Other uses of birds

The Innu used feathers for decoration, bedding, and tinder. Loon feathers trimmed traditional hats (Lips 1947:38) and white down was worn in the hair of Innu men (Kupp and Harp 1976). Turner (1894:114) noted it was rare to see a Barren Ground Innu woman without ptarmigan feathers on her clothing or hair. Ptarmigan were hunted year round and their feathers were always available; however, there may have been an ideological reason for their decorative use. Ptarmgian and grouse are unique birds for their ability to distinctly change plumage colour with the seasons and perhaps this triggered an interest in their feathers. Goose, duck, eagle, loon, gull and kingfisher also appeared in art as figures of wood or embroidered string in the nineteenth and early twentieth centuries (Speck 1935:213; Turner 1894:115). Down from eider and other birds were used for bedding in pillows and blankets while matches were made of eagle skin and down (Hind 1863:31; Le Jeune 2004:152; Loring et al. 2003).

Birds and Innu worldview

The Innu ideological perception of birds both reflected and shaped ecological relationships (Armitage 1992; Henriksen 1993:6). Belief systems, legends, ceremonies, and ritual artifacts hint at the spiritual realm birds occupied in Innu life.

As in the past, the Innu believe that spirit masters control individual animals within each animal kingdom: separate kingdoms include those of caribou, porcupine,

geese, owls, partridge (grouse and ptarmigan), bears, beaver, and aquatic creatures (Armitage 1992; Clément 1987:61). That geese, owls, and partridge have their own animal masters suggests they may have been spiritually important from the time of European contact. Unlike the Beothuk, evidence for a correlation of birds, spiritual messengers, and the Innu afterlife is lacking.

Societal values and ecological information are imbedded in Innu legends and customs. The following is a discussion of Innu bird stories, spiritual practices, and an interpretation of their significance regarding ideology and subsistence.

One of the first Innu legends ever recorded was of the thunder bird (Le Jeune 2004:19). According to Speck (1935:66), thunder is associated with a giant bird because an Innu man shot an arrow at the sound of thunder and struck a bird. It is thought that thunder is the sound of giant wings beating or is the hollow sound of a giant buzzing nighthawk (Le Jeune 2004:155). This association is common among Algonkians of central and eastern Canada where the thunderbird is believed to be a powerful raptor respected for its strength and prowess (Chamberlain 1890). Raptor feathers were used in ceremonial contexts and certain raptors were revered by many Native Americans (Eckert and Clark 2009; Krech 2009). The Innu commonly feared owls as spiritual beings partly owing to their nocturnal habits and ominous calls. Northern Innu camped on high ground to avoid meeting these powerful spirits in their low-lying haunts (Turner 1894:109).

A well known Innu legend tells of a wolverine that lures geese and loons to dance around a fire (Desbarats 1969; Strong 1994:158-160). The birds are then individually killed before some escape. Goose and loon were hunted by the Innu with imitation calls

and decoys: perhaps the wolverine legend hints at the admirable use of deception to ensure bird hunting success.

Other legends explain why the loon song is mournful, why loon eyes are red, how robins acquired red breasts, and how summer birds bring warm weather (Desbarats 1969; Strong 1994). Loon cries were also believed to indicate wind directions and loon bones had to be placed in prominent locations to please spirits (Armitage pers. comm. 2009; Speck 1935:127; Strong 1994:160; VanStone 1982). Loons are common in Labrador, have high meat yields, are vocal, and are striking birds, which may explain their prominence in Innu legends and customs.

Bird remains were also used for divination and as charms. To predict hunting success, Canada jay throats were cut and the stomach examined, while grouse breastbones and scapulae were burned (Armitage pers. comm. 2009; Speck 1935:125-126). Bird heads were kept as hunting charms and to respect spirits: the Innu preserved harlequin duck heads out of respect to ensure that they returned next spring (Van Stone 1985:32). Harlequins are among the most ornate northern ducks and are often the first to arrive in spring along rivers and lakes.

Based on linguistics, the Innu at the time of European contact were acutely aware of the temporal dimension of bird behaviour. Innu-Aimun names of lunar divisions reflect bird activities; Shiship-pishum is the month of waterfowl (April), Nishk-pishum is the month of Canada Goose (May), and Upau-pishum is the month of first flight (August) (Clément 1993:14, 44, 122; Speck 1935:67). The latter refers to the period when young waterfowl are ready to fly and adults have finished their moult. Further support for the

temporal significance of bird events were annual spring feasts to honour geese and loons (Comeau 1923:85-89; Hind 1863: 245).

As with the Beothuk, the Innu perspective of birds extended beyond resource use and consumption. Customs such as the naming of lunar divisions reflects ecological relationships with birds while other customs such as the use of legends to reinforce hunting strategies may have actually guided and preserved ecological relationships with birds. There are limits to the correlation of ideological and ecological importance, for example, regardless of how essential ptarmigan and grouse meat were, they are virtually non-existent in Innu legends.

Conclusion

Historical records and ethnographic collections suggest that birds contributed to Innu diet during all seasons. Ptarmigan and grouse appear to have been the most important bird group in Innu diet, which perhaps reflects the interior orientation of many Innu people. Specific technologies were tailored to hunt birds effectively. Early ethnographers were justified in their focus on the centrality of caribou in Innu life but historical accounts portray a broader range of food resources and the prominence of other animals in Innu symbolism. Innu legends, customs, and linguistics hint at the ideological and ecological dimension of waterfowl, seabirds, and ptarmigan/grouse. Components of ecological relationships between Innu and birds are likely rooted in traditions of the Innu's pre-contact ancestors. In the following chapters, the preceding reconstructions of Beothuk and Innu bird use will inform archaeological interpretations of Recent Indian sites.

CHAPTER 5

BIRDS AND BIRD HUNTING SITES IN THE ARCHAEOLOGICAL RECORD

This chapter presents an archaeological background to the material record of bird hunting in Newfoundland and Labrador. Two bodies of data are used to construct a hypothetical material signature of bird hunting by the Beothuk, Innu, and their Recent Indian ancestors: historical records of Beothuk and Innu practices (from Chapters Three and Four), and archaeological research of bird bone taphonomy. Examples of pre-contact and historical bird hunting from a wider geographic context are used throughout the chapter to support hypotheses of bird hunting material refuse. Chapter Six investigates the existing archaeological record of Recent Indian, Beothuk, and Innu bird use and concludes with a summary of how ethnohistorical records and taphonomic data can be employed to help explain the nature of the archaeological record of bird exploitation.

Ethnohistory and the material record of Beothuk and Innu bird hunting

Material traces of bird harvesting are here extrapolated from early accounts of hunting practices and technologies. In this context, historical documents are an indirect analytical source used to understand pre- and post-contact archaeological records. While many Innu, Beothuk, and Recent Indian behaviours changed through time, a number of hunting practices were likely retained for many years after European contact. The following is a generalized prediction of the archaeological record of bird hunting in Newfoundland and Labrador over the past thousand years.

Bird hunting tools and features

The majority of Beothuk and Innu bird hunting weapons were organic (Table 5.1) and would seldom preserve in Newfoundland and southern Labrador because of acidic soils and high energy environments. Blunt arrows, decoys, snares, and nooses quickly decay resulting in poor archaeological representation. The most durable objects would be stone projectile points and tools like burins and abraders that were used to shape wood and bone associated with bird hunting weapons. Projectile points, burins, and abraders were used for a variety of tasks making the association of stone tools and bird exploitation difficult. For example, Jordan (1980:624) wrote that despite large numbers of bird bone at Labrador Palaeoeskimo sites, no obvious bird hunting items were discovered.

Tool	Composition	
	Beothuk	**Innu**
Composite arrow		
Projectile point	Stone/iron/bone	Stone/iron/bone
Arrow shaft	Seasoned pine	White spruce, birch, juniper
Cordage and fletching	Caribou sinew/hide, feathers	Caribou/moose sinew/hide, feathers
Blunt arrow		
Arrow shaft, head	Pine*	White spruce, birch, antler
Cordage and fletching	Caribou sinew/hide, feathers	Caribou/moose sinew/hide, feathers
Bow		
Bow shaft	Maple, ash, spruce, pine,fir	Spruce, larch, juniper
Bowstring	Caribou sinew/hide	Caribou hide
Snare		
Shaft	Wood	Juniper sapling
Cordage	Caribou sinew/hide	Caribou hide
Club	Wood	Wood
Noose		
Pole	Pine*	Pine*
Cordage	Caribou sinew/hide*	Caribou sinew/hide*
Canoe		
Boat	Birchbark, spruce, sinew, tree roots, sap, iron nails	Birchbark, sinew/hide/tree roots, sap, iron nails, canvas
Paddles	Driftwood	Wood
Decoys		
Body	Boughs, rotting wood, skins*	Boughs, rotting wood, skins
Line	Caribou sinew/hide*	Caribou sinew/hide
Blinds	Boughs, cobbles	Boughs, cobbles, driftwood

Table 5.1: Composition of bird hunting weapons and related tools (based on Howley 1915; Lips 1947; Marshall 1996; Turner 1894; VanStone 1982, 1985). An asterisk (*) indicates those tools whose composition is unknown and have been hypothesised by the author.

Projectile point sizes are informative regarding weapon choice and are an indirect avenue to investigate bird hunting. The only Beothuk and Innu projectile connected to bird hunting appears to be the arrow, which required a small width projectile point. The Inuit employed bird hunting darts thrown with an atlatl but no historical records document Beothuk or Innu use of darts on birds. Native people of the Pacific Northwest and Inuit hunters crafted multi-pronged bird hunting spears (Hawkes 1916:76; Suttles 1951:74-75) but in all recorded cases, the prongs were organic. A quantitative assessment of the size of bird hunting projectile points is not yet possible but based on Erwin *et al.* (2005), most Recent Indian and Beothuk points less than 20 mm in basal width would be appropriate for hafting to arrow shafts. Sites where birds were hunted are predicted to yield a larger percentage of small projectile points with widths of 20 mm or less.

Different bird hunting methods produced kill sites with variable archaeological visibilities. When birds were actively pursued, the location of kill sites on landscapes such as marshes, bays, and forests are near impossible to detect. However, unlike some other aquatic species, swimming birds could be hunted from land by waiting hunters and it these shore-based hunting sites, particularly those involving bird blinds, that are the most archaeologically visible.

Hunting blinds are generally 50-75 cm high and are crescent-shaped, cobble or wood structures in which a crouching or lying hunter would be hidden (Fitzhugh 1981:196-198; Gendron 1995:55; Morrison 1981:173; Pryde 1971:185; Ritter 1977:3). Bird blinds are necessarily located close to relatively shallow water within arrow reach of swimming, landing, and low-flying game (Leffingwell 1888). If the range of a northern

hunter-gatherer arrow is less than 60 m (Pryde 1971:185), bird blinds would most likely be within 40 m of water.

Knowledge of probable hunting blind locations can aid the detection and interpretation of pre-contact bird hunting sites in the province. Bird hunting camps were likely located near shallow bays, island archipelagos, lakes, marshes, and other areas that birds frequent (Mannermaa 2008:63; Smith 1984). Nelson (1969:155) wrote that the Inuit preferred to construct blinds on beaches that offered views of oncoming birds. Small camps were commonly located nearby so that people inside tents could quickly jump outside when they heard approaching flocks. During bird migrations, a person was commonly stationed outside camp to watch for waterfowl (Nelson 1969:155). The ethnographic association of warm weather camps and beach-based bird hunting blinds has implications for archaeological interpretations of stone rings/crescents found on the periphery of warm weather sites.

Areas with open water in early spring and early winter were attractive to migrating waterfowl and human hunters (Prevett *et al.* 1983:191). This includes habitats with fast currents and/or upwellings such as near river mouths, tickles (narrow channels), and polynyas. Shoreline topography likely influenced bird blind location. Terraces along shorelines of shallow bays would be ideal for hunting surface feeding ducks and geese and Nelson (1969:154-155) noted that long spits were also popular sites for bird hunting blinds.

Lithic assemblages associated with pre-contact hunting blinds are generally dominated by projectile points and flakes from late stages of tool manufacture and repair (Fitzhugh 1981; MacKay 2004; Morrison 1981:175; Ritter 1977); however, a multitude of

tools may appear because hunters performed many tasks while waiting for game to arrive (Binford 1978b). Nelson (1969:157) wrote that Inuit hunters waited for many hours in bird blinds and were rewarded for their patience with ample meat. Cree hunters similarly spent long periods in hunting blinds (Scott 1987). Time optimization by waiting hunters would lead to potentially diverse lithic assemblages compared to the narrow primary function of blinds. Binford (1978b) noted that modern blinds of northern hunter-gatherers generally had dense refuse from tool repair and that hunters usually brought unfinished artifacts to work on while waiting. Activities represented by artifacts at blinds related to art, entertainment, and tool repair (Binford 1978b). MacKay (2004) found that the majority of lithics at a pre-contact Yukon hunting blind were from projectile point manufacture from bifacial performs. According to MacKay (2004:132), sufficient downtime existed for the creation of artifacts related to social expression and identity. Flakes and broken bifaces have also been found at structures interpreted as hunting blinds in the Great Basin (Wilson 2000:35), the northern Barren Grounds (Morrison 1981:175), and coastal bays of Baja California (Ritter 1977). In northern Newfoundland, burin-like tools used for carving wood and bone were found associated with what are interpreted to be Dorset bird blinds (Renouf pers. comm. 2009).

I hypothesise that lithic assemblages at Innu, Beothuk, and Recent Indian bird hunting sites would include late stage manufacturing debris and a potentially diverse tool assemblage. Bifaces were likely repaired and sharpened at blinds and tools unrelated to bird hunting could be manufactured and repaired while waiting for bird flocks.

Bird meat preparation

Birds generally involved less intense butchering than caribou and seal, which had hides to prepare and large quantities of meat to cut and preserve. Mammal skin tanning and processing was often a long and laborious task (Boudreau 1974:27; Renouf and Bell 2008) and mammal carcasses took hours to process. In contrast, birds are generally easy to disarticulate; Steadman *et al.* (2002:583) noted that pre-contact bird processing sites almost entirely lacked stone tools and cut marks on bird bone were rare. When present, cut marks most commonly occur on the humerus, coracoid, and scapula where pectoral and deltoid muscles were severed (Cassoli and Tagliacozza 1997:308-309; Mannermaa 2008:59). Feathers were commonly burnt off or removed with skin during de-fleshing events as was common for grouse and ptarmigan (Armitage 2009 pers. comm.; Krech 2009). Pryde (1971:218) wrote of the Inuit that the skins of birds as large as geese were simply torn off and the birds were boiled. Swan (1869:217) similarly noted that dead birds on the Northwest Coast were quickly and very superficially cleaned by Native hunters before boiling whole. The Beothuk also boiled birds intact, which required little or no meat processing.

According to ethnohistorical records from Newfoundland and Labrador, bird meat processing would have involved artifacts and features that differed from mammal processing sites (Table 5.2). Scrapers, large bifacial knives, and other specialized stone tools commonly used for mammal butchering would be less prevalent at bird processing sites (Birkett-Smith 1929:135; Steadman *et al.* 2002:583). I hypothesise that utilized and/or retouched flakes would be sufficient for most bird butchering although bifaces used to cut mammal meat could be easily used on birds. All Recent Indian sites with bird

bone also contain mammal bone and it is likely that tools designed for butchering one taxon were used for the other when available.

Activity **Processing tools**	**Composition**
Butchering	
Knives	Stone/metal
Utilized/retouched flakes	Stone
Boiling	
Vessels	Birch bark
Hearth	Cobbles, fire cracked rock, and charcoal
Roasting	Larger cobbles, some fire cracked rock, and charcoal
Drying	Cobbles, wooden scaffold
Pounding (of dried egg)	Grinding stone, hammerstones

Table 5.2: Pre-contact bird processing tools and features.

