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Inuit ethnobotany and ethnoecology in Nunavik and Nunatsiavut, northeastern Canada

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Inuit ethnobotany and ethnoecology in Nunavik and Nunatsiavut, northeastern Canada

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Résumé

Les habitats uniques de l'écotone forêt boréale-subarctique dans le nord du Canada subissent les contrecoups du changement climatique. Combinés aux effets de la mondialisation, les changements environnementaux touchent les Inuits de cette région et imposent des contraintes importantes sur leur mode de vie traditionnel, ce qui a des répercussions sur leur langue et les savoirs qui l'accompagnent. Cette étude compare deux aspects de l'ethnobiologie inuite : a) les noms et les utilisations des plantes par les Inuits de Nain, Nunatsiavut, suivis par une comparaison des utilisations avec la communauté inuite de Kangiqsualujjuaq, Nunavik, et b) une analyse des types de lieux ou d'habitats que les Inuits reconnaissent et nomment. Des interviews semi-dirigés ont été menés à Nain, Nunatsiavut et à Kangiqsualujjuaq, au Nunavik. Les plantes mentionnées sont utilisées comme aliment, thé, médecine, combustible, construction, nettoyage, et autres utilisations. Les deux communautés ont utilisé un nombre égal de plantes, avec des proportions équivalentes de taxons vasculaires/invasculaires, de formes de croissance (habitus), et d'espèces par catégorie d'utilisation. Les éléments du paysage les plus fréquemment rapportés sont d'ordre topographique, hydrologique ou écologique. L'intégration des concepts inuits, quant aux plantes et au paysage, à ceux de la science occidentale peut améliorer notre compréhension de l'écologie subarctique, aider à impliquer les acteurs locaux dans les décisions sur le développement de leur territoire et, conséquemment, modifier l'aménagement du territoire ainsi que les initiatives de conservation de la biodiversité. Ces concepts ont également des répercussions sur les stratégies d'adaptation face aux changements climatiques.

Mots-clés

ethnobotanique, ethnoécologie du paysage, Inuit, Nunatsiavut, Nunavik, région subarctique, boréale, les plantes médicinales, la classification écologique, les connaissances traditionnelles

Abstract

Unique habitats of the boreal-subarctic ecotone in northeastern Canada are being impacted by climate change. Combined with effects of globalization, changing environmental conditions are causing Inuit of this region to see significant strains on their traditional lifestyle and on the language and knowledge that go with it. This study compared two aspects of Inuit ethnobiology: we compared plant names and uses from two Inuit communities and examined what kinds of places or habitats Inuit recognize and name. Semi-structured interviews were conducted in Nain, Nunatsiavut and Kangiqsualujjuaq, Nunavik, by showing interviewees (mostly Elders) plant specimens or photos of the region. Plants were used for food, tea, medicine, fuel, construction, cleaning, and other uses. Both communities used equal numbers of plants, with equivalent proportions of vascular/non-vascular taxa, growth forms, and species per use category. Forty-three species were reported in each community, for a total of 78 species from 39 families. Despite high overlap in species distributions, only half of all species were shared, reflecting community-specific bodies of traditional knowledge, or perhaps an overall decline in ethnobotanical knowledge use. The most frequently reported landscape features were topographical, hydrological, and ecological (i.e. plant associations and animal habitats). Some Inuit categories reflected their significance to traditional Inuit lifestyle (e.g. 'berry-patch', 'seal-place'), aiding navigation and resource finding. Integrating Inuit conceptions of plants and landscape with those of contemporary science can improve our understanding of subarctic ecology, help involve local stakeholders in sustainable development discussions, and inform land-use planning, biodiversity conservation initiatives, and climate change adaptation strategies.

