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Résumé de l'article

Au Nunatsiavut, des études récentes ont montré que des changements majeurs affectent les écosystèmes de toundra forestière depuis plus de deux siècles, notamment au niveau de l'abondance et de la répartition des espèces arborescentes. Bien que ces changements puissent être attribués aux conditions climatiques variables de cette période, il faut aussi considérer les facteurs anthropiques, comme la récolte de bois, lors de l'étude écologique de la dynamique forestière. Cet article, basé sur une revue de littérature, des entrevues et des observations de terrain, documente les interactions entre les résidents de Nain (Nunatsiavut) et le paysage forestier depuis la fin du XVIII^e siècle. Nain est l'une des rares communautés inuit situées au sud de la limite des arbres et les relations qu'entretiennent ses habitants avec le paysage forestier apparaissent ambivalentes et changeantes. Ainsi, même si la forêt a dû tout d'abord être perçue comme potentiellement dangereuse, elle a graduellement été intégrée aux modes d'utilisation du territoire et a même contribué à modéliser certains aspects de la culture des Inuit du Labrador. Bien que continue, l'utilisation des ressources ligneuses par les résidents de Nain n'est pas homogène dans le temps. La coupe et la récolte ont changé avec le contexte socio-économique et ont laissé une empreinte sur le couvert forestier de la région, ce dont témoignent l'abondance de souches coupées et la rareté d'arbres morts naturellement.

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Au Nunatsiavut, des études récentes ont montré que des changements majeurs affectent les écosystèmes de toundra forestière depuis plus de deux siècles, notamment au niveau de l'abondance et de la répartition des espèces arborescentes. Bien que ces changements puissent être attribués aux conditions climatiques variables de cette période, il faut aussi considérer les facteurs anthropiques, comme la récolte de bois, lors de l'étude écologique de la dynamique forestière. Cet article, basé sur une revue de littérature, des entrevues et des observations de terrain, documente les interactions entre les résidents de Nain (Nunatsiavut) et le paysage forestier depuis la fin du XVIII^e siècle. Nain est l'une des rares communautés inuit situées au sud de la limite des arbres et les relations qu'entretiennent ses habitants avec le paysage forestier apparaissent ambivalentes et changeantes. Ainsi, même si la forêt a dû tout d'abord être perçue comme potentiellement dangereuse, elle a graduellement été intégrée aux modes d'utilisation du territoire et a même contribué à modeler certains aspects de la culture des Inuit du Labrador. Bien que continue, l'utilisation des ressources ligneuses par les résidents de Nain n'est pas homogène dans le temps. La coupe et la récolte ont changé avec le contexte socio-économique et ont laissé une empreinte sur le couvert forestier de la région, ce dont témoignent l'abondance de souches coupées et la rareté d'arbres morts naturellement.

Abstract: *Napâttuit*: Wood use by Labrador Inuit and its impact on the forest landscape

In Nunatsiavut, recent studies have shown that major changes to forest tundra ecosystems have occurred over the past two centuries, including a shift in the abundance and range of tree/shrub species. Although this trend could be due to the highly variable climate of this period, we should also consider anthropogenic factors, such as wood harvesting, when conducting ecological studies of forest dynamics. Based on a literature review, interviews, and field observations, this article documents the interactions between residents of Nain (Nunatsiavut) and the forest landscape since the late 18th century. Nain is one of the few Inuit communities south of the tree line, and its inhabitants seem to have had an ambivalent and changing relationship with their forest landscape. Thus, though probably perceived initially as potentially dangerous, the

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forest has gradually been integrated into land use patterns and helped shape some aspects of Labrador Inuit culture. For Nain's inhabitants, wood use has been continuous but not homogenous over time. Patterns of use and harvesting have changed with the socio-economic setting and have left their traces on the region's forest stands, as is evident from the abundance of cut stumps and the scarcity of naturally dead trees.

Introduction

Arctic and subarctic environments are stereotypically considered to be untouched and pristine. In reality, humans have been present for thousands of years. Among them, the Inuit and their predecessors have arguably shaped these environments by occupying the land and by harvesting its resources. Even though they have typically oriented their subsistence and settlement toward exploiting the resources of the sea, those of the land (both plant and animal) have also played key roles (Alix 2004, 2005; Alix and Brewster 2004; Kaplan 2009a, 2009b; Nuttall 2005; Zutter 2009). Wood has had particular importance across the circumpolar world, being used for fuel, home building, and other purposes in all manner of daily subsistence and social activities (Alix 2004: 112, 2005: 84; Arnold 1994: 277). Its importance is more than economic, having been woven into spirituality and ideology throughout the North American Arctic, as demonstrated by its role in Yupiit and Inuit oral histories, rituals, and beliefs (Alix and Brewster 2004: 2; Fienup-Riordan 1996: 153).

In the treeless regions that predominate in the Arctic, wood mainly comes from driftwood. Its harvesting in these regions depends on erosion and fluvial processes at lower latitudes and on ocean currents that carry it north (Alix 2005: 86). In more southerly Inuit territories, such as the central Labrador coast, wood grows locally and can be retrieved with reasonable if not modest effort. This is the case in the region around Nain, presently the northernmost community in Nunatsiavut. In this region, trees and other terrestrial resources such as berries are still harvested in quantity today by Nainimiut (the inhabitants of Nain). Nain is one of the few Inuit communities of the eastern Arctic to lie south of the tree line, and forest dominates the region's landscape.