Long periods of downtime at hunting blinds combined with less intense bird processing requirements created the opportunity for a variety of other tasks to be performed at bird hunting sites. Milne and Donnelly (2004) documented all stages of lithic reduction at a Pre-Dorset Palaeoeskimo bird hunting site. According to the authors, the ease of acquiring waterfowl in terms of planning and energy investment afforded Pre-Dorset people time to pursue other tasks. The lithic assemblage at their Pre-Dorset site reflects tool preparation for later caribou hunting (Milne and Donnelly 2004:107). Similarly, Damkjar (2005) noted of Late Dorset sites in the Arctic that faunal assemblages were dominated by bird bone while lithic assemblages were geared towards seal hunting. Sealing harpoons and mammal processing tools were prepared at Late Dorset bird hunting and fishing sites for use later in the year at other sites (Damkjar 2005:163). Behavioural flexibility and its associated artifact diversity at bird hunting sites can be potentially misleading regarding the interpretation of tools *used* at a site versus those *prepared* at a site. The preceding examples illustrate the value of reconciling lithic

and faunal assemblages in a context of seasonal subsistence pursuits in the annual round of hunter-gatherers.

Taphonomy

Chemical, geological, and biological variables contribute to the taphonomic filter through which bird hunting technology and bird bones must pass to be preserved in the archaeological record. Taphonomy is defined as those processes occurring to bone after deposition. Butchery and cooking practices influenced bone preservation and these activities conducted prior to deposition are also included in this section. The remaining taphonomic factors discussed are scavenging, bird bone biology, and the sediment/environment matrix.

Bone alteration prior to deposition

Cooking can alter bone chemistry and influence the likelihood of archaeological preservation. Unlike mammal skeletons that were often cut and processed, entire bird skeletons were subjected to high heat when boiled or roasted. Boiling accelerates hydrolysis and mineral/organic leaching leading to preferential microbial decomposition (Nicholson 1996:528). This results in a high degree of bone fragmentation that hinders taxonomic identification of birds (Bovy 2002; Dirrigl 1998; Nicholson 1996; Noe-Nygaard 1977) and other small animals that were boiled.

Calcined bone has a higher rate of survival in Newfoundland and Labrador and occurs as a result of direct contact with fire (*i.e.*, during roasting). Bones of animals commonly roasted may be preferentially preserved and faunal records may contain a

misrepresentative scarcity of animals that were boiled as birds often were by the Beothuk. Bones boiled for marrow extraction, however, may become calcined if discarded in an active hearth. Marrow extraction was likely much more common for caribou and other terrestrial mammals than birds although some seabirds, ptarmigan, and grouse have marrow rich bones attractive to northern hunter/gatherers (Whitridge 2001:25). Marrow would be especially attractive in winter and late spring when human diet was stressed and ptarmigan/grouse were in good health compared to fat depleted mammals. Winter and spring bird bones may therefore have been highly processed. In summary, I hypothesise that bird boiling and winter/spring marrow processing decreases preservation potential of bird bones.

The Innu and Beothuk had customs of bone disposal that affected faunal representation in the archaeological record (Lane 1952:44; Speck 1935:172). Dogs were forbidden to chew certain animal bones that were ritually disposed away from domestic areas. The bones of some bird species were carefully burned by the Innu (Lane 1952:44) and loon bones were often placed in sacred sites (VanStone 1982:20). In addition, grouse scapulas were burned to predict hunting success (Speck 1935:172). Ideology influenced bird bone disposal but the impact on bird representation in the faunal record is unknown.

Scavenging

Scavenging intensity is influenced by bone marrow abundance, which differs among bird species and skeletal parts. Bovy (2002:968) hypothesized that archaeological bird wing bones may appear at high relative frequencies because they contain little marrow and were not scavenged by animals. Ugan (2008) found that ephemeral hunting camps in the

southern United States had less thorough bone processing: discarded bones had more meat and marrow attractive to scavengers. Ephemeral camps were expected to have a lower likelihood of bone preservation. Whitridge (2001) also wrote that the preservation potential of animals at ephemeral sites is poor and that short term camps had a much lower archaeological visibility that longer term occupation sites. Bones that experienced more intense meat and marrow removal at less ephemeral sites (longer term occupation) would thus have higher preservation rates. Faunal records may contain a misrepresentative dominance of species captured at sites occupied for longer periods of time (such as seal and caribou) while species hunted at more ephemeral camps (such as birds) may be under-represented.

Dogs are efficient scavengers that likely influenced bird bone preservation (DePuydt 1994:245). Many Innu camps had dogs from the time of European contact to the twentieth century (Cummins 2002:122) and likely in pre-contact times. In contrast, historical accounts do not mention Beothuk dogs (Marshall 1996) and faunal analyses in Newfoundland have failed to reveal evidence of dog gnawing at Recent Indian and Beothuk sites. In the absence of domestic dogs that had ready access to camp refuse, bird and other small animal bone should appear more frequently in Newfoundland than in Labrador; this will be tested in Chapter Six.

Bird bone

Taphonomic analyses indicate that bird bone can be durable and resistant to degradation (Bovy 2002; Dirrigl 1998; Livingston 1989; Steadman *et al.* 2002; Tellkamp 2005:309). As with other animals, bird bone survivorship is largely dependent on skeletal part

density. The bones of certain bird species are denser than others depending on ecological adaptations (Bovy 2002; Ericson 1987:65; Livingston 1989:543-544; Lyman 1994). Birds that fly long distances have strong wing elements and therefore their humeri, radii, and ulnae are more likely to survive, while diving ducks and seabirds generally have denser and stronger leg elements (Bovy 2002; Livingston 1989). Bird body parts unlikely to survive regardless of species include skulls, ribs, and vertebrae, which are small, thin-walled, and susceptible to microbial decay. Bird cortical bone can be as dense and durable as mammal bone; however it is less likely to survive because of smaller size. Smaller bones, particularly from jays, ptarmigan, and grouse, are more likely to be swallowed and consumed by scavengers, have more surface area per volume exposed to microbial and chemical attack, and have smaller cross sections that are more easily broken (Ugan 2008). In general, skeletal elements of large birds such as goose, cormorant, great auk, and duck are expected to survive more than small birds, though to a lesser extent than large mammals.

Newfoundland and Labrador sediment/environment matrix

Newfoundland and Labrador soils are generally unfavourable for bone preservation because they are acidic and are subject to high-energy erosion (Roberts 1983). Coastal sites, where seabird hunting may have occurred, often experience ice, wave, and wind erosion. Middens, which are more common at longer-term occupation sites, create micro-environments of decreased acidity and enhanced preservation (Hodgetts *et al.* 2003:112). Species captured at sites with middens may be over-represented compared to those hunted at ephemeral camps.

In summary, based on its biological properties some bird bone is expected to preserve in favourable environments although survivorship may be limited by boiling and marrow processing. The likelihood of preservation is lowered by scavenging of small bird bones (*e.g.*, by dogs) especially at ephemeral sites where meat removal may have been less thorough and middens did not accumulate. In addition to lithic assemblages, features, and bone, interpretations of pre-contact bird hunting benefit from ecological analyses of site location.

Site locations

Historical and modern records of resources in the vicinity of archaeological sites contribute to reconstructions of pre-contact subsistence strategies in the province. For example, areas that were traditionally important sealing or salmon fishing grounds for Newfoundland settlers in the eighteenth to twentieth centuries were likely also important sealing and fishing areas for hunter-gatherers prior to European contact. Records of culturally important seabird colonies, historical bird hunting areas, and local knowledge of bird resources can be drawn on to interpret archaeological sites. Local ecological conditions are subject to significant variations with changing climate and hunting intensity, therefore, assessments of the importance of local game based on historical and modern records are best approached cautiously.

Conclusion

This chapter has approached bird hunting as a distinct activity, which, in reality, was likely performed concurrently with mammal hunting, fishing, and/or shellfish collecting.

Disentangling the role of birds at these multi-functional pre-contact sites is challenging. A number of variables potentially lead to under-representation of bird bone and bird hunting activities; however, cultural ecological reconstructions can be enhanced with data derived from ethnohistorical records, the relationship between faunal and lithic assemblages, analysis of archaeological features, and knowledge of local ecology.

This chapter makes use of historical records of the Beothuk and Innu, archaeological and ethnographic examples of hunter-gatherer bird use, and taphonomic research to predict the record of bird hunting in Newfoundland and Labrador. Bird hunting tools should not be well represented in the archaeological record owing to their largely organic composition. Small stone arrowheads and carving tools such as burins and abraders are the most durable tools related to bird hunting and the manufacture of bird hunting weapons. Cobble bird hunting blinds are predicted to preserve in the form of small circular to semi-circular clusters of stone within 40 m of water bodies and at the peripheries of small camps. Lithic assemblages at sites where birds were hunted, including those with blinds, may vary in relation to the tasks performed by waiting hunters and the availability of other game. I predict that stone tools and debris in the vicinity of sites where birds were hunted will be relatively diverse. Stone tools found associated with bird-dominated faunal assemblages may not be associated with bird exploitation (Damkjar 2005; Milne and Donnelly 2004). A variety of tasks could be conducted at bird hunting camps while hunters with alert ears awaited oncoming flocks.

The archaeological occurrence of avian remains in Newfoundland and Labrador is potentially limited by scavenging, the province's harsh sediment/environment matrix, and pre-contact cooking techniques that weakened bone. Despite variables that do not favour

preservation of bird bone and hunting refuse, the province contains a relatively rich record of Recent Indian, Beothuk, and Innu bird exploitation, which is investigated in Chapter Six.

CHAPTER 6

ARCHAEOLOGICAL RECORD OF RECENT INDIAN, BEOTHUK, AND INNU BIRD HUNTING

This chapter investigates the material refuse of bird harvesting at Recent Indian, Beothuk, and Innu sites. In coastal Newfoundland, virtually all recorded Recent Indian and Beothuk faunal assemblages include birds. A synopsis of sites with bird bone is followed by a discussion of bird species and body part representation. Labrador lacks similar faunal data and the record of bird use is largely limited to bird hunting blinds. After presenting the Labrador data, explanations are offered as to why the record of bird exploitation differs between Newfoundland and Labrador. The chapter concludes with a case study of the geographic relationship between Recent Indian/Beothuk sites and seabirds.

Newfoundland

Faunal remains have been recovered at 36 Newfoundland Recent Indian and Beothuk sites (Table 6.1). Animal taxa were identified by researchers at 17 coastal and interior sites, 14 of which yielded bird bone. Figure 6.1 and Table 6.2 depict twelve of these faunal assemblages. From the 17 sites with identified animal species, Birchy Lake 9 (DiBd-01), St.Paul's Bay 1 (DlBk-05), Parke's Beach (DgBm-01), and Sampson's Head Cove (CkAl-04) yielded bird bone but were excluded from Figure 6.1 because quantities were not available. L'Anse a Flamme (CjAx-01) also included bird bone but was excluded because of a small sample size (n=5). Percentages in Figure 6.1 are based on the number of individual specimens (NISP). Shellfish, fish and whale were excluded because their remains were not common enough to warrant inter-site comparisons (a total of three

whale bone fragments were found in the combined assemblages in Figure 6.1). The category 'small/medium mammal' includes muskrat, hare, wolf, bear, fox and those bones that could not be identified more specifically than 'small/medium mammal'. Mammal bone that was not identified to one of the four mammal categories in Figure 6.1 was excluded on the grounds that small unidentifiable fragments were often classified simply as mammal although analysts admitted that samples of this nature could include bird bone (Rick 1977; Stewart 1999).

Site name and Borden number	Cultural complexes	Reference	Bird bone	Coastal/ Interior
Russell's Point (CiAj-01)	LP, BK	Gilbert 2002	No	Interior
Boat Hole Brook (CkBm-01)	BA, LP, BK	Penney 1986	No	Interior
Triton's Brook (DdAp-02)	RI	Schwarz 1989	No	Interior
Pope's Point (DfBa-01)	BA, BK	Devereux 1965	No	Interior
Birchy Lake 9 (DiBd-01)	BA	Holly and Erwin 2007	Yes	Interior
St. Paul's Bay 1(DlBk-05)	LP	Penney 1988	Yes	Coastal
Peat Garden (EgBf-06)	CH	Murray 2000	Yes	Coastal
L'Anse aux Meadows (EjAv-01)	CH, LP	Rick 1977	Yes	Coastal
L'Anse a Flamme (CjAx-01)	LP	Penney 1985	Yes	Coastal
Port au Port (DdBq-01)	BA, LP	Simpson 1986	Yes	Coastal
Parke's Beach (DgBm-01)	LP, BK	Reader 1997	Yes	Coastal
Boyd's Cove (DiAp-03)	BA, LP, BK	Cumbaa 1984	Yes	Coastal
Birchy Lake 2 (DiBe-02)	CH	Hartery 2001	No	Interior
Spence (EeBi-36)	BA, LP	Teal 2001	No	Coastal
Gould (EeBi-42)	CH	Teal 2001	Yes	Coastal
North Cove 1 (EgBf-08)	RI	Stewart 1999	Yes	Coastal
Noel Paul's Brook (DeBb-01)	BK	Schwarz 1992	No	Interior
Little Brook Site (DeBd-05)	BK	Schwarz 1992	No	Interior
Red Indian Falls 1-6 (DfBb-01 to DfBb-06)	BK	Thomson 1983	No	Interior
North Angle (DfAw-01)	BK	Thomson 1983	No	Interior
Aspen Island I-III (DfAw-04 to DfAw-06)	BK	Gilbert 1996 Thomson 1983	No	Interior
Two Mile Island 2 (DfBa-03)	BK	Gilbert 1996	No	Interior
Slaughter Island (DfBa-05)	BK	Thomson 1983	No	Interior
Cow Head (DlBk-01)	CH	Hartery 2001	Unknown	Coastal
Inspector Island (DiAq-01)	LP, BK	Cridland 1998	Yes	Coastal
Sampson's Head Cove (CkAl-04)	BA, LP, BK	Holly 2002	Yes	Coastal
Beaches (DeAk-01)	BA, LP, BK	Cridland 1998	Yes	Coastal
Deer Lake Beach (DhBi-06)	BA	Reader 1997	No	Interior
Wigwam Brook (DfAw-01)	BK	LeBlanc 1973	Yes	Interior
Indian Point (DeBd-01)	BA, LP, BK	Devereux 1970	No	Interior

Table 6.1: Recent Indian and Beothuk sites with faunal assemblages (based on site record forms and faunal reports at the Provincial Archaeology Office of Newfoundland and Labrador as of 2009). CH= Cow Head, BA= Beaches, LP = Little Passage, BK = Beothuk, RI=Recent Indian (complex unknown).