Keywords

ethnobotany, landscape ethnoecology, Inuit, Nunatsiavut, Nunavik, Subarctic, boreal, medicinal plants, ecological classification, traditional knowledge

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bryolyco: bryophytes and lycopods

FL: fidelity level

GIS: Geographic Information System

ICF: informant consensus factor

K: Kangiqsualujjuaq

MT: Marie-Victorin Herbarium

N: Nain

sp.: species (singular)

spp.: species (plural)

subsp.: subspecies

TB: tuberculosis

TEK: traditional ecological knowledge

TK: traditional knowledge

To Mom and Dad,

for your unconditional love and support

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Chapter 1: Introduction

1.1 Study context and background

1.1.1 Introduction

Biological, cultural and linguistic diversity is under threat everywhere across the Earth (Maffi 2001; 2005; Cuerrier & Arnason 2008). Goals set by governments worldwide to curb the current rate of biodiversity loss at global, national, and regional levels have consistently not been met in the last decade (SCBD 2010), with climate change and human disturbances being some of the major factors impacting biodiversity (Wilson & Perlman 2000).

Being very sensitive to temperature changes, the Arctic is expected to be one of the regions most affected by climate change (Convey *et al.* 2012). Impacts of warming on terrestrial ecosystems at northern latitudes are complex, with high variability of responses across the Arctic depending on site-specific factors (Henry *et al.* 2012). Responses to warming also differ between vegetation types, shrubs appearing to increase with warmer ambient temperatures while colder sites seem to favour graminoid growth (Elmendorf *et al.* 2012). It is difficult to predict how species interactions will change in the coming years, and certain that some species will not fare as well as others (Greene *et al.* 2008).

Climate change is similarly affecting indigenous peoples worldwide, making the use of traditional knowledge less reliable for predicting environmental conditions (Downing & Cuerrier 2011). For Canada's Inuit who call the Arctic home, changing environmental conditions are having direct impacts on health, food security, and their ability to practice traditional activities (Ford 2007; Furgal *et al.* 2002; Furgal 2008; Pearce *et al*. 2009).

1.1.2 The Arctic and its people

The Inuit occupy territory across the Arctic, their predecessors having migrated from Siberia across the Canadian Arctic, then northeast to Greenland and southeast to Labrador, arriving in eastern Canada between 600-800 years ago (KRG 2005). The two southernmost Inuit territories are Nunavik, in northern Quebec, and Nunatsiavut, in northern Labrador (Province of Newfoundland and Labrador). Compared to the other more northerly Inuit territories (i.e. Alaska, the Inuvialuit region of the Northwest Territories, Nunavut, and Greenland), Nunavik and Nunatsiavut have somewhat different biogeographies. Both within the Canadian Shield plateau physiographic region, the two territories span from sporadic

discontinuous to extensive discontinuous and continuous permafrost zones (Natural Resources Canada 212).

The Ungava Bay area of Nunavik, Quebec, is home to principally arctic-alpine vegetation, to which boreal elements are added in more sheltered valleys (KRG 2005). Labrador harbours a variety of ecosystems unique in the range of the Inuit homeland due to its transitional location between boreal forest and arctic tundra (Lopoukhine *et al.*1978; Meades *et al.* 2000). While travel south along the Labrador coast has allowed Inuit in Nunatsiavut relatively easy access to a wide range of plant and animal habitats (Kaplan & Woolett 2000), the somewhat colder environment of Nunavik means that Inuit living on the eastern Ungava Bay coast have fewer boreal plant species in their immediate vicinity (Blondeau & Roy 2004; Blondeau *et al.*2011; Environment Canada 2012a, b), though both groups have historically travelled south along the George River drainage basin (Richling 2000; KRG 2005; Woollett 2007).

1.1.3 The Inuit and their language Inuktitut

Just as biological diversity is at risk worldwide, the situation is equally sobering concerning linguistic and cultural diversity: of the 6000-7000 languages left in the world, it is estimated that hundreds are being lost every decade (Wuethrich 2000; Mufwene 2004). The trend is similar in Canada, with the majority of the country's Aboriginal languages at risk of disappearing; less than a quarter of the Aboriginal population is able to speak or understand an Aboriginal language (Norris 2007). Only Cree, Ojibwa, and Inuktitut have large enough speaker bases that their long-term survival is deemed likely (Norris 2007).