The last few decades have seen much study of the relationships between Labrador Inuit and their environment (e.g., Brice-Bennett 1977; Fitzhugh and Lamb 1985; Kaplan 1983; Kleivan 1964, 1966; Taylor 1974; Williamson 1997; Woollett 2003, 2007, 2010). As yet, we know comparably little about land use because researchers have focused on maritime adaptations and Labrador's coastal regions. Our study, entitled "Historical ecology of a subarctic forest landscape, Nain, Nunatsiavut," aims 1) to improve the body of knowledge about forest resources and Inuit land use of the Nain region and 2) to document the history of the forest landscape in terms of climatic and human impacts. This article reviews current knowledge about the relationship of the Labrador Inuit to their forest environment. We also discuss our methods in this interdisciplinary study and the results of interviews conducted in Nain in 2010-2011 on

Nainimiut wood use and local forest-related knowledge. We argue that wood harvesting is a major land use, in terms of both effort expended and economic return, and that the forest is an important referent for Nainimiut traditional environmental knowledge and cultural distinctiveness. We also suggest that wood harvesting has greatly impacted the forest landscape in the Nain region, in particular over the last 150 years, and that these impacts ought to be considered in ecological studies of forest dynamics.

Previous work

How important have forest resources been for Labrador Inuit? This research question is being addressed by archaeological research at the Inuit winter settlement sites of Uivak Point 1 in the Okak region and Oakes Bay 1 on Dog Island (Kaplan and Woollett 2000; Kaplan 2009a, 2009b; Zutter 2009) (Figure 1). Uivak Point 1 (HjCl-09) is on a windswept tundra-covered cape at the northern edge of Okak Bay (Kaplan 2009a: 120). The site, occupied in the late 18th to early 19th centuries, includes the remains of nine semi-subterranean sod houses, in which dozens of spruce timbers as well as many wooden artifacts such as parts of dogsleds and household items have been recovered through extensive excavations of houses and midden deposits (Woollett 2003). The substantial size and number of timbers is striking and implies much exploitation of local wood resources and possibly overexploitation, given the locality's present treeless state. Furthermore, according to analyses of plant macrofossils (Zutter 2009) and insect remains (Bain 2000) recovered from these excavations, there was intensive use of diverse plants, including berry seeds, weeds, and conifers, for food, house furnishings and, probably, medicine as well. Wood was used for fuel, house building, and the making of various items.

The Oakes Bay 1 site (HeCg-08) is on a sandy terrace in a sheltered and partially wooded bay on Dog Island, in the Nain region. It comprises the ruins of seven semi-subterranean sod houses that were probably occupied between the late 17th and late 18th centuries (Woollett 2010). Today, this terrace is capped by peat 20-40 cm thick in which several tree stumps have been found, along with a widespread distribution of spruce macrofossils, including bark, needles, branches, and cones (Roy et al. 2012a: 30). The terrace is currently an open peat bog, despite being surrounded by open spruce woodland. Stumps have also been found in adjacent forest and dated to the early 20th century (Kaplan 2012: 34), a sign that cutting has continued into recent years since the site's abandonment. These observations imply intensive local wood harvesting by the site's occupants with definite local impacts.

Natasha Roy has examined the use of terrestrial plants around Oakes Bay 1 in greater detail by studying pollen and plant macrofossils in peat monoliths (Roy 2010; Roy et al. 2012a). Spruce (*Picea* sp.) significantly declined after ca. 600 BP, and this decrease paralleled an increase in charcoal—a strong indicator of human occupation (Figure 2). Although the precise cause is not yet known, this decline might be due to the arrival of the Inuit and their predecessors and subsequent wood harvesting. Indeed,

the earliest Thule occupation is posited between the 15th and 16th century for the Nain region, and in the 17th century for Dog Island (Kaplan 1983; Woollett 2010). More work by Roy is currently under way to assess the impact of harvesting during and after occupation of Dog Island woodlands (Roy et al. 2012b). Aside from this recent research and isolated, anecdotal observations (Brice-Bennett 1977, 1981; Kleivan 1966; Turner 2001[1894]; Williamson 1997: 53), we still know very little about the interactions between wood harvesting and the forest landscape in Nunatsiavut.

Methods

To link forest ecology to historical patterns of forest use and current Inuit ecological knowledge, we attempted to obtain and work with diverse sets of data through a multidisciplinary fieldwork program. Macrofossils and pollens from wetland or lake sediments were analysed to define vegetation history locally and regionally and to identify proxies for large-scale environmental change. Tree rings in living and subfossil wood were studied (dendrochronology) to determine the age structure of forests and the impacts of climate change on tree growth over the last few centuries. Cut stumps were dated to determine when cutting and other human disturbances occurred. Finally, semi-directive interviews were conducted to document Nainimiut land use practices and Traditional Ecological Knowledge (TEK) about the forest. TEK, as defined by Huntington (1998: 237), is a system of knowledge based on observation and experience and transmitted among and reproduced by members of a community over generations. These kinds of data are produced over different time scales with different degrees of resolution, thus posing a real methodological challenge. Such multifaceted evidence is necessary, however, to study Nain's forest landscape as a product of biophysical processes and human occupation and exploitation (see Crumley 1994, 2003; Hardesty and Fowler 2001). Because we are still analysing our palaeoecological and dendrochronological data, this article will draw on the existing literature and our TEK data to describe the role of the forest and its resources in Nainimiut land use.

TEK can be documented through semi-directive interviews (Huntington 2000: 1271). This method lets the interviewer guide the respondents by asking them questions from a list of topics and by adjusting the direction of the interview according to their knowledge and background. Respondents can thus express themselves on a topic without the constraints of a questionnaire or time limit. Besides providing the interviewer with a wide range of information, this method allows respondents to discuss a topic according to their understanding and perception, rather than following pre-set categories that might not be locally meaningful or pertinent (Huntington 1998: 241; Wishart 2000: 4). Semi-directive interviews were conducted with 15 people, including 10 Nain elders (three women and seven men), three active harvesters (all men), and two local stakeholders (one man and one woman). Elders were sought out for their long experience as observers of the environment. Also interviewed were former inhabitants of Webb's Bay and Kammâsuk, two small settlements of the Nain region that are the focus of the present study. Interviews followed three main themes:

1) forest and wood use; 2) observed environmental changes; and 3) local history. A local interpreter (K. Naeme MerKuratsuk) was hired to facilitate the initial contact and to conduct the interviews in Inuttitut, if requested.