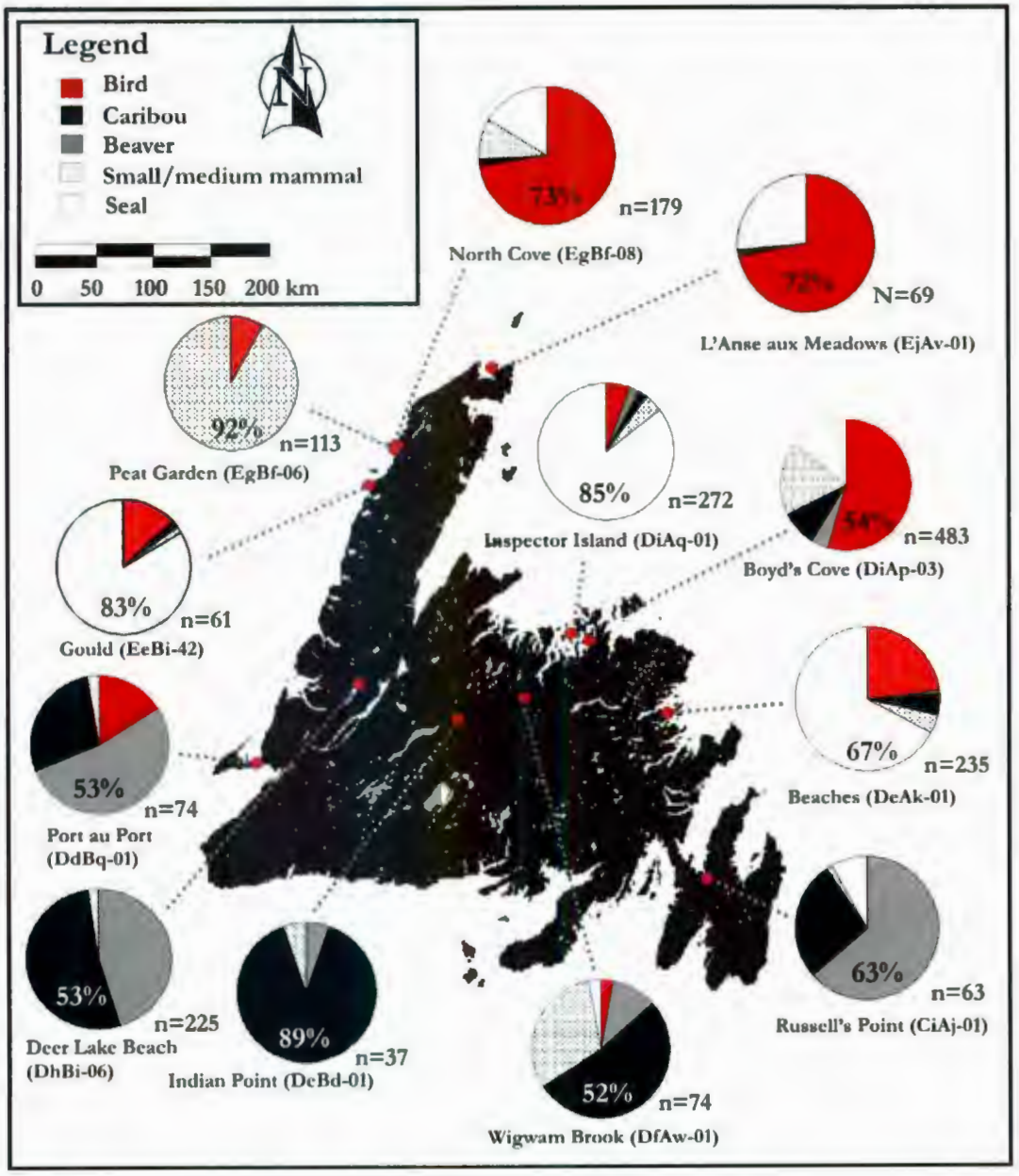

Figure 6.1: Species frequencies in Recent Indian and Beothuk faunal assemblages. Percentages are based on number of individual specimens (NISP). Shellfish, fish and whale were excluded. Birchy Lake 9 (DiBd-01), St.Paul's Bay 1 (DlBk-05), Parke's Beach (DgBm-01), and Sampson's Head Cove (CkAl-04) yielded bird bone but were excluded because bone quantities were not available. L'Anse a Flamme (CjAx-01) also included bird bone but was excluded because of a small sample size (n=5). Accompanying NISP values of fauna at each site are represented in Table 6.2.

	LAM	DLB	BE	II	PAP	RP	WB	IP	BC	GO	NC	PG
Bird	50	0	54	15	12	0	2	0	263	8	130	9
Beaver	1	102	2	7	39	40	8	2	22	0	0	0
Caribou	0	118	11	6	21	17	39	33	43	1	3	0
Small/med. mammal	0	5	10	12	2	1	23	2	85	1	17	104
Seal	18	0	158	232	0	5	2	0	70	51	29	0
Total	69	225	235	272	74	63	74	37	483	61	179	113

Table 6.2: Faunal remains from Recent Indian sites. **LAM**= L'Anse aux Meadows (EjAv-01), **DLB**=Deer Lake Beach (DhBi-06), **BE**=Beaches (DeAk-01), **II**=Inspector Island (DiAq-01), **PAP**=Port au Port (DdBq-01), **RP**=Russell's Point (CiAj-01), **WB**=Wigwam Brook (DfAw-01), **IP**=Indian Point (DeBd-01), **BC**=Boyd's Cove (DiAp-03), **GO**=Gould (EeBi-42), **NC**=North Cove (EgBf-08), **PG**=Peat Garden (EgBf-06). Small/medium mammal includes muskrat, hare, wolf, bear, and fox as well as all bones classified by researchers as 'small or medium mammal'. Mammal bone that was not identified to one of the four mammal groupings in this table were excluded: small unidentifiable fragments were often classified as 'mammal' although analysts admitted that these samples could include bird bone (Rick 1977; Stewart 1999).

Interior sites including Deer Lake Beach (DhBi-06) (Reader 1998), Indian Point (DeBd-01) (Stewart 1971), Wigwam Brook (DfAw-01) (LeBlanc 1973), and Russell's Point (CiAj-01) (Gilbert 2002) are dominated by caribou and beaver and are generally interpreted as late autumn and winter occupations. Although ptarmigan, grouse, loon, and other birds were abundant in the interior, they are absent from faunal assemblages with the exception of loon bone at Wigwam Brook (LeBlanc 1973).

All coastal Recent Indian and Beothuk sites in Newfoundland at which systematic faunal analyses were conducted contain bird bone. Coastal ecology varies across the island yet avian remains were encountered at sites on the west coast, the Northern Peninsula, the northeast coast, and the south coast. The presence of bird bone in nearly all coastal faunal assemblages demonstrates that avian resources were consistently exploited.

Coastal sites are generally dominated by either seal or bird bone with no notable regional differences. For example, relatively close sites such as Peat Garden (EgBf-06) and North Cove (EgBf-08) on the west coast and Boyd's Cove (DiAp-03) and Inspector Island (DiAq-01) on the northeast coast (Figure 6.1) have notably different ratios of bird

to seal bone. Based on animal ecology, I hypothesise that relative abundances of seal and bird bone differ due to different seasons of human occupation: sites with more abundant seal may have been occupied in mid-winter/early spring during harp seal migrations while sites with more abundant bird bone may have been occupied in summer/autumn during nesting, moulting, or the migration season. At sites where seal were the primary focus, birds were likely hunted opportunistically and when birds were the primary focus, seal were likely hunted opportunistically.

Species present

Bird species found at Newfoundland Recent Indian and Beothuk sites are presented in Table 6.3. Ducks and/or geese appear at virtually all coastal sites with faunal remains. The most commonly found birds (geese, eiders, scoters, cormorants, and guillemots) all feed near shore and are relatively gregarious. These species are generally abundant on Newfoundland's coasts and could be hunted using blinds and decoys (guillemot and goose decoys were identified among the Beothuk while Innu goose hunting blinds were identified across the Strait of Belle Isle). Goose may be the most commonly preserved species because of human preference for this bird (its high meat yield) and/or taphonomic reasons (the higher durability of goose bone than other species). Seabirds appear at inner and outer coast sites with no notable difference of species between the two ecological zones. All seabird species would be most easily hunted during nesting season, particularly pelagic jaeger and auk, as well as colony nesters such as goose, eider/scoter, cormorant, guillemot, gull, murre, and tern.

Species present	NISP	Site name and Borden number	Reference
Goose	23	Beaches (DeAk-01)	Cridland 1998
(*Branta* spp.)	4	Inspector Island (DiAk-01)	Cridland 1998
	1	Gould (EeBi-42)	Teal 2001
	1	North Cove (EgBf-08)	Stewart 1999
	44	Boyd's Cove (DiAp-03)	Cumbaa 1984
Eider/scoter	11	Beaches (DeAk-01)	Cridland 1998
(*Somateria/Melanitta* spp.)	2	Inspector Island (DiAk-01)	Cridland 1998
	3	Boyd's Cove (DiAp-03)	Cumbaa 1984
Cormorant	7	L'Anse aux Meadows (EjAv-01)	Rick 1977
(*Phalacrocorax* spp.)	10	Beaches (DeAk-01)	Cridland 1998
	11	Boyd's Cove (DiAp-03)	Cumbaa 1984
Guillemot	2	L'Anse aux Meadows (EjAv-01)	Rick 1977
(*Cephus grylle*)	6	Inspector Island (DiAk-01)	Cridland 1998
	3	Boyd's Cove (DiAp-03)	Cumbaa 1984
Loon	2	Wigwam Brook (DfAw-01)	LeBlanc 1973
(*Gavia immer*)	2	Boyd's Cove (DiAp-03)	Cumbaa 1984
Gull	2	Beaches (DeAk-01)	Cridland 1998
(*Larus* spp.)	1	Boyd's Cove (DiAp-03)	Cumbaa 1984
Bald eagle	8	Port au Port (DdBq-01)	Simpson 1986
(*Haliaeetus leucocephalus*)	1	Boyd's Cove (DiAp-03)	Cumbaa 1984
Murre	N/A	Sampson's Head Cove (CkAl-04)	Simpson 1986
(*Uria* spp.)	1	Boyd's Cove (DiAp-03)	Cumbaa 1984
Merganser (*Mergus* spps)	1	Inspector Island (DiAk-01)	Cridland 1998
Raven (*Corvus corax*)	1	Beaches (DeAk-01)	Cridland 1998
Oldsquaw (*Clangula hyemalis*)	2	Boyd's Cove (DiAp-03)	Cumbaa 1984
Auk (Family Alcidae)	2	Port au Port (DdBq-01)	Simpson 1986
Tern (*Sterna* spp.)	1	North Cove (EgBf-08)	Stewart 1999
Scaup (*Aythya* spp.)	1	Boyd's Cove (DiAp-03)	Cumbaa 1984
Sandpiper (Family Scolopacidae)	1	Boyd's Cove (DiAp-03)	Cumbaa 1984
Jaeger (*Stercorarius* spp.)	2	Boyd's Cove (DiAp-03)	Cumbaa 1984

Table 6.3: Bird species present at Recent Indian and Beothuk sites in Newfoundland.

Loon is the only species identified from an interior site (Wigwam Brook, DfAw-01), perhaps reflective of their residence in lakes and ponds into late autumn. Eagle and raven could have been hunted for feathers or may appear naturally at sites as scavengers. Great auk and gannet bones are unexpectedly absent from the faunal record given their high bone density and accounts of Beothuk exploitation of these species. Like the Beothuk, Recent Indian people were probably aware of gannet and great auk colonies. If these species were hunted by Recent Indian people, perhaps the meat was processed on

island seabird colonies to reduce canoe weight during return voyages. Gannet and great auk bones would therefore appear less frequently at coastal sites compared to other species that were caught near shore and brought back to camps intact.

Body part representation

Recent Indian consumption practices can be interpreted from the archaeological presence of bird body parts. Faunal reports from four Recent Indian sites contain information about bird skeletal parts: Beaches (DeAk-01), Inspector Island (DiAk-01), North Cove (EgBf-08), and L'Anse aux Meadows (EjAv-01) (Cridland 1998; Rick 1977; Stewart 1999). A tentative hypothesis of Recent Indian behaviour regarding bird consumption is offered here in the hopes that it will be tested in the future when larger sample sizes are acquired.

Figure 6.2 and Table 6.4 depict the frequency of body part representation of Canada goose, cormorant, guillemot, and duck (including eider, scoter, merganser, and those remains that could be not identified to a lower taxon than Anatidae). Seabird leg elements generally appear more frequently in faunal assemblages than other seabird body parts while waterfowl trunk elements appear more frequently than other waterfowl body parts. Seabird legs should preferentially preserve due to higher leg bone density and thicker cortical walls than other bones (Bovy 2002:968). Seabird legs are also associated with relatively large muscle tissue for swimming and diving; leg elements may have been retained while meat and energy-poor wing and axial bones were discarded. Waterfowl fly long migrations that require large wing and breast muscles. The associated meat of these parts was generally higher than that of seabirds, which may explain why trunk elements (including scapulae, coracoids, sternum, and furculum) more commonly appear at

archaeological sites. These upper body bones would likely have the highest amount of marrow and, as with seabird leg bones, could have become associated with hearth middens after boiling.

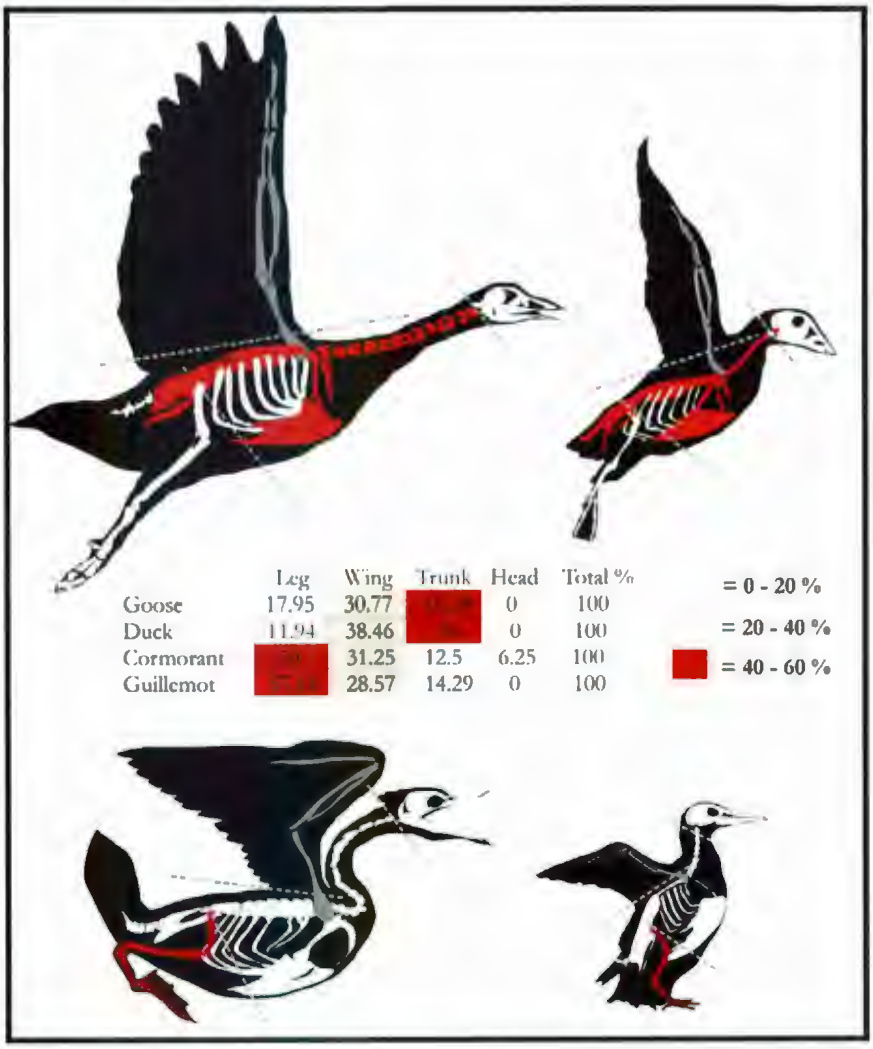

Figure 6.2 Body part frequency comparison of waterfowl (goose and duck) and seabird (cormorant and guillemot) from Newfoundland Recent Indian sites: Beaches (DeAk-01), Inspector Island (DiAk-01), North Cove (EgBf-08), and L'Anse aux Meadows (EjAv-01) (Cridland 1998; Rick 1977; Stewart 1999). Colours represent percentage of total, *e.g.*, 17.95% of identified goose remains were leg bones, which is depicted in white (0-20%). No ribs were recovered. Total NISP=88.

	Taxa	Leg	Wing	Trunk	Head	Total
L'Anse aux Meadows (EjAv-01)	Cormorant	7	0	0	0	7
	Guillemot	2	0	0	0	2
Inspector Island (DiAk-01)	Goose	1	3	1	0	5
	Guillemot	2	2	1	0	5
	Duck	2	0	2	0	4
Beaches (DeAk-01)	Goose	3	1	17	0	21
	Duck	1	8	11	0	20
	Cormorant	1	5	2	1	9
North Cove (EgBf-08)	Goose	3	8	2	0	13
	Duck	0	2	0	0	2
Total		22	29	36	1	88

Table 6.4: NISP values of four bird taxa from L'Anse aux Meadows (EjAv-01), Inspector Island (DiAk-01), Beaches (DeAk-01), and North Cove (EgBf-08) (Cridland 1998; Rick 1977; Stewart 1999).