Although its knowledge and use are in decline, Inuktitut would appear to be doing fairly well – of the more than 50,000 Inuit in Canada, 69% reported having knowledge of Inuktitut in Canada's 2006 Census (Statistics Canada 2006a).The proportion is even higher (84%) when counting only Inuit living within Inuit Nunangat (Canada's North, the "Inuit homeland"), i.e. excluding those living in other urban or rural areas. However, these numbers hide some important differences in regional speaker fluency: while the proportion of the population able to hold a conversation in Inuktitut was reported at 99% in Nunavik and 91% in Nunavut (in 2006), the dialects spoken to either side are not nearly so widely spoken. To the

west, a mere 20% of the population in the Inuvialuit region of the Northwest Territories reported being able to hold a conversation in Inuktitut, and to the east in Nunatsiavut, fluency was only slightly higher at 27% (Statistics Canada 2006a).

Nunavik is home to 19% Canada's Inuit, with a population of 9,565 Inuit in 2006 (Statistics Canada 2006b). The nearly ubiquitous fluency in their own dialect Nunavik Inuktitut is in part due to the region's remoteness and inaccessibility by outsiders. Settlement into permanent villages only started in the latter half of the 21st century (KRG 2005).

Nunatsiavut, however, has had a markedly different colonization history, the Inuit there having had contact with Moravian missionaries from Germany and European whalers and fur traders since the late 18th century (Kaplan & Woollett 2000). Being the smallest of the Canadian Inuit territories, and with population of 2,160 in 2006, Nunatsiavut accounts for only 4% of the total Canadian Inuit population (Statistics Canada 2006b). Among other factors, the substantially longer period of European and southern Canadian influence has resulted in a smaller number of fluent speakers of the Nunatsiavut dialect (called Labrador Inuttitut). Perhaps even more threatening to the survival of the dialect is the paucity of fluent speakers in the younger generations. In Nunatsiavut, as in all other Inuit regions, the number of speakers of Inuktitut as a second language is on the rise, but the number of children who are growing up with Inuktitut as their mother tongue is declining (Norris 2007).

Unless recorded in the near future, many regional dialectal differences and specific terminology are at critical risk of disappearing since they are not being passed down orally from generation to generation as has been the Inuit tradition (Stewart 2000; Wenzel 2004). This is particularly true of terminology relating to the biotic environment, i.e. knowledge that would have been passed on to youth while out "on the land" – an opportunity which presents itself much less frequently since the shift to a more sedentary lifestyle and an English- or French-based Western education system (Tulloch 2004). So, while Inuktitut fluency is much higher in Nunavik than in Nunatsiavut, the trend of reduced transmission of botanical and environmental traditional knowledge and its terminology is still prevalent.

1.1.4 Traditional ecological knowledge

With the loss of language comes the associated risk of loss of detail recognized in the regional flora and environment (Shepard *et al.* 2001; Maffi 2005). While terminology is not the only indicator of a concept or awareness of some distinction in the biological world, the presence of a specific term is an obvious indicator of the existence of that idea in the culture that uses that language (Atran 1985; Berlin *et al.* 1973; Berlin 1992; Dougherty 1978). For example, while it is possible to be aware of and understand what the descriptive phrase "wet, semi-frozen semi-liquid snow" means and refers to in English, the term "slush" clearly and concisely captures the idea, explicitly showing that a salient category for that phenomenon exists for speakers of English.

The classic example that has become widely known is that of the hundreds of Inuit terms for snow (Berkes 2008, p. 59; Johns 2010). While perhaps less dramatic than the extensive terminology codifying the nuances between snow types, terminology pertaining to the botanical and zoological world, as well as to other aspects of the environment, provides evidence of cultural salience for those categories (Brown *et al.* 1979). The alternate perspectives afforded through the lens of a different language have the potential to reveal interesting and important insights into the nature of the biological and environmental world, as well as to generalities of human experience across cultures (Medin & Atran 1999; Burenhult & Levinson 2008). However, once a language is lost, those perspectives disappear.