Semi-directive interviews have their limitations, one being their context. Given that TEK is learned and validated through real-world observation and experience, abstract questioning within the confines of a sterile room may not be conducive to useful discussion. To elicit more elaborate observations and explanations, a better way may be participant observation during trips and subsistence activities (Berkes and Jolly 2001: 4; Wishart 2000: 4). Hence, the principal author visited the study areas with local people and participated in harvesting activities (of wood and animals) on the land during spring and summer 2011 to get a better sense of land use patterns and travel routes. Additional collaborative efforts were made with the community to reinforce local participation. For example, the study objectives and preliminary results were discussed with community members and local stakeholders, a science workshop was held in the Nain high school, and local field assistants were hired.

Study sites

To ascertain the character and variability of forest ecosystems around Nain both spatially and temporally, fieldwork was undertaken at four sites (Figure 3). The first two sites (Nain1, Nain2) are in the two main valleys bordering the community of Nain to the south and the west. The third and fourth study areas (WB1 and Kam1) are outlying sites in bays about 30 km north and south, respectively, of Nain. The Kam1 site is Kammâsuk, at the mouth of Voisey's Bay. This former settlement comprised three houses built on a sandy terrace on the sheltered side of a point; the remains of wood structures are visible, as are old tent rings. The Winters family, now residing in Nain, lived in Kammâsuk between the late 19th century and the 1960s, and they still own a cabin there. WB1 is in the sheltered inner reaches of Webb's Bay. Six cabins currently stand on the site, which the Webb family has occupied since at least the late 19th century (Fitzhugh 1999: 258; Hood 2008: 19).

Being close to the community of Nain, the Nain1 and Nain2 sites are easily accessed and have likely been used by a variety of people (Inuit families, settlers, missionaries, HBC staff) since the founding of the permanent Moravian mission there in 1771. The two outlying sites (Kam1 and WB1) are environmentally similar to Nain1 and Nain2, but represent contrasting case studies because tree cutting has been more tightly constrained in time and space and more limited in scale. These study sites permit a more focused and detailed analysis of tree cutting and how it relates to more precisely defined historical contexts. Families still visit the sites on an ongoing basis and are also valuable sources of historical and ecological information.

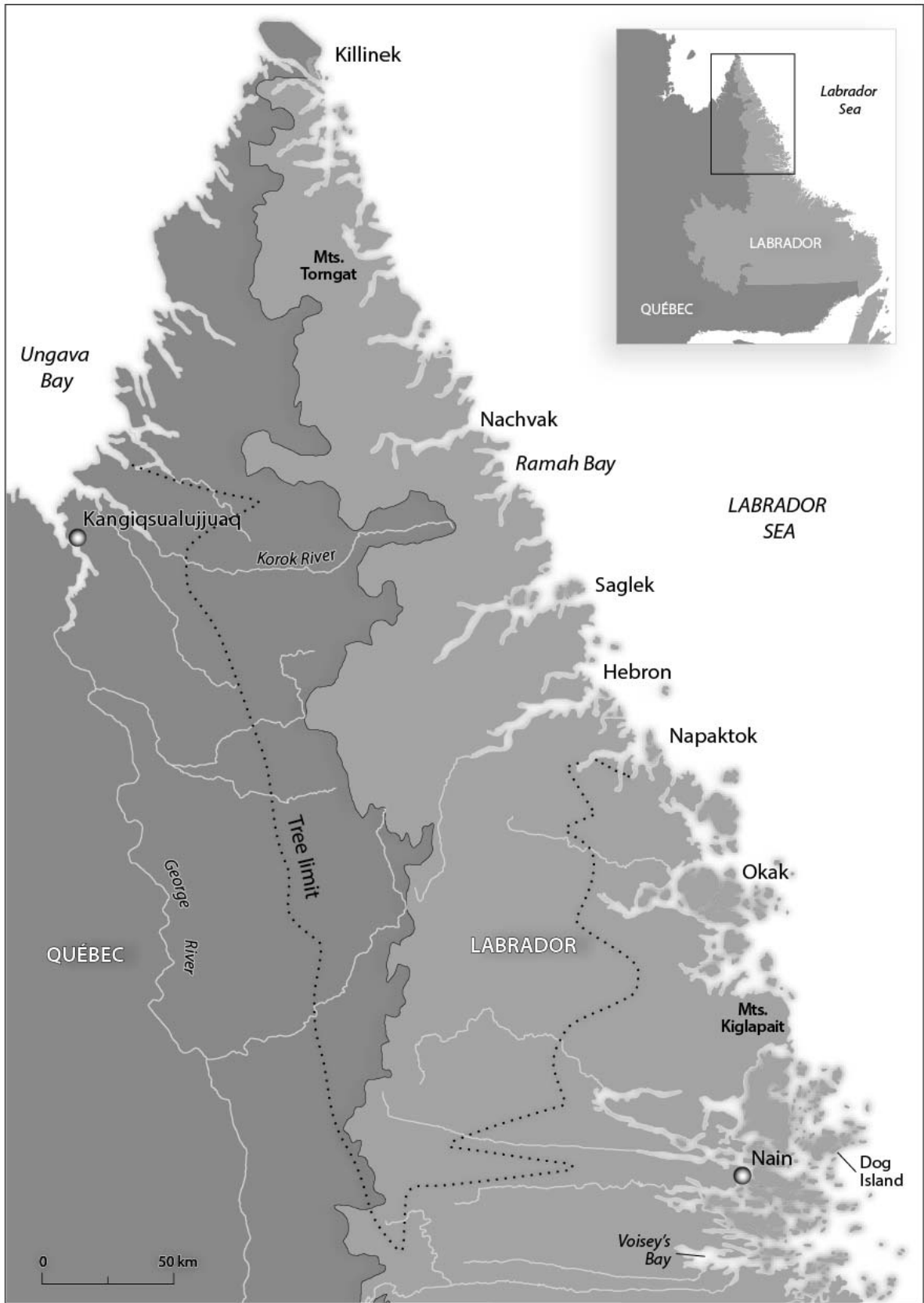


Figure 1. Map of the regions of the central and northern Labrador coast.