Birds are traditionally grouped together in zooarchaeological analyses despite their ecological diversity. Future research on body part representation in Newfoundland may reveal that Recent Indians and Beothuks utilized bird species in different ways and that different species represented different resource types.

Lithics

The predicted lithic signature of bird hunting and processing is difficult to test because of the co-occurrence of mammal and bird exploitation. Differentiating tools associated with mammal versus bird hunting is challenging. Aside from large bifacial projectile points and scrapers that were likely associated with caribou and seal hunting/processing, lithic tools were probably sufficiently flexible to be used on a variety of animals. The prediction that sites at which birds were hunted will have higher frequencies of small projectile points (<20 mm width) is currently not testable because projectile point sizes are not always available. However, Erwin *et al.* (2005) performed discriminant analyses to classify projectile points from a number of Beothuk and Recent Indian sites as either

arrows or darts. Four sites, Boyd's Cove (DiAp-03), Inspector Island (DiAk-01), Indian Point (DeBd-01) and Russell's Point (CiAj-01) produced sufficient numbers of projectile points to warrant their discussion here (Table 6.5).

	Arrows	Darts	Dominant taxa (and % of faunal assemblage)
Boyd's Cove (DiAp-03)	103	29	Bird (54%)
Inspector Island (DiAk-01)	5	12	Seal (85%)
Indian Point (DeBd-01)	4	17	Caribou (89%)
Russell's Point (CiAj-01)	164	44	Beaver (63%)

Table 6.5: Numbers of arrows versus darts according to Erwin *et al.* (2005). The dominant taxa in faunal assemblages of these sites were taken from Figure 6.1.

At the risk of oversimplification, an apparent relationship exists between projectile point type and game. Birds (at Boyd's Cove) and beaver (at Russell's Point) are associated with higher frequencies of arrows while seal (at Inspector Island) and caribou (at Indian Point) are associated with higher frequencies of darts. Many other variables may explain the observed pattern including the temporal dimension of arrow and dart technology. For the current discussion it is worth noting that the site with relatively abundant bird bone (Boyd's Cove) contained a relatively high frequency of arrowheads.

Labrador

The archaeological record of bird use in Labrador differs from Newfoundland in both a smaller number of faunal remains and a larger record of bird hunting blinds. In Labrador, bird bones were identified in three of eight Recent Indian faunal assemblages but species, body parts, and number of bones were not reported (Loring 1992:550-556). A number of factors explain why there is less evidence of Labrador faunal assemblages: 1) Labrador Recent Indian and Innu sites have received less attention than those of Newfoundland

Recent Indian and Beothuk; 2) there are less opportunities for bone preservation along southern coastal and interior Labrador; and 3) domestic dogs, which were more abundant in Labrador, may have scavenged animal remains. Bird hunting blinds may be more abundant in Labrador because many are associated with the Innu who still practice many traditional hunting methods. The following is a synopsis of pre-contact and historical bird hunting blinds in Labrador.

Twelve recorded Recent Indian and/or Innu sites in Labrador contain hunting blinds based on Provincial Archaeology Office site record forms (Table 6.6 and Figure 6.3), one of which is associated with caribou and is excluded from the remaining discussion. Six blinds are located in coastal settings and the remainder are on lakes or rivers. Innu bird hunting blinds are composed of cobbles and vegetation including driftwood and fresh boughs. Very few blinds were excavated or extensively surveyed but the few associated artifacts include historical hunting gear and stone flakes. Most blinds are in the vicinity of camps. A number of hunting blinds were not associated with camps and may be more distant from the nearest as yet undiscovered camp. Bird hunting could have been the primary or secondary activity at these campsites. Seasonality is unknown; however, four structures are specifically referred to on site record forms as goose hunting blinds and were most likely used in early spring and/or late fall.

Site name, Borden or ethnographic number	Affiliation	Associated game	Associated with camp	Location	Reference
Black Bay 5 EkBc-22	RI	Waterfowl	No	Strait of Belle Isle	Auger and Stopp 1986
Ashuanipi Lake 2 FfDn-03	RI/ Innu	Unid.	Yes	Ashuanipi Lake	Neilsen 2006, 2007
Ashuanipi Lake 22 23B/16 Ethno 5	Innu	Unid.	Yes	Ashuanipi Lake	Neilsen 2007
John Hay's Harbour HcCj-06	Innu	Unid.	Yes	Nain	Hood 1995
Bird Islet GdCi-03	Innu	Bird	No	Snegamook Lake	McAleese 1992, 1993
Nishk 14C/05 Ethno 1	Innu	Goose	Yes	Voisey's Bay	Labrèche 1998
Goose Blind HbCm-04	Innu	Goose	Yes	Voisey's Bay	Thomson 1997
Tuamishiss 7 HbCm-15	Innu	Goose	No	Voisey's Bay	Labreche 1998
Tuamishiss 8 HbCm-16	Innu	Goose	No	Voisey's Bay	Labreche 1998
Ryan HbCu-06	Innu/ Inuit	Unid.	No	Kogaluk River	Biggin and Ryan 1989
Goodyear 3 HcCv-02	RI/Innu/ Inuit	Unid.	Yes	Kogaluk River	Biggin and Ryan 1989

Table 6.6: Recent Indian and Innu hunting blind sites in Labrador (based on site record forms on file at the Provincial Archaeology Office of Newfoundland and Labrador as of 2009).

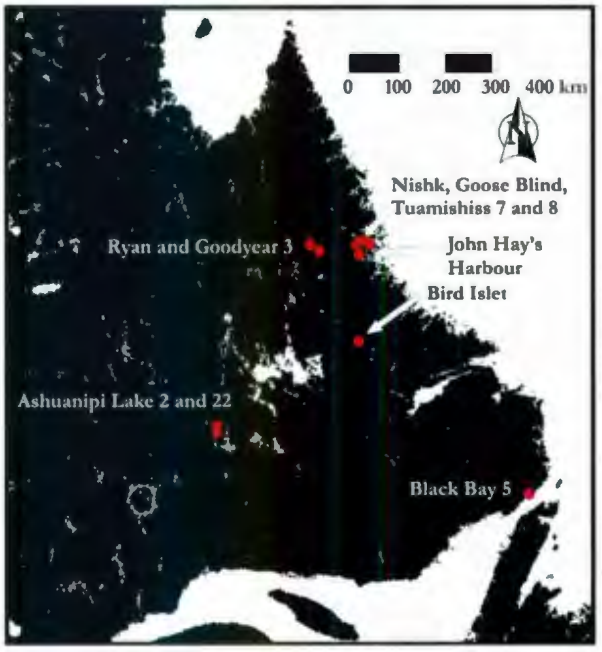

Figure 6.3: Locations of Recent Indian and Innu hunting blind sites in Labrador (based on the Provincial Archaeology Office of Newfoundland and Labrador 2009 database).

All hunting blinds in Table 6.6 generally offer good views of calm water along rivers, harbours, and lakes. Landforms associated with Recent Indian and Innu hunting blinds include relatively steep shorelines, spits, islands, and the shores of shallow bays. Recorded distances from hunting blinds to water ranged from 5 to 40 m. The latter distance may have been smaller during high tides or when relative water levels were higher. Data pertaining to elevation above adjacent water bodies are absent. One Recent Indian waterfowl hunting blind was identified along the Strait of Belle Isle across from L'Anse aux Meadows, which will be discussed in Chapter Seven. Ethnographic examples of Innu hunting blinds can serve as analogues for the interpretation of blinds in the archaeological record; unfortunately, many current site record forms from Labrador lack necessary information to accomplish this. Future excavations at hunting blinds would broaden knowledge of this component of pre-contact and historical bird harvesting.

Case study: Recent Indian/Beothuk sites and islands

Patterns of seabird exploitation are here explored through an analysis of Recent Indian/Beothuk island sites. On the basis of historical documents, seabirds were important summer resources for the Beothuk, especially those that camped on Newfoundland's numerous islands (Cartwright 1826:35, 314; Cormack 1873:226; Howley 1915:5, 41). The following analysis of Recent Indian/Beothuk island sites represents an attempt to archaeologically verify historically documented summer subsistence. The ecology of island sites is discussed with reference to the dietary role of seabirds.

Distances were recorded from all Recent Indian/Beothuk coastal sites to the nearest island using ArcGIS tools. To test the statistical significance of the mean distance

from Recent Indian/Beothuk sites to the nearest island, 100 random coastal locations were chosen using a random number generator for latitudinal and longitudinal coordinates. All known burial sites were excluded in an effort to investigate only those sites related to subsistence. Two-tailed t-tests ($p<0.05$) were performed to assess the difference between distances from Recent Indian and random sites to the nearest island and the difference between distances from Beothuk and random sites to the nearest island.

Figure 6.4 illustrates that a high number of Recent Indian and Beothuk sites are located on islands. Table 6.7 indicates that Recent Indian and Beothuk sites are located closer to islands (2.48 and 0.92 km respectively) than random coastal locations (5.56 km). The differences are statistically significant (for Recent Indian and random sites $t=7.21$, $df=202$, $p<0.05$ and for Beothuk and random sites $t=21.18$, $df=160$, $p<0.05$). I suggest that the relatively small mean distance from Recent Indian/Beothuk sites to islands reflects an attraction to island archipelago habitats and isolated islands, both of which are known to be prime seabird colony locations.

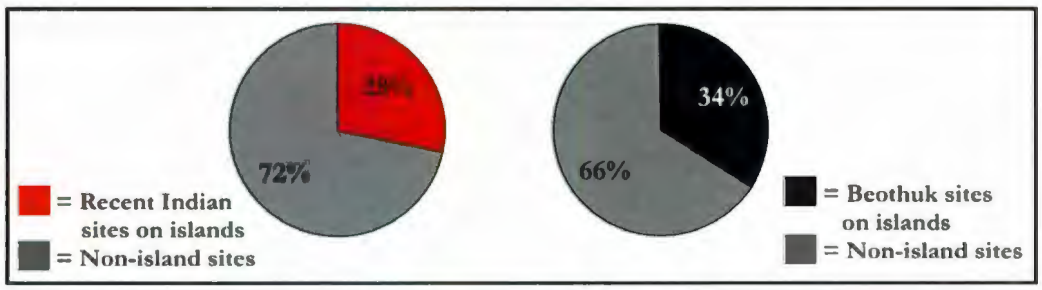

Figure 6.4: Percentage of coastal Recent Indian and Beothuk sites located on islands.

Site type	# of sites	Mean distance to nearest island (km)	Standard Deviation (km)	Variance	2-tailed T-test value when compared to random	T-test table value at alpha p<0.05	Statistical significance
Recent Indian	104	2.48	4.80	23.00	7.21	1.96-1.97	7.21>1.97 **Yes**
Beothuk	62	0.92	1.52	2.31	21.18	1.97-1.98	21.18>1.98 **Yes**
Random	100	5.56	6.53	42.58			

Table 6.7: Summary statistics of spatial analysis of coastal Recent Indian/Beothuk sites and islands. Two-tailed t-test analyses indicate that both Recent Indian and Beothuk sites are closer to islands than random coastal locations and the difference in mean distance is statistically significant at $p<0.05$.

In regards to the percentage of Recent Indian and Beothuk sites located on islands (28% and 34% respectively), islands must have offered ecological gains that outweighed the energy and risk involved to access them. Island habitats generally lacked caribou, bear, anadramous fish, and beaver while perhaps offering increased access to harbour seal, harp seal, stranded whale, and seabird colonies. Based on Recent Indian and Beothuk fauna from archaeological sites near or on islands, birds and harbour seal were principal summer resources (Cridland 1998; Cumbaa 1984; Penney 1985). No evidence currently exists for winter island occupation. Therefore, I hypothesise that the majority of Recent Indian and Beothuk island sites were summer occupations and that the abundance of island sites is directly related to seabird hunting. Seabird colonies are rarer on the mainland coast and may have been a major attractant that drew people to islands in summer and autumn. This is supported by faunal assemblages of pre-contact people in the North Atlantic and North Pacific that indicate birds were important island resources during warm-weather seasons (Brothwell *et al.* 1981; Mannermaa 2008; McCartney 1975; Moss and Bowers 2007; Nuñez and Gustavsson 1995; Serjeantson 1998). The analysis of island sites provides archaeological support for the historically recorded

abundance of Beothuk island summer camps noted during the seventeenth to eighteenth centuries (Marshall 1996:62).

Conclusion

Recent Indian, Beothuk, and Innu archaeology sites in the province are informative concerning bird exploitation despite cultural and taphonomic variables that do not favour the preservation of bird bone and bird hunting sites. Archaeological evidence of bird use by these people includes faunal remains, bird hunting blinds, and site locations relative to islands and bird colonies. Bird bone was found in all Recent Indian and Beothuk coastal sites in Newfoundland at which taxa were identified. Though sample sizes are small, relative abundances of bird bone suggest that the importance of birds varied from a primary to secondary resource depending on the season. The archaeological record of bird exploitation in Labrador is generally limited to bird hunting blinds constructed along bays, lakeshores, and islands. Faunal remains and hunting blind locations suggest that the most commonly hunted birds were shallow water feeders (geese, eider/scoter, cormorant, and guillemot). The frequency of island sites in ideal seabird habitats offers further support for the consumption of avian resources.

When considered together, ethnohistorical and archaeological evidence reveal several trends regarding hunter-gatherer bird harvesting. Historical evidence of Beothuk seabird use can be extended through archaeological faunal assemblages to their Recent Indian ancestors. Archaeological data fail, however, to support the historically recorded relationship between Innu and grouse/ptarmigan. Very few interior sites have been extensively excavated and fewer have yielded faunal remains. Totally absent from

Newfoundland and Labrador archaeological sites are bird hunting tools such as blunt arrows and snares, despite the fact that bird exploitation is represented in faunal collections. The inability of archaeological research to detect some historically recorded behaviours is indicative of how certain aspects of pre-contact cultural ecology can be under-represented. Early European observations depict intangible components of Native subsistence systems and document practices with material refuse that have not preserved or are yet to be discovered.

CHAPTER 7

RECENT INDIAN OCCUPATIONS AT L'ANSE AUX MEADOWS

This chapter explores the archaeological record of Recent Indian occupants of L'Anse aux Meadows National Historic Site (EjAv-01) on the Northern Peninsula of Newfoundland. In the course of investigating the Norse occupation for which the site is famous, researchers found that pre-contact hunter-gatherers inhabited L'Anse aux Meadows for thousands of years (Wallace 1989). Data pertaining to the Recent Indian component of this pre-contact record were gathered by the Ingstad research team and Parks Canada from 1961 to 2002 (Ingstad 1977; Wallace 2003) and by a collaboration of Memorial University and Parks Canada archaeologists in 2008 (Kristensen *et al.* 2009; Kristensen and Renouf 2009). A summary of the 2008 contribution to the Recent Indian record at L'Anse aux Meadows is followed by synopses of Recent Indian lithics, radiocarbon dates, features, and fauna recovered over the past 40 years. Evidence suggests L'Anse aux Meadows was a warm weather site where over time birds were hunted by small groups of Recent Indian people from the Cow Head to Little Passage Complex. The faunal assemblage is dominated by bird bone and the lithic assemblage includes an abundance of late stage reduction debris and a variety of tools. The relationship between the lithic and faunal assemblages is investigated and several explanations are proposed for the co-occurrence of bird bones and tools that appear best suited for mammal hunting/processing.