In addition to providing alternate perspectives of the natural world, investigating Inuit traditional ecological knowledge (TEK) has important potential to be integrated into resource management, education, and conservation initiatives (Legat *et al.* 2001). This can provide a more holistic approach than offered by western science alone, while at the same time involving stakeholders and community members in decisions important to their livelihoods and lifestyles (Wenzel 1999).

1.1.5 Inuit ethnobotany and ethnoecology

With the effects of climate change and globalization impacting indigenous peoples worldwide, the Inuit and First Nations of Canada are no exception (Downing & Cuerrier 2011). Rapid changes to their traditional lands and lifestyles mean that their practice of

culturally important activities and specific traditional knowledge is at stake of disappearing (Nickels *et al.* 2005). Given the biological sensitivity of Nunavik and Nunatsiavut, and the trend of environmental and botanical language loss, it is imperative that ethnobiological research be conducted sooner rather than later, especially given the elderly demographic of those members of the communities who grew up on the land and are still fluent in Inuktitut and its specialized ecological terminology and knowledge.

Various ethnobotanical studies have been done across the Arctic and are summarized in Table 1.1. Much has been done in the western Arctic, especially in Alaska, but relatively little in the east. Turner (1894) and Hawkes (1916) mentioned some plant uses by Inuit in their historical ethnologies of the Ungava District and Labrador, respectively. Several medicinal uses of plants were also documented in Labrador by Peacock (1947). More recently, plant names and uses have been recorded for multiple communities in Nunavik, including Kangirsujuaq, Umiujaq, Kuujjuarapik, and Kangiqsualujjuaq (Cuerrier & Elders, see table below). In Labrador, however, no ethnobotanical work has been published since Peacock and Hawkes in the first half to the 20th century. Several dictionaries addressing eastern dialects of Inuktitut contain some botanical terminology, but some of these are outdated, and none are specifically ethnobotanical.

Table 1.1 Inuit ethnobotany references.

Region	Inuit Ethnobotany	Inuktitut Dictionaries
Alaska	Gorman 1896; Anderson 1939; Alexander 1949; Bank 1951a, b: Oswalt 1957; Lantis 1959; Young & Hall 1969; Nickerson *et al.* 1973; Ager & Ager 1980; Fortuine 1988; Griffin 2001; CAFF 2006	Webster *et al.* 1970; Wells & Kelly 1975; Jacobson & Centre for Alaska Native Language 1984; Fortescue *et al.* 2010
Central Arctic: Northwest Territories and Nunavut	Ootoova *et al.* (2001); Black *et al.* (2008): medicinal plants Dritsas (1986): ethnobotany and folk taxonomy of Inuit in Igloolik Birket-Smith (1976): lists of plant names Paillet (1973): ethnobotany and folk taxonomy of Inuit in Baker Lake	Thibert 1958; Lowe 1983, 1984; Spalding & Kusugaq 1998
Nunavik	Cuerrier & Elders of Kangiqsualujjuaq (2012a, b); Cuerrier & Elders of Umiujaq and Kuujjuarapik (2011); Cuerrier & Elders of Kangirsujuaq (2005, 2011); Cuerrier & Avataq Cultural Institute (2004); Avataq Cultural Institute (1990, 1991, 1992, 1994); Turner (1894)	Dorais 1978, 1983; Schneider 1970, 1985; Qumaq Allatangit *et al.* 1990

Labrador	Hawkes (1916); Peacock (1947)	Erdmann 1864; Peacock 1974; Memorial University of Newfoundland 1978; Andersen *et al.* 2007
Arctic - various	Smith (1973); Wilson (1978)	
Greenland	Le Mouël 1969; Birket-Smith 1976; de Bonneval & Robert-Lamblin 1979)	Gessain *et al.* 1982