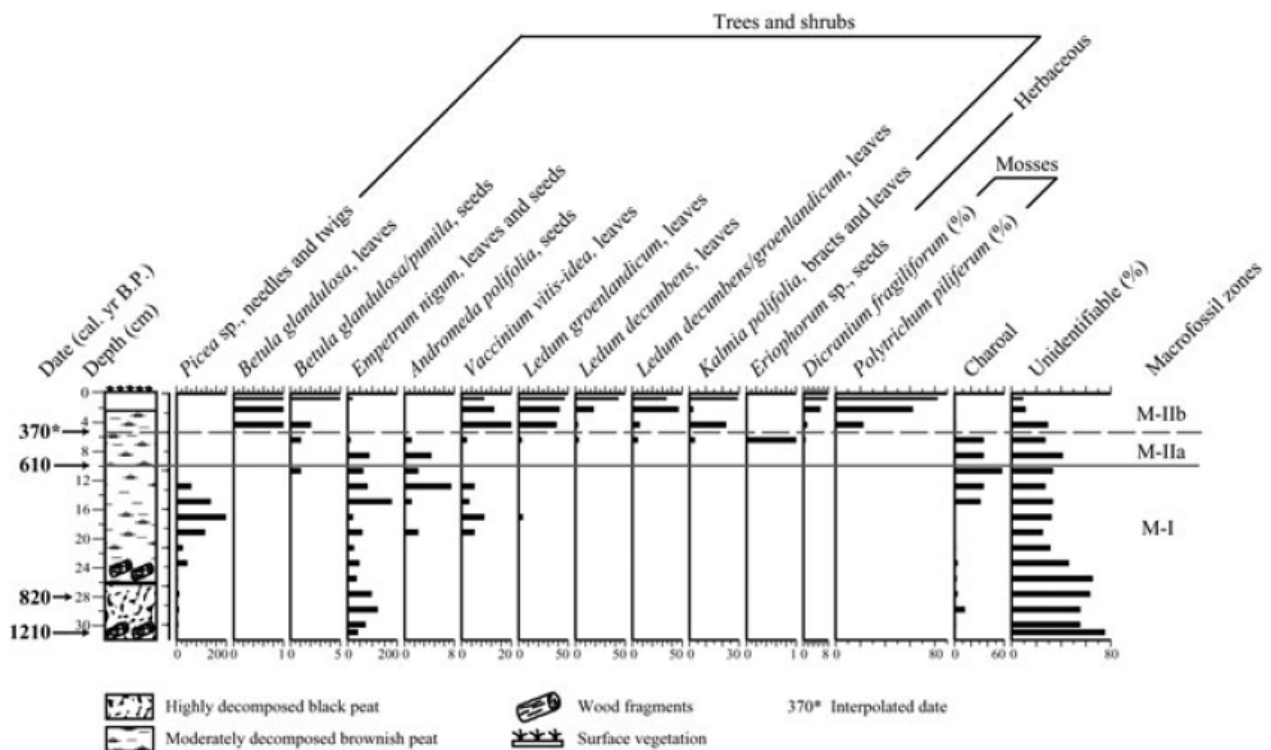


Figure 2. Macrofossil diagram of monoliths sampled at Oakes Bay 1, Dog Island (source: Roy et al. 2012a).

Environmental and historical context

Physical and ecological setting

Nain is a coastal community of Northern Labrador within the territory of Nunatsiavut. Between Cape Harrison and Cape Kiglapait, the coast has deep bays and fjords that extend east-west, a range of mountains that runs parallel to the coast, and a very extensive archipelago of mostly small islands. This region transitions between the Low Arctic climate of Northern Labrador and Baffin Island and the subarctic/temperate climate of Southern Labrador and Newfoundland (Newell 1990: 14). Nain has an annual mean temperature of -3°C and an annual mean precipitation of 893 mm, more than half of which falls in the form of snow (Environment Canada 2012). The local vegetation is forest tundra. Various tree species exist on valley bottoms, where soil conditions are favourable and environments more protected. The dominant species are black spruce (*Picea mariana* [Mill.] B.S.P.), white spruce (*Picea glauca* [Moench] Voss), and larch (*Larix laricina* [Du Roi] K. Koch), locally referred to as juniper. Black spruce is also found at higher altitudes and in exposed coastal areas in the form of krummholz (stunted) trees. Shrub vegetation is mainly represented by berry plants (notably *Empetrum nigrum* and *Vaccinium* sp.) dwarf birch (*Betula glandulosa*), Labrador tea (*Ledum groenlandicum*), alder (*Alnus* sp.) and willows (*Salix* sp.). The tree limit extends as far north as Napaktok Bay and the interior of the Hebron region, although balsam poplar groves are present as far north as Saglek Fjord (Elliot and Short 1979: 201; Payette 2007: 771).