Site location

Holly (2002:87) described L'Anse aux Meadows as an outer coast location: the area is relatively exposed with a narrow resource base and lack of access to interior animals (Northcott 1976). For example, caribou did not frequent L'Anse aux Meadows in historical times and the nearest population was 20 km south in the White Hills (Northcott 1976:48). Harp seal migrations pass by the tip of the Northern Peninsula but the migratory paths were difficult to access because of offshore ice conditions. Salmon populations were likely small due to the narrow width of Black Duck Brook (the largest brook in the area) and the lack of appropriate sized channel gravels for spawning. Épaves Bay and the neighbouring coast are relatively shallow with over 300 small islands that provide habitat for many nesting birds (Lamberton and Maunder 1976). Northcott (1976:72) noted that historically, the greatest hunting effort at L'Anse aux Meadows was by bird hunters. The area previously supported large populations of breeding eider and guillemot before historical overhunting. Lamberton and Maunder (1976:11,32) conducted an avifaunal survey of the area and stated that rafts of thousands of eider were once relatively common near L'Anse aux Meadows. Tern colonies are notably abundant on neighbouring islands and their eggs were regularly harvested by locals. Offshore currents around the site are strong, which creates a relatively rich upwelling of nutrients and keeps water open late into winter, both of which are attractive to seabirds. The area would also be an attractive resting spot for waterfowl migrating up and down the Atlantic coast. L'Anse aux Meadows is located at the far northern tip of the Northern Peninsula where the bird migration corridor of the North Atlantic flyway narrows (Figure 2.1). Migrants from the west and east coast of the island meet at L'Anse aux Meadows in spring and

autumn. Lamberton and Maunder (1976:47-49) noted that the autumn migration brought particularly large numbers of birds to the L'Anse aux Meadows area. Toponyms hint at both the abundance of birds and their importance to human inhabitants. Names of aquatic features in the immediate area of L'Anse aux Meadows include Duck Pond, Gull Pond, Black Duck Pond, Black Duck Brook, Hen Cove, Hen Cove Pond, Diver Pond (a local name for loon), Canards Cove (French for duck), Pigeon Cove (referring to guillemot), Partridge Point, and Noddy Bay (referring to fulmars). Mannermaa (2008:63) wrote that northern hunter-gatherers were attracted to sheltered, shallow archipelagos (which characterises the area of L'Anse aux Meadows). It is perhaps noteworthy that the three wild faunal resources mentioned in Norse sagas thought to relate to the Norse occupation of L'Anse aux Meadows are bird colonies, a stranded whale, and fish (Magnússon 1965:95, 96).

Previous interpretation of the Recent Indian record at L'Anse aux Meadows

Wallace (1989) synthesised the existing record of pre-contact people at L'Anse aux Meadows and this chapter extends from her interpretations of Recent Indian activities. Recent Indian material was recovered from four major areas (Figure 7.1): two on an upper terrace east of Black Duck Brook; one a middle terrace west of the brook; and one further west on the south shore of Épaves Bay.

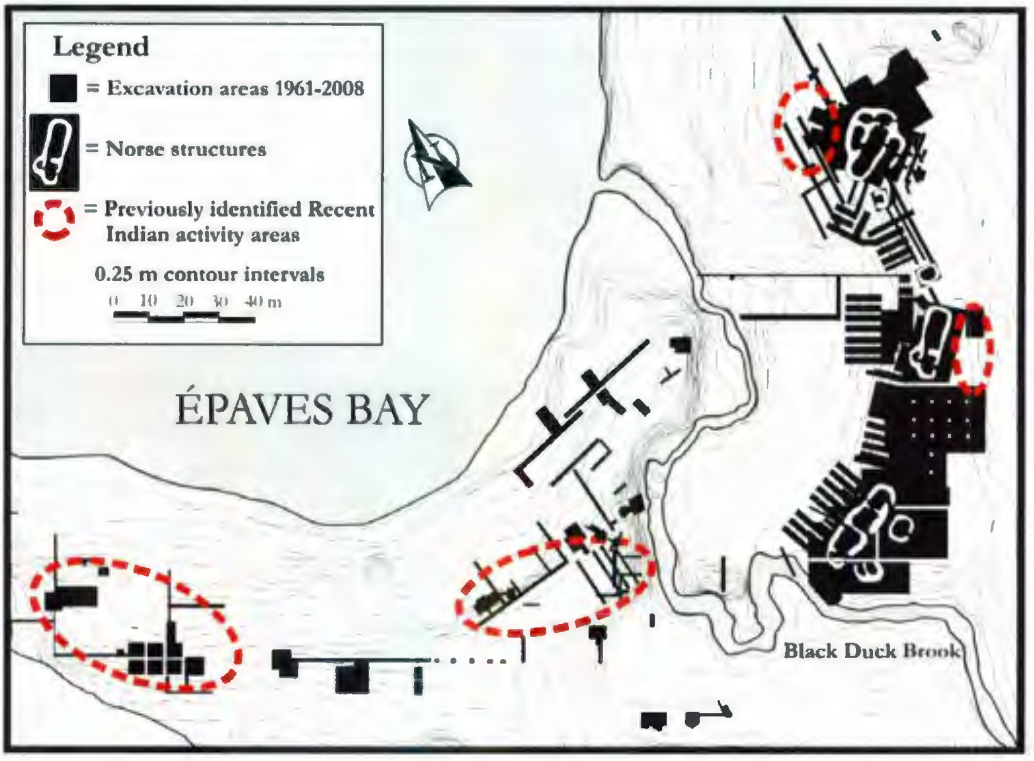

Figure 7.1: Recent Indian activity areas at L'Anse aux Meadows.

Based on radiocarbon dates, two peak periods of Recent Indian occupation occurred from 1200 to 1100 BP and 700 to 400 BP. The earlier habitation is associated with two tent rings, several flint-knapping areas, clusters of fire-cracked rock, and two large depressions interpreted as cooking pits on the basis of charred organics and fire-cracked rock (Wallace 1989). The later phase is associated with two possible tent floors, several hearths, numerous thinning flakes, and bird bone. Wallace (1989) suggests that Recent Indian people lived at L'Anse aux Meadows during warm weather seasons based on the ephemeral nature of dwellings, bird remains from species that visited the site in spring to autumn, and the exposed location of L'Anse aux Meadows, which would have made it an unattractive winter locale. Wallace hypothesised that sea mammals, namely whales, were the main resource at the site as evinced by the large size of cooking pits, sea

mammal bones found in the vicinity of Recent Indian features, and the relative abundance of large bifaces and butchering implements. A relative absence of scrapers was offered as additional evidence that the sea mammal of choice was whale, which unlike seal, did not require extensive scraping to process skins (Wallace 1989:67-68). Wallace noted that the number of finished tools was relatively low given the large amounts of flint-knapping debris. One Recent Indian activity area identified on the middle marine terrace was returned to in 2008 in an effort to locate additional features.

2008 L'Anse aux Meadows excavation summary

Four areas totalling 18.25 m^2 were excavated in 2008 (Figure 7.2). A Recent Indian hearth was found in suboperation 4A76P associated with stone flakes, charcoal, fire-cracked rocks, and a European nail. Additional stone flakes were found in, and adjacent to, suboperation 4A301A. This area also yielded a potentially Norse piece of jasper. Suboperation 4A76P is the subject of the remaining discussion of the 2008 excavation. See Kristensen and Renouf 2009 for methodology, artifact descriptions, photographs, and profiles of other suboperations.

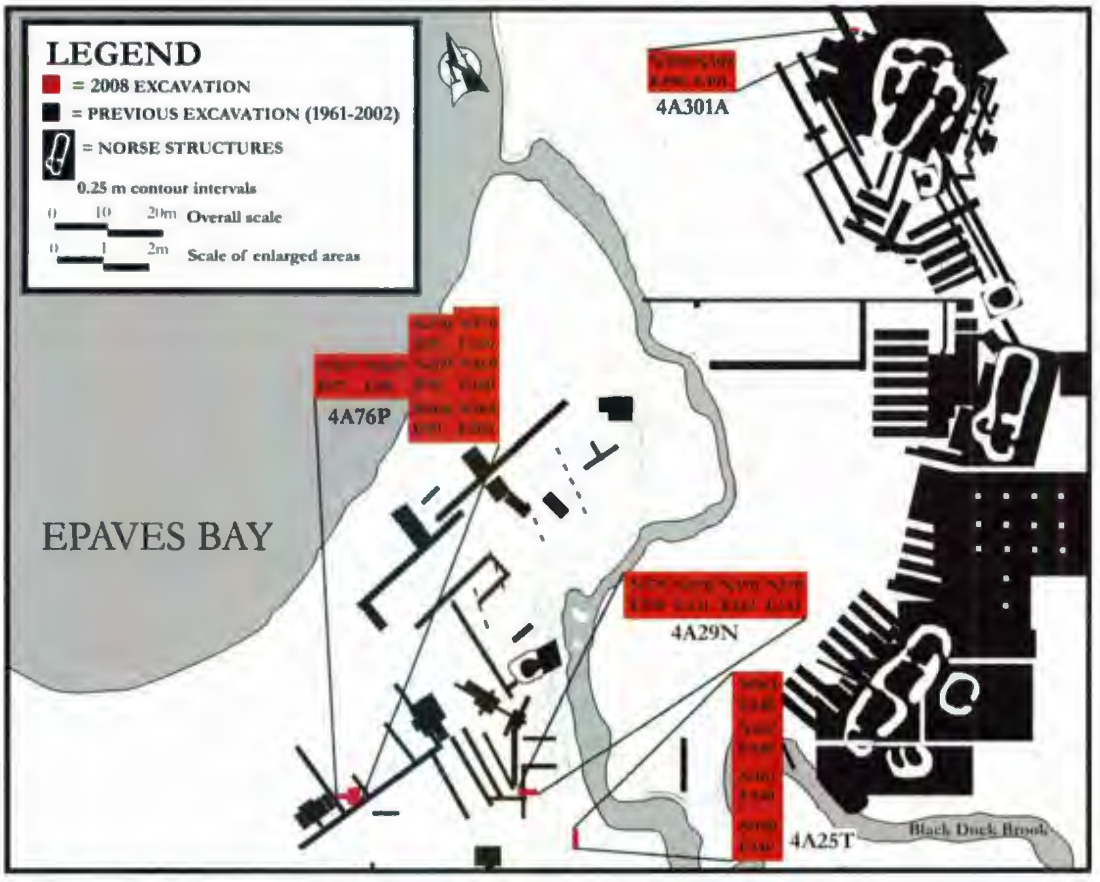

Figure 7.2: Excavation areas at L'Anse aux Meadows. Excavation units from 2008 are highlighted and enlarged in red.

Suboperation 4A76P

4A76P is located southeast of Épaves Bay and west of Black Duck Brook. The units are situated on a middle marine terrace that offers a good view of the relatively shallow bay and neighbouring islands. Recent Indian hearths were found in the immediate area in 2000 and 2002 (Wallace 2003). The hearth found in 2008 is approximately 1.2 m in diameter and is associated with several clusters of fire-cracked rock (Figures 7.3 and 7.4). Two charcoal samples associated with the hearth were radiocarbon dated and both dates belong to the Recent Indian Period (Table 7.1). No depressions, stone tools, or faunal material were recovered from suboperation 4A76P.

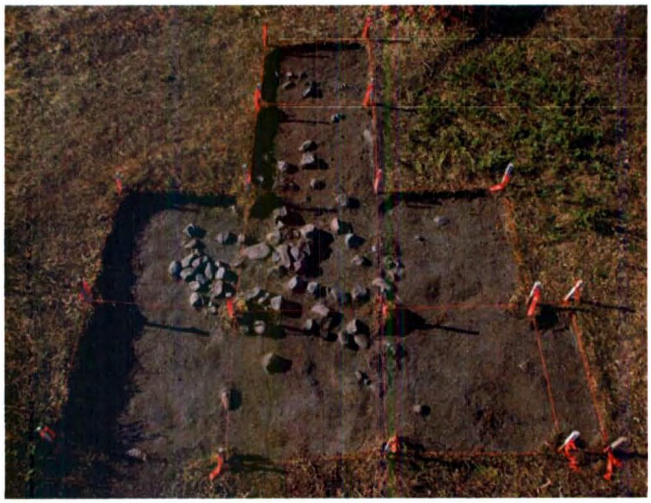

Figure 7.3: View west at Recent Indian hearth feature in suboperation 4A76P.

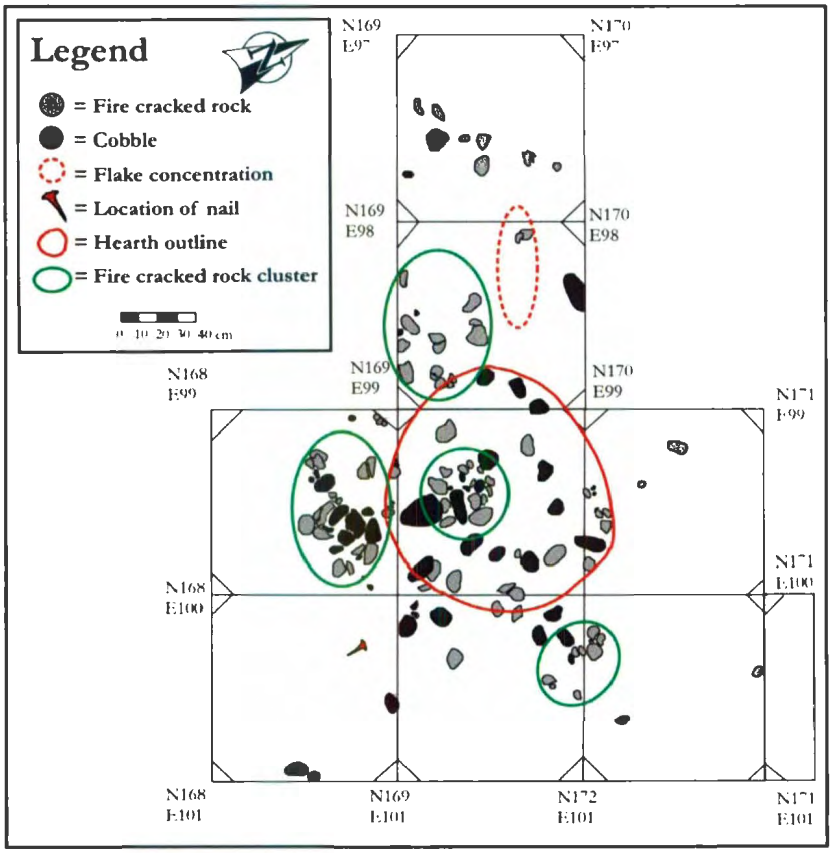

Figure 7.4: Excavation plan of 4A76P hearth feature, flake concentration, fire cracked rock, and cobbles.

Charcoal date number	Lab number	Uncalibrated C14 years BP	Calibrated C14 years BP (intercept method, 2 sigma)
4A76P2-17	Beta 252632	1030 ± 40 BP	1050 to 1040 cal BP and 990 to 910 cal BP
4A76P2-25	Beta 252633	990 ± 40 BP	960 to 800 cal BP

Table 7.1: Radiocarbon dates from 4A76P. Dates were calibrated by Beta Analytic Radiocarbon Dating Laboratory using a two sigma intercept method and the INTCAL04 database based on the approach outlined in Talma and Vogel (1993).

Interpretation

Evidence from 4A76P supports Wallace's (1989) interpretation of the site as a short term, warm weather occupation. Walls were not identified and the hearth was probably associated with an expedient skin tent structure or located outdoors. All lithics (15 tertiary flakes) are composed of one raw material (grey green chert) and represent a small-scale late stage reduction event such as tool re-sharpening. Prevailing wind directions around hearths are thought to have influenced the location of flint knapping (MacKay 2004:33-34). The distribution of flakes west of the hearth in 4A76P is logical given that summer winds from the west would blow smoke to the east.

Based on the number of fire-cracked rock clusters and the inferred warm weather occupation, I speculate that many rocks were broken in the process of boiling water for food preparation. Rock clusters could therefore have formed when boiling stones broke, were removed from vessels, and discarded as has been ethnographically recorded of the Nunamiut Eskimo (Binford 1978a:159) and Northern Plains hunter-gatherers (Vehik 1977:171). Three to four boiling events may be represented by fire-cracked rock clusters in 4A76P (Figure 7.4). No diagnostic tools were found although radiocarbon dates suggest the hearth is from the Little Passage Complex. The flakes found in 4A76P are

similar in size and raw material to other lithic scatters associated with the Little Passage Complex at L'Anse aux Meadows (Wallace 1989).