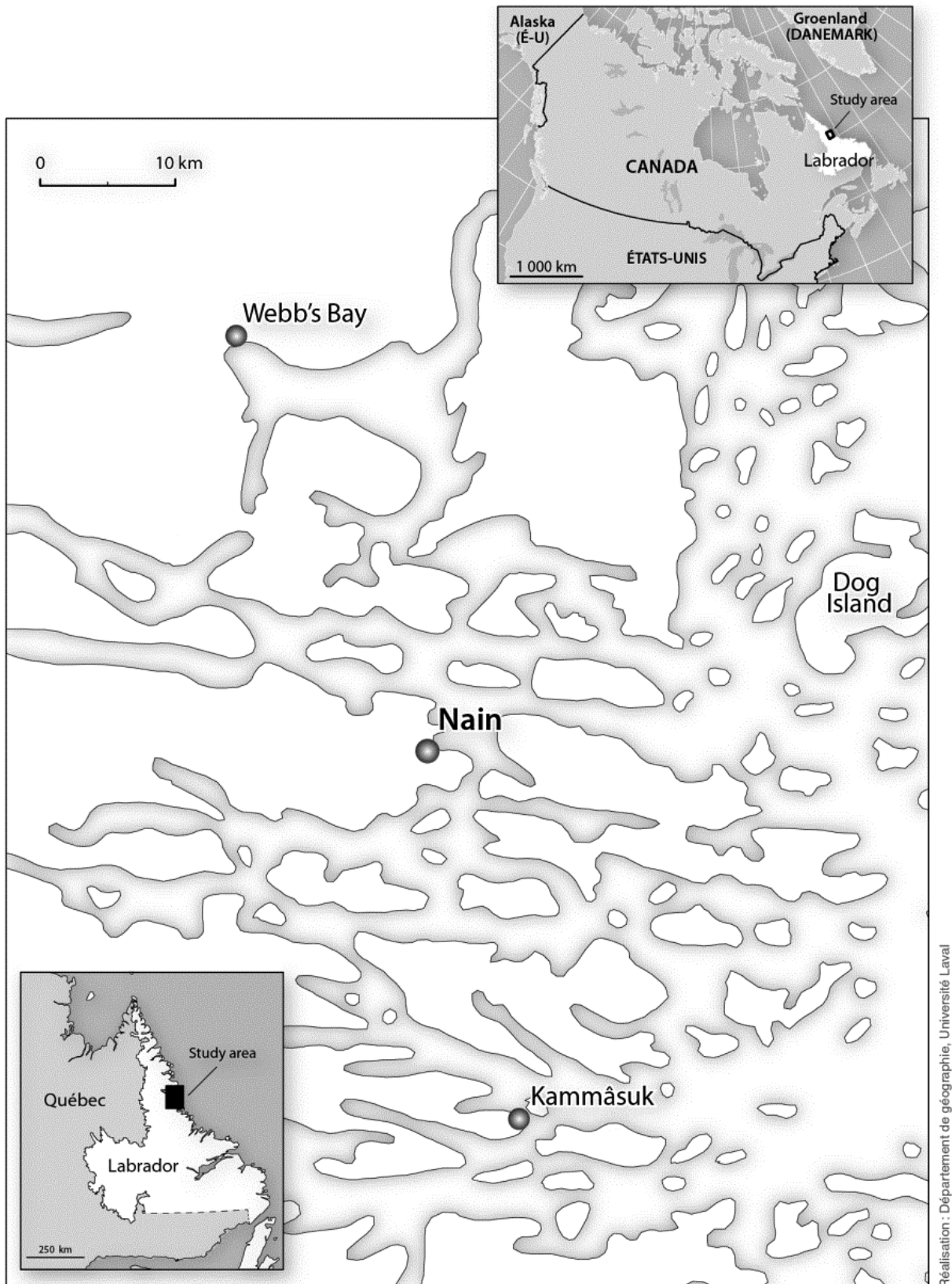


Figure 3. Map of the study sites: Nain (Nain 1, Nain 2, Kammâsuk (Kam1) and Webb's Bay (WB1).

The climate has changed very significantly over the last five centuries. The 16th to 19th centuries spanned the coldest and most variable climate of the recent Holocene, a time popularly known as the “Little Ice Age” (see Ogilvie and Jónsson 2001 for a critical discussion). More recently, global warming is becoming noticeable in this subarctic region and is causing diverse environmental impacts, such as unpredictable weather, spreading of animal and plant species into new habitats, and decreasing sea ice quality and duration (Downing and Cuerrier 2011: 58; Furgal et al. 2002: 14).

Land use and occupancy

Archaeological evidence shows a continuous Aboriginal presence in Nunatsiavut since about 7,000 years BP, beginning with the Maritime Archaic culture and leading, eventually, to the Labrador Innu. Palaeoeskimo groups arrived from the northwest by 4,000 BP and were followed by the Thule who arrived in Labrador between the late 13th and 15th centuries and are the ancestors of modern Inuit (Fitzhugh 1985: 362; Kaplan 1983: 219).

Even though Inuit had sporadic contact with European fishermen and traders before the 18th century, it was not until the late 18th century that permanent direct contacts became commonplace in Northern Labrador with the arrival of Moravian missionaries. The Moravian Church sponsored the establishment of several missions along the north coast: Nain in 1771; Okak in 1776; Hebron in 1830; Ramah in 1871; and Killinek in 1904 (Figure 1). Some English colonists also established themselves in the region, adopting elements of the local lifestyle and marrying local women. These settlers, as they are termed locally, established small communities of a couple of households each in various bays, which they left during summer to go to their fishing camps (Brody 1977: 314). Their descendants are today among the beneficiaries of the Labrador Inuit Land Claims Agreement, which was signed in 2005.

The establishment of permanent Moravian missions greatly affected Inuit land use and Inuit society in general. In particular, it profoundly influenced the daily lives of mission-resident Inuit. The Moravians redefined community social organisation, religious practices, and economic activities in order to advance the mission’s role as hub of the society and sought various ways to inculcate a more European way of life. This acculturation included, by the late 19th century, the abandonment of traditional sod winter houses in favour of aboveground houses made of wooden planks, which the missionaries believed to be more sanitary (Kaplan 2012: 27).

With the expansion of the European colonial presence in Labrador, Inuit resource harvesting became increasingly oriented towards supplying European markets and receiving trade goods in exchange (Brice-Bennett 1977: 101; Kleivan 1966: 44). Both the Moravians in Northern Labrador and fishermen and traders in Southern Labrador were middlemen for products such as fish, pelts, seal oil and hides, and baleen. The Moravians remained in control of trade in Nain until 1926, the year when they transferred their business rights to the Hudson’s Bay Company (HBC), which closed its

Nain trading post in 1942 (Brice-Bennett 1977: 107). By the 1950s, all of the communities north of Nain and the small settlements scattered around the Nain region were successively closed by the government and their inhabitants relocated (except for Killinek, which was closed in the late 1970s). Most of these people were moved to Nain, but many went to other communities of Labrador and Nunavik (Brice-Bennett 1977: 111; Williamson 1997: 21). Today, the town of Nain is the northernmost community in Nunatsiavut and has a population of approximately 1,100, predominantly of Inuit origin (Statistics Canada 2012).

Historical relationships between the Labrador Inuit and their forest environment

As mentioned earlier, Inuit across the circumpolar world used wood for a number of purposes, both economic and ideological. For example, the Yupiit of southwestern Alaska made extensive use of driftwood to build houses, to make material goods, to heat houses and steam baths, and to smoke fish (Alix and Brewster 2004). Among its uses in material culture, wood was valued for making ceremonial masks, which were often elaborate, sculpted, and comprised of multiple moving parts (Fienup-Riordan 1996: 153). Its economic and cultural value was acknowledged through dance rituals for the arrival of driftwood in the spring (Fienup-Riordan 1996: 153).

As recently argued by Kaplan (2012), Labrador Inuit appear to have had complex and ambivalent attitudes toward the forest. Where organic preservation allows, Inuit archaeological sites show a consistent reliance upon wood as a fuel and raw material. Nevertheless, when their Thule ancestors arrived on the Labrador coast after a migration across the treeless Central Arctic, the dense woodlands south of Napaktok Bay may have seemed unfamiliar and potentially dangerous. In contrast to the open tundra, these environments are difficult to walk through and block both the horizon and landmarks from ready view—features that Inuit rely upon for orientation on the tundra of higher latitudes (Aporta 2005: 223; Kaplan 2012: 36). This new landscape may have been disorienting because it lacked not only visual markers but also the familiar animals of the tundra and coast, whose place was taken by other species unknown to Inuit (e.g., black bears). Some of the missing animals were of particular spiritual importance (e.g., polar bears) while the presence of diverse forms of insects, which are a major component of subarctic forest ecosystems, might have been of particular concern. In addition to causing discomfort, insects are for the Inuit potentially dangerous creatures that have strong symbolic connotations and appear in many Inuit myths (Laugrand and Oosten 2010: 18).

Furthermore, forest lands may have seemed ambiguous and potentially dangerous to the Inuit because of the presence of the Innu. Although the Inuit tended to remain on the coast and the Innu in the interior, their territories overlapped when the Inuit went inland to trap or hunt caribou and when the Innu travelled to the coast to fish and hunt seals (Brody 1977: 311; Fitzhugh 1977: 19). The Innu were also present on the barrens of the deep interior but the lack of trees made them recognisable from far away and easy to avoid, this being not always the case in the forest. Even though the Inuit and the

Innu were both nomadic and shared similar elements of subsistence, relations between the two groups were historically complex and often involved suspicion, fear, and even violence (Brody 1977: 312).

Hence, the forest was probably unappealing and alienating to the Labrador Inuit's ancestors for several reasons: potential encounters with another people with whom interactions were coloured by mutual aversion; presence of unfamiliar animals; absence of familiar ones; and a concentration of dreaded insects. Indeed, when they first arrived in subarctic Labrador, the Thule typically chose to settle in winter on the islands of the outer coastal zone, close to the *sina* (the limit between land-fast sea ice and open water) (Kaplan 1983: 297). These outer islands provided opportunities to hunt large marine mammals and were ecologically similar to more northerly Arctic environments with which the Thule were already very familiar (Kaplan 2009a: 1). Later, however, the Thule and the Inuit amply demonstrated their ingenuity in adapting to the unfamiliar and perhaps dreaded forest where they could secure fuel and raw material for various purposes. For example, the Inuit could harvest larch and use its knot-free timber to make sled runners, or cut down green spruce krummholz to use as robust beams (Kaplan 2009b: 124; 2012: 35). In the early 18th century, the Inuit moved from their outer locations to inner islands and sheltered bays (Woollett 2007: 72). These new sites provided local access to a wider range of resources, including wood that might have been increasingly useful as fuel during this period of deteriorating climate and as a building material for the larger winter houses then in use (Kaplan 2012: 21; Woollett 2007: 72).

Trees as cultural objects

Trees have more than an economic value for Nainimiut; they also contribute to cultural identity. To live in a forest landscape and integrate it into their way of life, the Inuit needed a specific and elaborate vocabulary to distinguish the different kinds of trees, parts of trees, and types of wood used as raw materials. The vocabulary currently in use among Nain elders was compiled through interviews in 2010 and 2011 and is summarised in Table 1. This non-exhaustive list shows the distinctions that Labrador Inuit made between species and different tissues of a tree, the physical characteristics affecting its handling as a raw material, and the transformation of raw wood into economically useful objects. By creating a forest-related vocabulary, the Inuit could describe the available material (species, parts) and its different qualities (green, dry, rotten, etc.).

Wood-related vocabulary rarely appears in Eastern Arctic Inuit language dictionaries, probably because such terms have not been a subject of much enquiry, although some have been documented by Alain Cuerrier (pers. comm. 2012), Petersen (1986), and Williamson (1997: 86). Wood-related terms exist in other languages of the Eskimo-Aleut family, e.g., in the Yup'ik language of central Alaska to describe physical characteristics of wood (Alix 2007). However, terms collected by Alix (2007) among the Yup'it have not been found in Labrador, and Inuit language specialist Louis-

Jacques Dorais (pers. comm. 2011) has confirmed the desirability of collecting this vocabulary in the Eastern Canadian Arctic. Such research could provide insight into the way Labrador Inuit describe their forest environment and the materials it provides. For instance, researchers could document the terminologies for items made of wood, such as kayaks, boats, spear shafts, sleds, etc.

Table 1. Forest and wood-related Inuttituk vocabulary.