Revised interpretation of the Recent Indian record at L'Anse aux Meadows

Lithics

The 15 flakes found in 4A76P bring the total of Recent Indian lithics at L'Anse aux Meadows to 1236, including 60 tools and 1176 flakes/debitage (Table 7.2). All lithic material recovered from 1961 to 2008 was re-analysed by the author. Tool types and morphology classes were adopted from Gilbert (2002), Hull (2002), and Teal (2001). Tools were examined with a hand lense for micro-flake use wear scars. Cultural affiliations were assigned based on raw material, tool morphology, and radiocarbon dated contexts. Primary, secondary, or tertiary flake designation was based on the amount of cortex, flake size, and flake scars (Andrefsky 1998). Primary flakes exhibited >50% cortex, were larger than 5 cm long, and lacked dorsal flake scars. Secondary flakes had less than 50% cortex, were between 2 and 5 cm long, and had 1 to 2 dorsal flake scars. Tertiary flakes lacked cortex, were smaller than 2 cm long, and had 2 or more dorsal flake scars. These parameters were loosely applied, *e.g.*, a primary flake could be smaller than 5 cm if it had enough cortex while a tertiary flake could lack dorsal flake scars if it was small enough to represent a final stage of reduction. Artifact and feature locations were plotted using ArcGIS 9.0 software and maps of their distributions were manipulated in CorelDRAW 11. The majority of flakes are tertiary (Figure 7.5) and were likely produced during late stages of tool manufacture/repair. Raw materials include quartzite, quartz, and rhyolite, as well as Cow Head, Pistolet Bay, Ramah, black, grey, and white chert.

Recent Indian artifact types	Number
Utilized flakes	7
Retouched flakes	5
Uniface	1
Scrapers	10
Lanceolate biface	1
Biface preforms	3
Notched bifacial points	2
Straight base biface	6
Bipointed biface	2
Bifacial knives	4
Convex base biface	4
Biface fragments	2
Hammerstones	1
Cores	7
Utilized cores	1
Abrading stone/grinding stone	4
Total tools	**60**
Flakes and debitage	1176
Grand total	**1236**

Table 7.2: Recent Indian artifacts found at L'Anse aux Meadows from 1961 to 2008. Artifacts from 1961 to 2002 were re-analysed and cultural affiliations were assigned based on raw material, tool morphology, and context (*e.g.*, association with radiocarbon dated features).

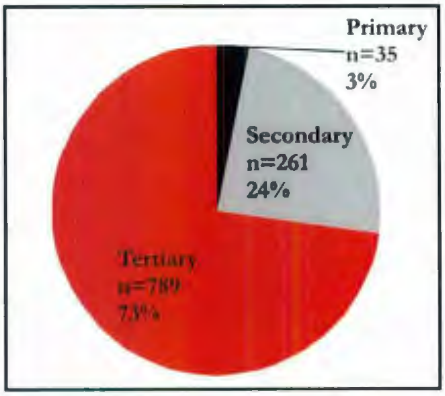

Figure 7.5: Recent Indian flake types at L'Anse aux Meadows. Primary, secondary, and tertiary designations were based on amount of cortex, flake size, and dorsal flake scars.

Recent Indian lithics were found in three main areas: on an upper terrace east of Black Duck Brook, a lower terrace near the south shore of Épaves Bay, and a middle terrace west of Black Duck Brook (Figure 7.6). Flakes, bifaces, and processing tools were found on the upper and lower terrace while the middle terrace yielded flakes and four abrading stones. The total lithic assemblage is likely the product of multiple tool

preparation and maintenance events based on the broad range of raw materials, the wide extent of flake clusters, and a variety of biface morphologies. Biface morphologies include lanceolate, notched, straight base, bipointed, convex base, and ovate knives. Representative bifaces diagnostic of the Beaches and Cow Head complex are illustrated in Figure 7.7. Additional Recent Indian tools include scrapers, a uniface, hammerstone, cores, abrading stones, utilized flakes, and retouched flakes.

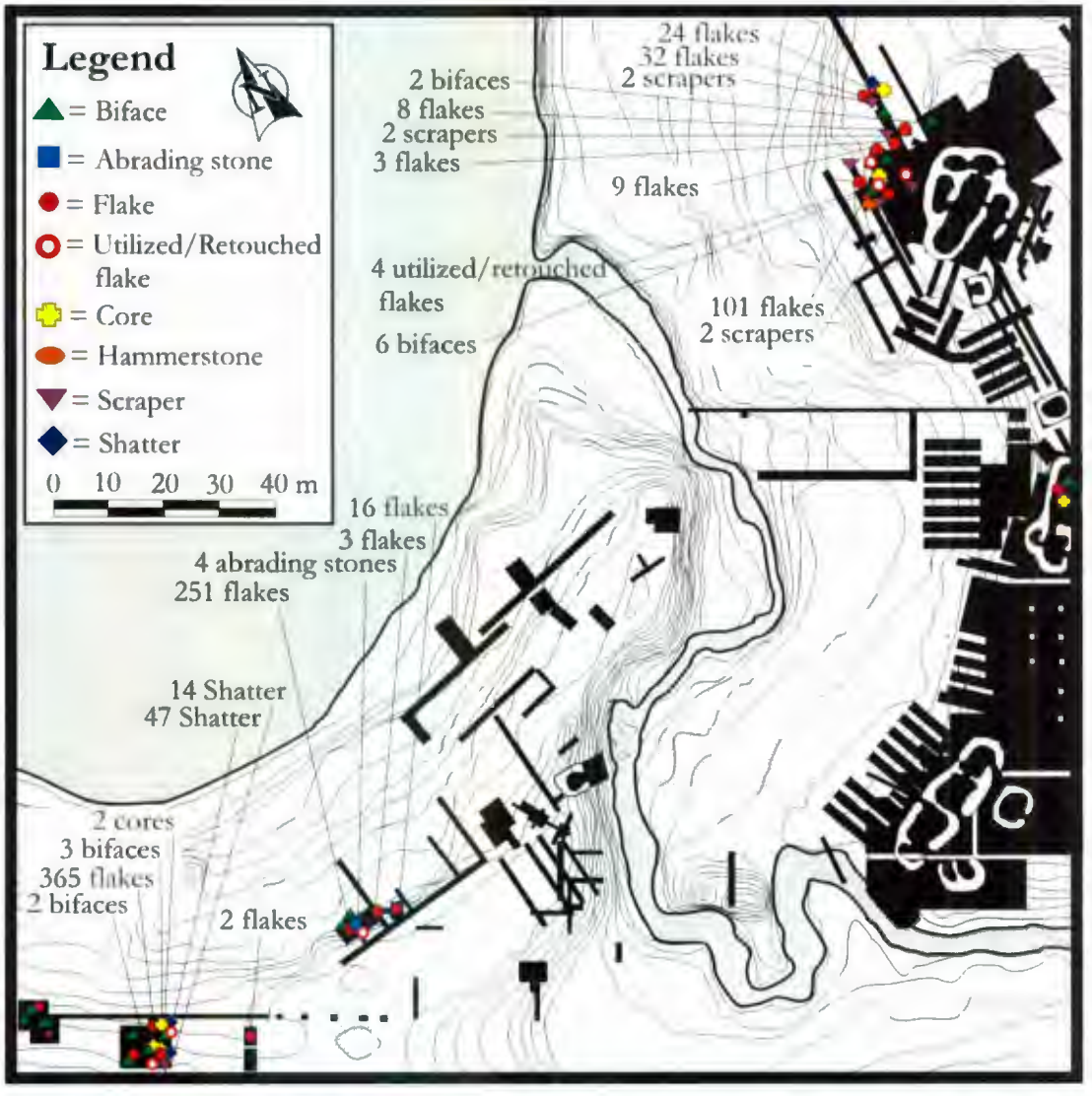

Figure 7.6: Recent Indian lithic distribution at L'Anse aux Meadows (based on Wallace 1989). Each symbol represents one artifact unless it is connected by a line to a number. Artifact locations are approximate.

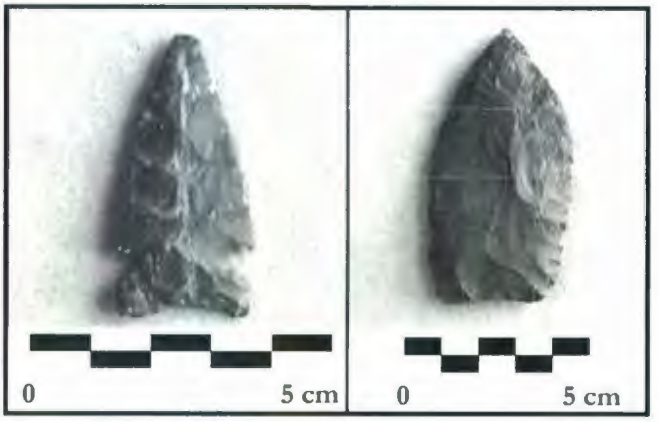

Figure 7.7: Beaches projectile point (left) and Cow Head biface (right) from L'Anse aux Meadows.

Most bifaces are relatively large; the average length of intact bifaces is 68.48 mm, the average width is 43.79 mm, and the average thickness is 11.98 mm (Table 7.3). Erwin *et al.* (2005) conducted a series of tests on Recent Indian and Beothuk projectile points and, based on Shott's (1997) arrow and dart parameters, found that Newfoundland arrowheads very rarely exceeded 20 mm in width. No Recent Indian bifaces at L'Anse aux Meadows are less than 20 mm in width (three are less than 25 mm in width) suggesting that very few of the bifaces could be considered appropriate sizes for hafting to arrows. In fact, data from Erwin *et al.* (2005) indicate that the vast majority of Recent Indian bifaces at L'Anse aux Meadows are considered too large for hafting to darts as well. Only two bifaces were classified as knives and I hypothesise that most bifaces at the site were likely intended for hafting to spears. For example, 14 of the intact bifaces are symmetrical, longer than 60 mm, and wider than 35 mm.

Biface variables	Mean (mm)	Standard deviation (mm)	Range (mm)	Coefficient of variation
Length	68.48	19.84	28.07-109.68	28.98
Width	43.79	13.97	21.73-76.94	31.91
Thickness	11.98	3.67	4.53-18.17	30.63

Table 7.3: Summary statistics of Recent Indian biface measurements from L'Anse aux Meadows.

Features

A total of 41 features at L'Anse aux Meadows are attributed to the Recent Indian Period (Figure 7.8). Hearths and fire-cracked rock are particularly abundant, despite few habitation structures. Wallace (1989) associated two tent rings with an early phase of the Recent Indian Period and two possible tent floors to a later phase of the Recent Indian Period based on radiocarbon dates. All four features are between one and two metres in diameter and resemble structures interpreted as warm weather dwellings in Labrador (Loring 1992). Wallace (1989:61) stated that the lack of substantial habitation features at L'Anse aux Meadows indicates ephemeral, warm weather occupation as cold season structures in Newfoundland are expected to be more archaeologically visible (Cridland 1998; Gilbert 2002, Loring 1992; Marshall 1996:350-354; Teal 2001). Food processing features are relatively numerous including large cooking pits (Figure 7.9) and the large numbers of hearths and fire-cracked rock, which may be cooking refuse.

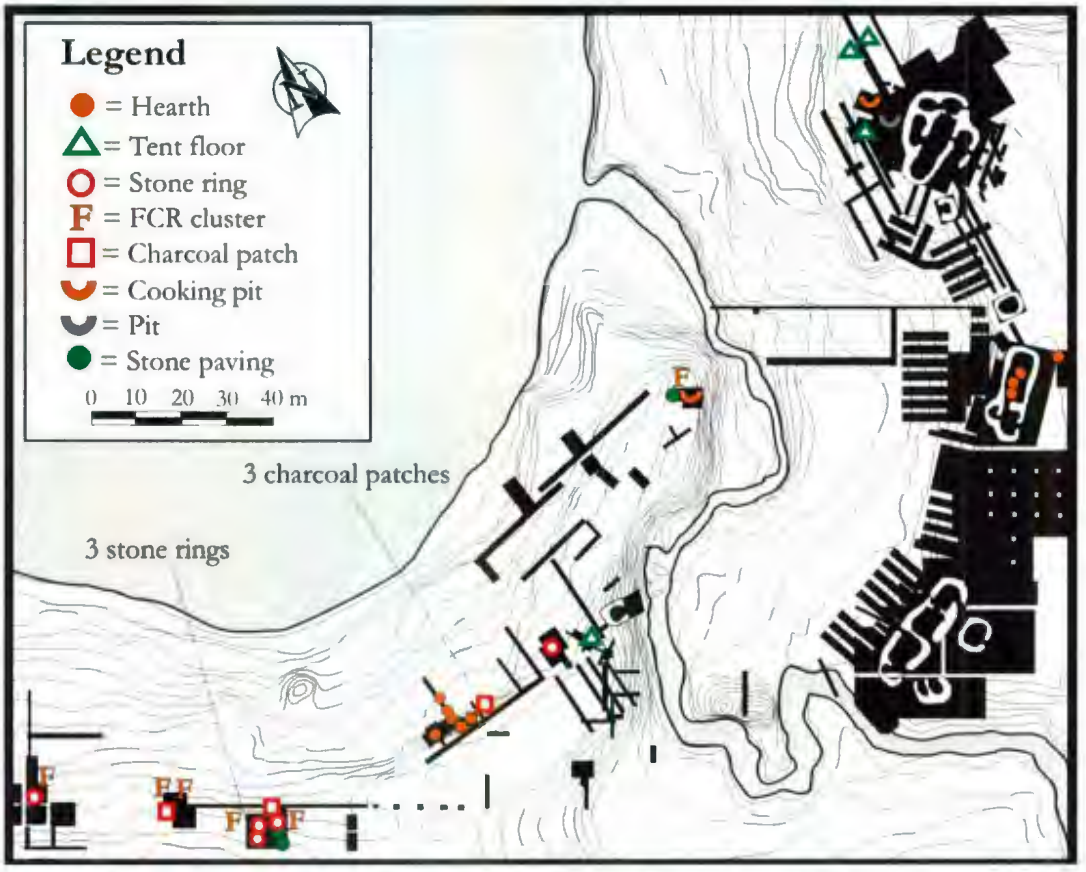

Figure 7.8: Recent Indian feature distribution at L'Anse aux Meadows (based on Wallace 1989). This figure includes only those features assigned to the Recent Indian Period based on radiocarbon dates and/or associated artifacts (morphology and raw material type). "Stone rings" includes those features that could not be definitively classified as hearths or tent rings. Four features are not depicted on this map because their locations could not be determined.

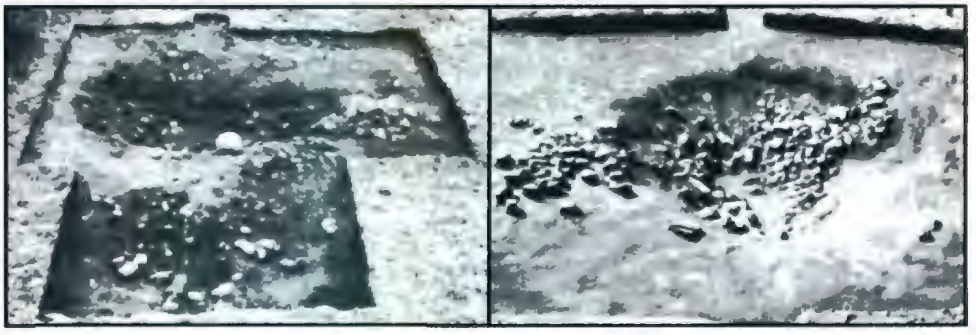

Figure 7.9: Recent Indian cooking pit I (left) and II (right) (Ingstad 1977). Cooking pit I is 2.3 m by 1.1 m and pit II is 3.0 m by 2.9 m. Both are 0.70 m deep (Ingstad 1977).

Feature distribution is loosely correlated to topography. Large pits are located on exposed upper terraces (Figure 7.8). These areas are generally dry and have sufficient soil

depth to allow the excavation of deep pits. Fire cracked rock clusters, hearths, charcoal patches, and unexplained stone rings are more commonly located at lower elevations near the shoreline. These areas had more ready access to beach cobbles and driftwood.

It is possible that some of the unexplained stone circles along the south shore of L'Anse aux Meadows (Figure 7.8) represent hunting blinds because they are an appropriate size and distance from the water. The average diameter of six Recent Indian stone rings found on the south shore is 1.07 m (Table 7.4). The south shore offers a good vantage of Épaves Bay, which is regularly filled with ducks. Small flocks of eider were common visitors along the south shore during the 2008 excavations in October. These stone circles, however, may be remnants of small tent structures or hearths. The evidence for blinds at L'Anse aux Meadows is decidedly weak but if birds were hunted at the site, hunters likely spent time waiting either in blinds or at more distant locations from the water's edge where their appearance would not deter birds from landing.

Feature number	Diameter (m)
204A2 Feature 5	1.2
204A3 Feature 2	1.2
202A8 Feature 2	1
204A2 Feature 2	1
204A2 Feature 4	1
204A5 Feature 4	1
	Mean: 1.07 m

Table 7.4: Recent Indian stone circle features recorded by Wallace (1989) along the south shore of Épaves Bay. Cultural affiliations were based on radiocarbon dates and/or the typology of associated artifacts.

Radiocarbon dates

Prior to 2008, two clusters of Recent Indian dates (1200 to 1100 BP and 700 to 400 BP) were separated by a period of abandonment that coincided with Norse occupation

(Wallace 2003). Dates obtained in 2008 fill in this gap indicating that Recent Indian people occupied the site relatively continuously from 1200 to 400 BP (Figure 7.10). The Recent Indian complexes represented at L'Anse aux Meadows are Cow Head and Little Passage based on radiocarbon dates and lithic assemblages.

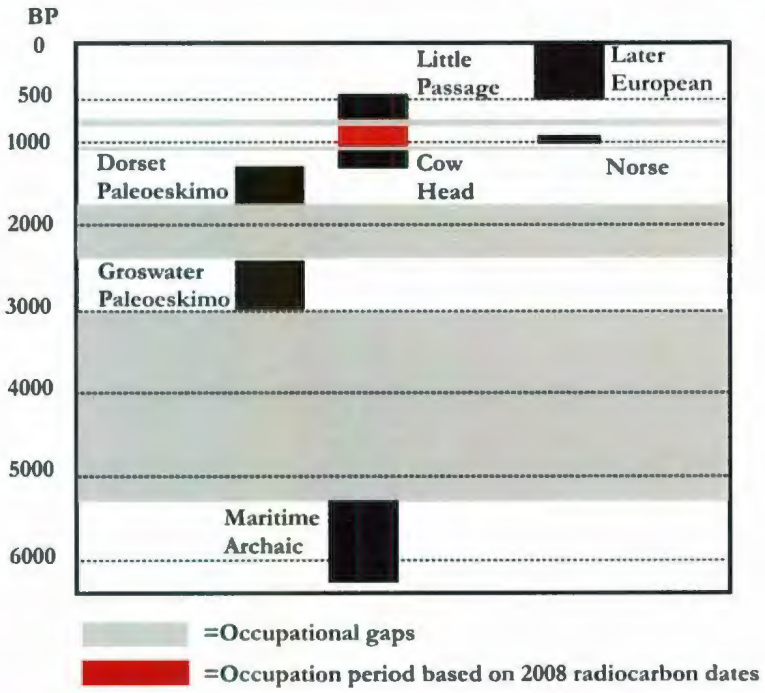

Figure 7.10: Revised cultural chronology of L'Anse aux Meadows with addition of radiocarbon dates obtained in 2008 (figure adapted from Wallace 2006).

Fauna

The Recent Indian faunal collection from L'Anse aux Meadows includes bird, beaver, and seal (Table 7.5). Many bird bones, a bear bone, and seal bone fragments, were excluded from this summary because of uncertain cultural affiliation. Because of the compressed stratigraphy at L'Anse aux Meadows, it is difficult to assign faunal remains to the Norse or Recent Indian occupations. Whale bone fragments found at L'Anse aux

Meadows could have been naturally deposited from beached carcasses or may be affiliated with the Norse (Speiss 1990). There is currently little archaeological and historical evidence for Recent Indian/Beothuk whale hunting. Of the faunal assemblages investigated in Chapter Six, a total of three whale bone fragments were found and whale are excluded from the current discussion.

Animal	NISP
Bird	50
Beaver	1
Seal	18
Total	**69**

Table 7.5: Recent Indian faunal material from the upper terrace east of Black Duck Brook, L'Anse aux Meadows (based on Rick 1977; Speiss 1990).

A total of fifty bird bone elements were identified but the minimum number of individuals was not reported (Rick 1977). Species present include cormorant, guillemot, and a medium-sized bird that Wallace (1989:100) suggests may be black duck (Table 7.6). Bird bone was found associated with Recent Indian thinning flakes and hearths on the upper terrace approximately 15 m north of a large cooking pit.

Bird species	NISP	Bone type
Cormorant	5	Foot phalanges
	1	Shaft fragment of tarsometatarsus (calcined)
	1	Distal fragment of femur (calcined)
Black guillemot	2	Proximal epiphyses of tarsometatarsus
Goose/duck	1	Fragment of bill
Medium sized bird (*e.g.*, black duck or eider/scoter)	40	Fragments of vertebrae, leg bones, and foot phalanges
Total	**50**	

Table 7.6: Bird bone elements from the upper terrace east of Black Duck Brook at L'Anse aux Meadows (based on Rick 1977).

Cormorants, guillemots, black ducks, eiders, and scoters often occupy near shore habitats and could be hunted any season although they are most vulnerable when nesting. The bird species recovered from L'Anse aux Meadows are not seasonal indicators although they are most common from spring to autumn. However, two unfused guillemot epiphyses belong to an immature bird that died in summer or early autumn (Rick 1977:10). Lower limbs are the most common body parts present perhaps due to preferential human retention of parts associated with large seabird muscle tissue (see Chapter Six).

Site function

Binford (1980) wrote that artifact remains of people with foraging strategies can be classified as those associated with either a *residential base* or *location*. *Residential bases* were loci of processing, manufacture, and maintenance activities. *Bases* were generally occupied by larger group sizes and were returned to more regularly than *locations*. The archaeological visibility of *residential bases* is accordingly higher than *locations*. *Locations* are the sites of a more limited range of extractive tasks and were occupied for shorter periods of time by often smaller group sizes (Binford 1980:9). Four possible Recent Indian tent features were identified and are thought to represent ephemeral dwellings appropriate for warm weather use (Wallace 1989). Evidence of more substantial dwellings that could have housed people through winter, like those found at North Cove (Hull 2002) and Peat Garden (Teal 2001), are lacking at L'Anse aux Meadows. According to Binford's (1980) foraging model, L'Anse aux Meadows was a *location* as opposed to a *residential base*. The palimpsest of ephemeral features (Wallace

1989) indicates that the site was occupied repeatedly but for short periods by small groups of people. The diversity of tools at L'Anse aux Meadows is generally broad but this probably does not indicate long term residence by large groups. Other components of residential sites, such as storage locations, middens, wood working tools (axes and choppers), substantial structures with defined boundaries, and patterned refuse disposal within structures, are lacking.

Site location and local ecology support the designation of L'Anse aux Meadows as a warm weather *location*. *Residential bases* in Newfoundland generally have access to a variety of resources from inner coast, outer coast, and/or interior habitats or are associated with large mammal hunting sites (Holly 2002:88; Pastore 1986; Renouf pers. comm. 2009; Rowley-Conwy 1990; Schwarz 1994). The resource base of L'Anse aux Meadows is relatively narrow and few animals were available beyond birds, harbour seal, and ringed seal (Northcott 1976). These animals are most abundant from spring to autumn and the peaks in available faunal resources likely occurred during the summer nesting season and autumn bird migrations (Lamberton and Maunder 1976; Northcott 1976). The area would be a challenging winter locale on account of its exposed location and inaccessibility of winter resources because of offshore ice.

Historical records indicate that local European residents of L'Anse aux Meadows relied on bird hunting and egg-collecting into modern times (Lamberton and Maunder 1976:33, 41, 42; Northcott 1976:72). These avian resources were likely available to pre-contact residents and perhaps in larger numbers than in the last 300 years as records show that bird populations in many areas of the province significantly declined after European contact (Lamberton and Maunder 1976:33, 42; Montevecchi *et al.* 2007; Pope 2009;

Townsend 1916). The faunal record, features, site location, and historical records suggest that in pre-contact times warm weather bird hunting occurred at L'Anse aux Meadows. A total of 72% of the bone elements identified in the Recent Indian record are bird while 26% are seal. Many small fragments of sea mammal bone found at the site are affiliated with the Norse although they may be associated with Recent Indian activities. In addition, the amount of useable meat per animal is higher for seal than that of any bird. While bird dominates the faunal assemblage, it is probable that seal hunting occurred at the site and was an important activity.

The 60 tools and 1176 flakes/debitage indicate that tools were prepared at L'Anse aux Meadows. Tertiary flakes are the most common flake type and I hypothesise that most Recent Indian lithic reduction took the form of tool maintenance, repair, and final stages of manufacture. A relatively large number of Recent Indian bifaces (22 intact bifaces and 2 fragments) were found at the site. It was this that led Wallace (1989) to posit whale processing as a major Recent Indian activity at L'Anse aux Meadows. Subsequent research on Recent Indian, Beothuk, and Innu subsistence has failed to identify whale as a significant resource on the Northern Peninsula and in southern Labrador although these large bifaces were probably still intended for use on large mammals (seal or caribou). Wallace (1989:67-68) noted that scrapers were relatively absent from the Recent Indian lithic assemblage, and offered this as additional support for whale hunting. After re-analysis of the lithics including an updated assignment of cultural affiliation based on new knowledge of Recent Indian raw material types (Renouf 2009 pers. comm.), ten Recent Indian scrapers were identified. Scrapers therefore form 17% of the tool assemblage. Stone scrapers are not usable on bird skins because they are less

durable than mammal skins and cannot withstand heavy scraping (Birket-Smith 1929:135). The scrapers identified at L'Anse aux Meadows therefore represent mammal processing tools. To summarize, I hypothesise that late stages of lithic reduction were performed on relatively large tools and scrapers at L'Anse aux Meadows that appear to be designed for use on mammals.

The L'Anse aux Meadows faunal and lithic assemblages appear to be inconsistent. Birds are the most abundant taxon yet most tools, including large, durable, and symmetrical bifaces and scrapers, are traditionally associated with mammal hunting and processing. While large symmetrical bifaces could have been used to disarticulate birds, it is not likely that they were fashioned at L'Anse aux Meadows for that specific purpose when less specialized tools would suffice (*i.e.*, retouched and utilized flakes).

To illustrate the disparity between lithic and faunal collections at L'Anse aux Meadows, two sites were chosen for comparative analyses: Russell's Point (CiAj-01) and North Cove (EgBf-08). Russell's Point is a Little Passage/Beothuk site (Gilbert 2002) that was selected for this analysis because it represents a mammal hunting and processing locale based on faunal records, historical accounts, and local ecology (Figure 6.1). In addition, Gilbert (2002) reported quantitative data of the lithic assemblage that could be compared to L'Anse aux Meadows. North Cove was selected because it contains the largest relative proportion of bird bone of all Recent Indian/Beothuk faunal collections in the province (Figure 6.1) and is also located directly along a major bird flyway corridor (Figure 2.1). As with Russell's Point, Hull (2002) presented quantitative lithic data amenable to a comparative analysis of North Cove with L'Anse aux Meadows.

Figure 7.11 depicts a comparison of L'Anse aux Meadows, North Cove, and Russell's Point collections. The percentage of lithic tool types at L'Anse aux Meadows is most similar to Russell's Point while the percentage of fauna is most similar to that of North Cove. Bifaces are comparatively abundant lithic tools at Recent Indian mammal hunting sites (Cridland 1998; Teal 2001) as illustrated at Russell's Point. At North Cove, where birds were hunted, there is a greater comparative abundance of utilized and retouched flakes that may be associated with bird butchering. Ethnohistorical accounts corroborate the correlation of lithic and faunal collections exhibited at Russell's Point and North Cove. Mammals such as caribou, beaver, and seal, were hunted by the Beothuk and Innu with large spears and projectiles (Marshall 1996:315-335) while birds were often hunted with organic weapons like blunt arrows or small projectile points (Howley 1915:212; Turner 1894:312). Records of Beothuk boiling pots filled with intact birds indicate that bird processing was less intense than that of mammals and required fewer processing tools.

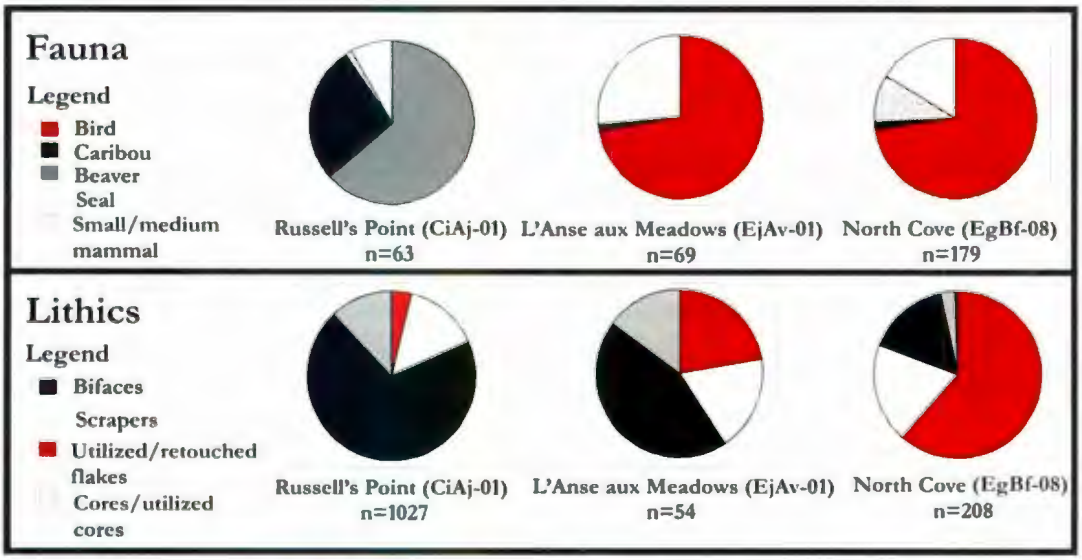

Figure 7.11: Comparison of faunal and lithic assemblages from Recent Indian sites in Newfoundland. Only bifaces, utilized/retouched flakes, cores/utilized cores, and scrapers were included in this lithic analysis. Thin rectangles connect the most similar faunal/lithic assemblages.

Quantitative lithic data from other Newfoundland sites where bird remains are comparatively common are unavailable and an assessment of the correlation between animal bone and lithic tool types in the province must await further excavations. For the current study it is sufficient to note that the frequency of Recent Indian lithics at L'Anse aux Meadows more closely resembles a mammal hunting and processing site despite a high proportion of birds in the faunal assemblage.

Three explanations are offered for the appearance of tools used on mammals with a faunal assemblage dominated by bird bone; 1) seal and/or caribou were hunted and processed at L'Anse aux Meadows to a greater degree than is indicated by the faunal record, 2) large bifaces were used to hunt/process birds, and 3) mammal hunting and processing tools were prepared at L'Anse aux Meadows for later use.

Ecological conditions over the past few hundred years do not lend support to the first explanation. Neither seal nor caribou were historically abundant at L'Anse aux Meadows (Northcott 1976:49, 50-55) although they may have been at times in the past when ecological conditions on the Northern Peninsula were much different. Harp seal migratory paths are difficult to reach but may have been accessible in pre-contact times. Harbour and ringed seal may also have been more abundant. Caribou bones have not been identified in association with any cultural occupation at L'Anse aux Meadows and historically were rare visitors but may have been attracted to the grassy slopes of L'Anse aux Meadows in larger numbers millennia ago. Future excavations may yield the bones of these animals in Recent Indian contexts.