English name	Latin name	Inuttituk name
balsam fir	<i>Abies balsamea</i>	killagittuk
bark removed from a tree		sanigavinikuk
birch	<i>Betula sp.</i>	kaigulek
black spruce	<i>Picea mariana</i>	Kinnitannik
branch, stump		akiguk
dry wood		pannak
forest		napâttulik
green wood		Kautsik
larch (juniper)	<i>Larix laricina</i>	pingik
lumber, plank		sâttujâk
needles		Kisiktotik
roots		amâk
rotten wood		aunik
sawmill, sawhorse		killomittuvik
spruce gum		Kulliak, kutsuk
stem		meminak
tree		napâttuk
tree bark		amigak
tree (outer part wet, inner part dry)		Kautsikittuk
white spruce	<i>Picea glauca</i>	napâttutuinnak
wood		Kijuk

Wood apparently plays no significant role in current Nainimiut artwork. None of our respondents (among them renowned carvers) mentioned using it for carvings. Trees do provide material for some craft items, like the miniature snowshoes made by Willie Winters, an elder living in Nain. Also, local artists like Elias Obed depict forest scenery or wood harvesting in their drawings. Wooden artifacts have also been recovered from a Uivak 18th-century house, such as a wooden bowl, a wooden doll, and a toy wooden bear (Kaplan 2012: 29), but the interviewed elders did not recall such objects. Despite

this presence of the forest and the processing of wood in the language, material culture, and land use of the Inuit, neither the forest nor trees appear to have much symbolic value or spiritual meaning for them anymore, in contrast to many animal species. No respondent mentioned stories, myths, or rituals about the forest, although accounts by Lucien Turner (2001[1894]: 261) do mention the existence of Labrador Inuit myths about trees being the source of all animals. Trees were described more as raw materials, tools, shelters, and wildlife habitats. Forest products were said to be useful, but trees were also a perceived nuisance, and forest expansion was undesired because it affected transport and berry picking (Table 2).

Table 2. Nainimiut perceptions of the forest.

Perception	Number of respondents
useful	6
wildlife sanctuary	3
can be a nuisance	2
indifferent	2
protection when caught in bad weather	2
scary	2
important to prevent soil erosion	1

Wood use in the Nain region

Wood is harvested throughout winter and spring, in general at the same time as other harvesting activities. Because people will harvest wood as they hunt, woodlands are most seriously impacted in frequently used hunting areas and along travel routes. When people do go specifically to get wood, they will often head for burnt-over areas, where dead and dry wood is abundant.

Wood use in the Nain region has not been consistent over time. It has changed and adapted with changing socio-economic conditions. Table 3 presents a summary of the information collected during the interviews with elders and active harvesters about wood use and harvesting patterns. Because the interviews were semi-directed, respondents answered some questions and ignored others, with the result that not all topics have the same number of respondents.

Table 3. Summary of wood use and harvesting patterns in the Nain region

Type of use	Number of respondents
<i>Traditional use</i>	
heating	12
lumber	10
technological items	9
shingle roofs	5
medicine	3
crafts	2
sod houses (frame and floor)	2
dyes	1
<i>Current use</i>	
heating	13
lumber	6
technological items	6
<i>Other</i>	
provide wood to the government	5
provide wood to the mission	3
<i>Type of wood preferred for heating</i>	
dead and dry wood	5
it depends on the wind and weather	4
dead spruce	2
larch	2
<i>Species preferred for lumber</i>	
larch (for boat frame)	3
black spruce	1
<i>Harvesting patterns</i>	
wood provided by family or community members	7
harvests wood during winter and spring	6
has difficulty getting enough wood	6
uses wood as main source of heating	6
buys from people in the community	2

When the mission was established in 1771, the Inuit used wood mainly for subsistence: firewood for cooking and heating; timber for building semi-subterranean sod houses and making various technological items such as sleds and boats. Things changed rapidly when the Inuit started to settle in Nain. From the late 18th to late 19th centuries, the concentration of the population, the adoption of aboveground wooden

houses, and the greatly increased need for fuel to heat these poorly-insulated homes rapidly led to much deforestation around the village (Kleivan 1966: 17). Trees were used for fuel and lumber and for various other purposes, including medicine and dyes (because the latter were mostly mentioned by women, their importance could be under-represented by the small number of female respondents). Elders recalled traditional uses of wood:

Wood was used to build the homes, boats, *Kamutik* (sleds). It was also used for heating purposes (Nain, anonymous male informant, 76 years old, Nain, 2010).

We would go get *pingik* (larch) and make planks to build a boat. People would use *pingik* for the frame of the boat. We needed *pingik* that were not completely straight, to make a good frame (Gilbert Hay, elder, Nain, 2011).

My grandfather used *kutsuk* (spruce gum) when he had cuts on his hands. The gum would heal the cuts. He also used the bark. He used to boil that and dye his nets, his trout nets, so the nets wouldn't be so white in the water and the trout wouldn't be able to see it (Katie Winters, elder, Kammâsuk, 2011).

Respondents mentioned that the Innu used spruce needles as ground cover in their tents and sod houses. Twigs and needles have also been widely found in sod houses excavated at Uivak and in the Dog Island area (Kaplan 2012: 32; Woollett 2003: 324; Zutter 2009: 24). Also, "in the old days," tree bark could be used as shingles for roofs. Kleivan (1966: 17) mentions that in the late 1860s the Hopedale Inuit caused trees to die by peeling off the bark for tiling.

In Labrador, as elsewhere in the Canadian Arctic, the 1960s saw a shift to year-round residence in centralised settlements (Brice-Bennett 1977: 171). During this period, forest stands around communities were heavily cut down to provide wood for mission staffs, government agents, and other town residents, who used it chiefly for house building and fuel:

At the boarding school, boys used to have to chip off the wood to start the fire in the morning, we had to make big piles of kindling. People in the community provided wood for the mission. That meant the boarding school, the school, the Moravian mission house, the church, were all provided with wood by the people (Lucas Ittulak, elder, Nain, 2011).

Around the late 1950s, there were two sawmills in the Nain region: one in the community and the other in Anaktalak Bay, about 15 km south of Nain. Some people brought their wood to the Nain sawmill to be processed; others made the planks themselves, using a pit saw. During the second half of the 20th century, the local sawmills closed and lumber was imported. Even though pre-fabricated materials, modern technologies, and alternative fuels such as kerosene have in many cases replaced local timber and traditional use of forest products and have reduced demand for wood, "going wooding" is still popular in the Nain region. Many respondents considered it one of their favourite activities on the land.

Today, most Nain households own a wood stove, and wood remains the main heating source, followed by more expensive sources such as electricity and oil. To heat their houses, Nainimiut go “wooding” in nearby areas, mainly during winter. Snow makes it easier to transport heavy loads by snowmobile, which have replaced the dog teams of former times. Wood is transported on a sled (*Kamutik*), which can bring back only a relatively small quantity each time (Figure 4). Because of this limitation, a family may go wooding one to three times a week in winter for their heating needs (and sometimes those of their extended family). Dry wood (highly valued for firewood) can also be obtained by cutting living trees during spring, letting them dry until the following spring, and hauling them out before the ice breaks up (Figure 5).

A changing landscape

As mentioned earlier, long-past and recent climate changes have greatly impacted northern regions, including Nunatsiavut. In the Nain region, recent climate warming is affecting forest tundra ecosystems (Downing and Cuerrier 2011: 58, Furgal et al. 2002: 14). Table 4 summarises observed changes in the forest stands around Nain. Almost all respondents mentioned that trees and/or shrubs are growing where previously there were only tundra plants (e.g., on exposed slopes), and some also stated that trees are growing faster. Archive photographs of KAM1 site surroundings testify to the process of afforestation. When a photograph dating to ca. 1920 was compared with one taken from nearly the same angle in 2011, the differences were revealing: the forest is spreading over what used to be barren lands (Figures 6a and 6b). As an elder who grew up in Kammâsuk commented: “There are too many trees! This place doesn’t look like Kammâsuk anymore. We used to go berry picking in that spot, but it’s all full of trees now” (Katie Winters, Nain, 2011). This kind of statement was very common among respondents and suggests that afforestation is occurring generally within the Nain region, or at least on the sites that people frequent. Nainimiut associate this process with the longer and warmer summers they are experiencing. While climate more than likely partially explains this tree expansion, we doubt that it is the only explanation.

Table 4. Summary of changes observed in the forest ecosystems.

Observed changes	Number of respondents
more trees	9
more shrubs	6
less dead trees	4
trees grow faster	3
lots of deforestation within and around the community	3
new animals	3
trees are growing straighter	2



Figure 4: Nainimiut and their load of wood. Photo: courtesy of Harry Haye, Nain.



Figure 5. Wood drying at “Bill’s camp”, Nain region. Photo by Isabel Lemus-Lauzon.



Figure 6a. Kammâsuk, ca. 1920. Photo: courtesy of Katie Winters, Nain.



Figure 6b. Kammâsuk, 2011. Photo by Isabel Lemus-Lauzon.

While exploring the region around Nain, we were first astonished by the young-looking stands of adjacent valleys. In a remote place that has never witnessed commercial logging, one would expect nearly pristine old-growth forest. Our surveys revealed widespread cutting, however, as demonstrated by an abundance of cut stumps (an average of one stump for four live trees). We also came across a couple of small clear-cut areas. Also striking was the scarcity of naturally dead trees. This fact was mentioned by respondents, for whom the growing population in Nain and the intense harvesting of firewood had led to a scarcity of “good wood” around Nain. By “good wood,” they meant dry wood, mostly in the form of dead standing trees (Table 4).

The Kammâsuk study site provides initial evidence that the current afforestation is due to human causes. Kammâsuk was occupied by the Voisey and Winters families until the 1960s. At first glance, most trees in present-day stands around Kammâsuk appear to be between 50 and 60 years old. Consequently, forest growth seems closely related to the less intense logging that followed the relocation of the settlement’s inhabitants to Nain. Similar afforestation might be ongoing at the many other abandoned two-household settlements in the Nain region. This intuitive observation will be verified by dendrochronological analysis to gain precise information on tree age and rate of tree harvesting.

Conclusion

To portray the interactions between Nainimiut and their forest environment, this article has drawn on existing literature, documentation of pertinent TEK, and field observations. Existing archaeological evidence suggests that the Thule and their Inuit descendants became gradually familiar with the forests of Northern Labrador’s inner coast. In winter, they originally preferred to settle near the sea and ice edge, environments familiar to the Thule elsewhere in the Arctic. They later moved to the inner coast, and forest stands became more regularly incorporated into their lives on a seasonal basis. In the historic period, the forest has been key to land use. Wood is still highly valued for many purposes, and harvesting is a major ongoing activity throughout the winter. Uses have not, however, been consistent over time, having changed and adapted with changing socio-economic conditions and needs. Past studies have overlooked the degree to which the Labrador Inuit have adapted to a forest environment, how they have integrated its resources into their way of life, and how it has shaped their identity as a distinctive Inuit society of the Eastern Arctic. To understand their culture history, we need to understand their interactions with the forest.

This article has also touched on the changes to the region’s forest tundra ecosystem. Respondents mentioned a noticeable afforestation, which was documented on one site by an archive photograph. Such tree growth could be due to a warming climate, but there are likely anthropogenic causes as well. In fact, despite the remoteness and the absence of commercial logging, local harvesting has significantly impacted the forest of the Nain region. The forest landscape has thus been shaped by

both biophysical and cultural processes. Its history reflects its appropriation, signification, and transformation in a particular cultural and socio-economic context, which defines how people have used and therefore impacted it. This conclusion raises several questions. For example, what is the magnitude of this human-induced impact? And what has been the role of climate change? Is wood use in balance with the forest in the current context of climate warming and population growth? Answers will come from further work, including dendrochronological and palaeoecological analyses, which will help us better understand the historical ecology of these subarctic forests.

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