The second explanation for the presence of large bifaces at a site with mostly bird bone is a direct connection between spears and birds. Ethnographic records of northern

hunter-gatherers do not mention the use of large stone-tipped spears for bird hunting but it is conceivable that moulting waterfowl were killed this way. Bird darts and pronged spears were relatively common among the Inuit and Thule (Birket-Smith 1929:248-250; Hawkes 1916:76; Whitridge 2001) but spears were mostly organic and darts had a projectile weight incomparable to the majority of Recent Indian bifaces at L'Anse aux Meadows. Pronged spears were designed to stab nesting or sleeping birds that could not wrestle free from the multiple notched or barbed prongs (DePuydt 1994:217). The use of large symmetrical bifaces and scrapers on the bird species at L'Anse aux Meadows (cormorant, guillemot, and a medium-sized duck) is difficult to envision. The remaining section will explore the hypothesis that a portion of the hunting and processing tools were prepared at L'Anse aux Meadows for later use elsewhere.

The activities conducted at L'Anse aux Meadows were imbedded in a temporal context of seasonal resource use and landscape movement. Ethnographic and archaeological examples are used below to suggest that birds were hunted at L'Anse aux Meadows during summer/early autumn before the site occupants moved elsewhere to focus on mammal hunting in late autumn/early winter. The faunal record, site location, and historical records of bird hunting by local residents (Northcott 1976) all point to bird exploitation as the major pre-contact activity at L'Anse aux Meadows. I hypothesise that bird harvesting, particularly of migrating seabirds and waterfowl on the North Atlantic flyway involved periods of waiting that were filled with tool preparation. Given that many bifaces at L'Anse aux Meadows were an appropriate size for spears which, based on archaeological and historical records (Gilbert 2002; Howley 1915; Marshall 1996:315-

335), were commonly used on mammals (caribou, beaver, and seals), I speculate that tools were prepared for late autumn and early winter use.

Unidentified stone rings on the south shore of Épaves Bay are associated with several bifaces and flaking debris (Figures 7.6 and 7.8) including a comparatively small Recent Indian projectile point found in a partial stone ring (204A3 Feature 2). The location of these cobble features, their size, and associated artifacts may represent refuse of waiting hunters in shore-based blinds. Ethnographic and historical records suggest that migratory and/or gregarious birds were best captured with beach blinds in which hunters (like the Inuit and Cree) waited for many hours (Nelson 1969:157; Smith 1984). Binford's (1978b) ethnoarchaeological research indicates that waiting hunters optimized time by working on often unrelated tasks which produced diverse material refuse. MacKay (2004) found that a hunting stand lithic assemblage was dominated by late stage reduction debris, large biface preforms, and finished bifaces. It is conceivable that bird hunters at L'Anse aux Meadows crafted tools in hunting blinds while waiting for game to arrive. Unfortunately, much of the south shore has been disturbed and/or re-used as an activity area such that detailed information concerning artifact distribution relative to intact features is unavailable. Despite this, current evidence, including large bifaces, scrapers, late stage reduction debris, small cobble beach features on the periphery of a warm weather ephemeral camp, and the relative frequency of bird bone in the faunal assemblage, point towards bird harvesting and tool preparation.

The interpretation of L'Anse aux Meadows as a site where birds were hunted and mammal hunting/processing tools were manufactured involves an interesting temporal relationship between bird and mammal food resources. For the Beothuk, birds were

important summer and early autumn resources for immediate consumption and storage. Mammals appear to have assumed more importance during the autumn caribou and harp seal migrations. Milne and Donnelly (2004) suggest a similar temporal dietary relationship between bird and mammal meat. Pre-Dorset hunters in the Arctic stocked up on fat-rich moulting waterfowl meat before pursuing autumn caribou. Damkjar (2005:163) also noted that Late Dorset bird hunting was performed in between seasonal abundances of seal. Both Milne and Donnelly (2004) and Damkjar (2005) used this temporal food pattern to explain the abundance of mammal hunting and processing tools at sites with faunal assemblages dominated by bird bone. Münzel (1983) analysed the faunal assemblage of a Pre-Dorset site on Banks Island and similarly interpreted a succession of hunting from birds in late summer and early autumn to musk-ox in late autumn and early winter. As noted in Chapter Four, Prichard (1911) wrote that waterfowl were hunted by the Innu before attention turned to interior caribou grounds.

The Beothuk on Newfoundland's northeast coast from the seventeenth to eighteenth centuries provide an example of a temporal relationship between birds and caribou. Site locations, faunal records, and historical documents indicate that the northeast Beothuk occupied islands in summer, during which time seabirds were essential resources, then moved to the interior in late autumn/winter where they depended on caribou. In areas where seal migrations were accessible such as at the Gould site (EeBi-42) and Peat Garden (EgBf-06) on the Northern Peninsula, birds were likely secondary resources relied on between major seasonal influxes of seal.

The relationship and importance of bird and mammal meat to northern hunter-gatherers fluctuated on a several temporal scales from months to centuries (Gotfredsen

1997). During autumn caribou migrations and early winter harp seal migrations, the importance of bird meat could decrease if mammals were abundant or increase if mammals were sparse. For the northern Athapaskans (VanStone 1974:26), birds, particularly summer ducks and geese, were of vital importance when large game was scarce. Nelson (1969:157) wrote of the Wainwright Eskimo that during a lean year, waterfowl could provide the margin between adequate food supply and hunger. Hanson and Currie (1957:216) claimed that when summer seal hunting was poor, the Inuit of Hudson Bay turned inland to capture moulting geese. Klein (1966:327) wrote that mammals and fish made the most significant contributions to Alaskan Eskimo diet but birds kept them alive when other game was scarce. Evidence presented in Chapters Three and Four illustrates that the importance of birds to the Beothuk and Innu also varied during the seasons and on a yearly basis. For the Innu, stored bird meat and fresh ptarmigan/grouse kept groups alive through winter especially when caribou meat dwindled. Denied access to summer seabird colonies may have threatened winter survival of the Beothuk who depended on stored bird meat and eggs.

The importance of birds and other small game also varied on a larger temporal scale. Krech (2009:35) wrote that as deer became less abundant in the archaeological record over hundreds of years, birds assumed a greater role in hunter-gatherer diet in the southeast U.S. This marked a transition to a broadened subsistence base. Darwent (2004) similarly noted an archaeological increase of small game in Arctic hunter-gatherer diet when artiodactyl populations crashed. On the Northern Peninsula of Newfoundland, Hodgetts *et al.* (2003) documented a Dorset Palaeoeskimo dietary shift towards a more diverse resource base that included an increase in bird remains as the relative proportion

of sea mammal decreased. Based on archaeological and ethnographic examples, the ecological dynamics of bird exploitation by the Recent Indian people of Newfoundland was undoubtedly diverse and the importance of birds fluctuated with the availability of other game. In this context, the L'Anse aux Meadows record represents a pre-contact subsistence strategy on the Northern Peninsula that involved a broad resource base.

Conclusion

The Recent Indian archaeological record from L'Anse aux Meadows provides a case study of pre-contact bird use in Newfoundland. Local ecology, historical records, faunal remains, lithics, and features lead to the interpretation of L'Anse aux Meadows as a site where warm weather bird hunting and tool preparation occurred. The appearance of large bifaces and scrapers at a site where the majority of bones are from birds can be attributed to; 1) a faunal record that is not representative of the activities conducted at L'Anse aux Meadows, 2) the use of large bifaces and scrapers for bird hunting and processing, and/or 3) the preparation of hunting and processing tools for use elsewhere. The latter explanation is supported with archaeological and ethnographic examples that portray a temporal relationship between spring to early autumn bird hunting and late autumn to early winter mammal hunting.

CHAPTER 8

CONCLUSIONS

Based on ethnohistorical and archaeological evidence, Recent Indian, Beothuk, and Innu hunter-gatherers exploited birds. The ecological relationship between these people and avian resources was temporally and geographically diverse. A variety of bird species occupied different roles in the subsistence strategies and ideologies of the Beothuk, Innu, and their Recent Indian ancestors. Fauna, lithics, features, and ecological data are employed in the interpretation of L'Anse aux Meadows as a Recent Indian site at which seabirds and waterfowl were hunted during from spring to autumn. The L'Anse aux Meadows lithic assemblage is placed in a context of seasonal resource use to explore the notion that tools were prepared at the site for later seal and/or caribou hunting. This thesis supplements research of Late Holocene mammal hunting in Newfoundland and Labrador in an effort to broaden perspectives of pre-contact seasonal resource use and hunter-gatherer ecology in the North Atlantic.

An investigation of bird biology (Chapter Two) illuminates traits that attracted hunter-gatherers to avian resources. Firstly, birds were available year round. Migrating spring waterfowl were a welcome sign in northern landscapes during a time of year when human diet was generally stressed. Summer brought nesting waterfowl, seabirds, and eggs followed by easily hunted moulting adults. Autumn migrations offered food for immediate consumption and storage. In winter, ptarmigan and grouse were available and though they offered less meat than larger game, their relative ubiquity and uniquely high winter fat reserves made them attractive game. Secondly, birds were relatively predictable resources. Temporal patterns of bird activity were reliable while geographically

productive bird habitats were repeatedly used over many generations. For example, migration resting areas and seabird colonies represented specific places with abundant avian resources at specific times of year. When combined, predictability and year round availability of various species offered hunter-gatherers myriad ways to exploit birds.

Historical documents are valuable tools for zooarchaeological and ethnographic reconstructions of Beothuk/Innu and bird relationships (Chapters Three and Four). The most heavily harvested bird group by the Beothuk appears to have been seabirds, which relates to Beothuk summer occupation of mainland coastlines and islands. In contrast, the birds that were relied on most heavily by interior-oriented Innu shortly after European contact were likely ptarmigan and grouse. Ecological adaptations of both Native peoples were quite different although birds occupied important roles for both the Innu and Beothuk. Both Native peoples utilized an array of technologies to capture birds including decoys and blunt or stone-tipped arrows. While several technologies were shared, others differed: the Beothuk used seaworthy canoes to collect eggs and nesting adult birds while the Innu relied more on hunting dogs, snares, and hunting blinds.

Ceremonial and ritual artifacts, legends, linguistics, and historical documents hint at Beothuk and Innu ideological perceptions of birds. Bird feet and feathers are interpreted as symbols of bird spiritual messengers for the Beothuk: a view adopted by other North American Native people (Krech 2009; Morrow and Volkman 1975; VanPool 2009). Bird feet and feathers (or representations thereof) buried with the deceased may have been means by which spirits could be transported from one realm to the next. Birds do not appear to have occupied a similarly prominent spiritual role in Innu ideology, however, several lines of evidence are suggestive of their symbolic importance: bird

groups are represented by several spiritual masters (Armitage 1992); spring feasts were held in honour of geese and ducks; several Innu-Aimun months were named after culturally significant bird activities (Clément 1993:14, 44, 122); and legends feature loons, jays, and owls (Desbarats 1969). Ethnographic data of the Beothuk and Innu extend the realm of birds from economic resources to spiritually imbued beings.

Historical records of the Beothuk and Innu inform a prediction of the archaeological record of bird hunting in Chapter Five. Factors that reduce survivorship of bird hunting refuse are discussed with reference to the potential archaeological under-representation of bird hunting and consumption in Newfoundland and Labrador's pre-contact and early history. The material record of Recent Indian, Beothuk, and Innu bird harvesting is limited by the use of organic tools such as blunt arrows and snares that rarely preserve in the province's harsh sediments. Bird processing may not have required many stone tools, which further limits the visibility of historical and pre-contact bird processing sites. Boiling and other cooking practices may have weakened bird bone and lessened its preservation likelihood although the bones of other animals were also subject to these forces. Bird bone is predicted to preserve in those conditions in which other animal remains are present. While the organic nature of bird hunting tools limits preservation potential, the ability to hunt aquatic birds from land using hunting blinds presents a unique opportunity for the preservation of structures associated with aquatic game kill sites. Bird hunting blinds consist of semi-circular stone or organic structures and are predicted to occur on the periphery of camps within 40 m of the water's edge. It is also predicted that local ecology and historical records of avian resources can contribute to interpretations of pre-contact bird hunting sites.

In Chapter Six, geographic patterns of bird use are inferred from Recent Indian, Beothuk, and Innu archaeological records. Of the Recent Indian and Beothuk faunal assemblages where species were identified, bird bone was found at almost every Newfoundland coastal site. The relative abundance of bird bone at archaeological sites varies, which may reflect different seasons of occupation, local game availability, and/or different cultural food preferences. I hypothesise that at sites where birds where the primary focus, sea mammals were hunted opportunistically and vice versa. Labrador lacks well-preserved Recent Indian and early Innu faunal assemblages but contains a number of bird hunting blinds. Two factors unique to Labrador may explain why the material record of bird hunting differs from that of Newfoundland. Evidence of pre-contact dogs among the Recent Indian people of Newfoundland is meagre compared to a number of historical accounts of Innu dogs at the time of European contact. Dogs surely scavenged bones of small game but an assessment of the impact of dogs on faunal assemblages must await further research. The complete absence of hunter-gatherer blinds in Newfoundland may be related to the Beothuk disappearance from coastal areas and their eighteenth century downfall. Unlike Labrador, Newfoundland does not have the benefit of surviving voices to aid the interpretation of traditional Beothuk activities. Ethnographic research of the Innu in the nineteenth and twentieth centuries has likely aided the interpretation and detection of Labrador hunting blinds.

In Chapter Seven, L'Anse aux Meadows National Historic Site provides a case study of Recent Indian bird hunting in northern Newfoundland. Local ecological information highlights an abundance of bird species that live near L'Anse aux Meadows through the summer or seasonally visit the site which lies at a significant geographic

position along the Atlantic flyway. Historical records document the importance of bird hunting and egg-collecting in the area by local residents. Archaeological data from 1961 to 2002 (Wallace 1989, 2003) and from 2008 (Kristensen and Renouf 2009) are synthesized and interpreted with the aid of ethnohistorical and archaeological research of bird use in the province. Fauna, lithics, and features from L'Anse aux Meadows are inferred to represent bird hunting. Three hypotheses are offered to explain why the faunal assemblage contains a relative abundance of birds while the lithic assemblages includes a relative abundance of large bifaces and scrapers. Firstly, bifaces and scrapers may have been used on mammals at L'Anse aux Meadows that have not preserved or are yet to be discovered. Secondly, large bifaces and scrapers may have been used on birds. Thirdly, bifaces and scrapers may have been prepared at L'Anse aux Meadows for use elsewhere. The last hypothesis is explored through an investigation of northern hunter-gatherer seasonal subsistence patterns and time optimization.

I suggest that at L'Anse aux Meadows waiting bird hunters prepared mammal hunting weapons and processing tools. An implication of this interpretation is that a diverse lithic assemblage with a variety of tools may not be indicative of a variety of tasks performed at a site. To illustrate, scrapers found in the absence of bones from animals that had hides to scrape may indicate that these tools were prepared but not used. However, future research may link large Recent Indian bifaces and scrapers to animal remains at L'Anse aux Meadows.

Relationships between the province's pre-contact hunter-gatherers, birds, and mammals were complex. Hunter-gatherer adaptations in Newfoundland and Labrador, as elsewhere in northern landscapes, were characterised by diversity and flexibility. Birds

were generally a reliable resource but their importance surely varied through time depending on other game availability and cultural preferences. At times, birds may have been the exclusive faunal resource, while at other times, bird meat supplemented human diets dominated by caribou or sea mammal.

Added complexity in the archaeological record is attributed to hunter-gatherer decisions to balance the satisfaction of immediate needs with the desire to prepare for future events in the seasonal movement of people across landscapes. Bird hunting represented both a means to acquire food for consumption and storage (Gotfredsen 1997), and an activity that afforded time to prepare tools for later use (Milne and Donnelly 2004). Interpretations of sites and pre-contact human ecological systems can be aided by research perspectives that link records of human behaviours in a temporal chain of seasonal movements.

Archaeological detection of bird exploitation in northern landscapes benefits from the synthesis of multiple lines of evidence including ethnohistorical records, faunal assemblages, features, lithics, and local ecology. Increased awareness of birds as faunal resources broadens archaeological knowledge of the ecological sphere of Newfoundland and Labrador's hunter-gatherers and can inform reconstructions of pre-contact subsistence in the North Atlantic.

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