Much less in terms of ethnoecology has been done in Northern Canada. Table 1.2 summarizes the major works addressing landscape ethnoecology of other North American hunter-fisher-gatherer peoples. Only Collignon (2006) has specifically addressed Inuit geographies and place names, but with the Innuinait in the Central Canadian Arctic. In the eastern Arctic, Rankin *et al.* (2008) and Wheeler (1947) report place names in Labrador, and just recently Furgal *et al.* (2010) and Pulsifier *et al*. (2012) have started projects looking at Inuit geospatial ontologies in Nunatsiavut for application within Geographic Information Systems (GIS). No ethnoecological work that we know of has been done in Nunavik, but various studies have recorded Inuit toponyms in this region.

Table 1.2 Ethnoecology references.

Region	**Northern Ethnoecology**
Alaska	* Kari (1987,1989, 1996): Athabaskan geographic, toponymic and hydronymic knowledge in Alaska
northwestern BC and Yukon	* Johnson (2000, 2008, 2010): landscape ethnoecology for Gitksan and Witsuwit'en in northwest BC and Kaska Dena in southern Yukon; * Cruikshank (1981, 1990): Athapaskan place naming in Yukon
Central Arctic: Northwest Territories and Nunavut	Johnson (2008, 2010): Gwich'in in the Mackenzie Delta Region, and Sahtu'ine' at Great Bear Lake * Legat *et al*. (2001): Dogrib place names in NWT * Collignon (2006): Inuinnait place names and geographies * Aporta (2009); Krupnik *et al*. (2010); Heyes (2011): sea ice terminology and knowledge
western USA	* Hunn & Selam and Family (1990): Sahaptin topographic, hydrograpic, biological terms in Columbia Basin
Ontario	* Davidson-Hunt and Berkes (2003) Algonquian biogeophysical landscape vocabulary in northwestern Ontario
Nunavik	Müller-Wille 1984, 1987, 1989, 1991; Müller-Wille & Müller-Wille 1983; Saladin d'Anglure 1968; KRG 2011
Labrador	Rankin *et al.* (2008): Inuit place names from historical maps of Southern Labrador Wheeler (1953): Inuit place names from Northern Labrador Pulsifier *et al*. (2012); Furgal *et al*. (2010): Inuit geospatial ontologies in Nunatsiavut

While ethnobotanical work from other Inuit groups and place names in Labrador provide interesting background, traditional botanical and ecological knowledge of the Inuit in Nunatsiavut has yet to be published. Given the rapid rate at which languages, cultures and biological species are disappearing throughout the world, the need for ethnobiological research is immediate and widespread (Albuquerque *et al.* 2008; Kaua'i Declaration 2007), and the case is no different for Canada's northeastern Inuit territories.

1.2 Objectives and hypotheses:

This project thus examines two major aspects of Inuit ethnobiology in northeastern Canada: comparative ethnobotany in Nunavik and Nunatsiavut, and landscape ethnoecology in Nain, Nunatsiavut.

1.2.1 Ethnobotany

We aimed to record as exhaustively as possible the names and uses of plants known by Nunatsiavut Inuit in their local dialect Labrador Inuttitut. Additional information about each plant was sought, including: knowledge about the ecology/habitat of each plant, names in Labrador Inuttitut for plant parts, meanings of the names (if linguistically analyzable), and any interesting and relevant stories or personal memoires about the plant. Plant specimens were sought to confirm identifications and were added as vouchers to the Marie-Victorin Herbarium (MT) for reference.

Plants used in Nain were then compared to those used in the geographically close community of Kangiqsualujjuaq, Nunavik. Although Inuit of Kangiqsualujjuaq live in a more northerly and somewhat colder environment, and have had a different socioeconomic background, given the similarity of a) the flora to which both groups have had access, b) the high overlap of lexicon and mutual intelligibility of their Inuktitut dialects, and c) their history of cultural exchange, a high proportion of plant species, uses, and names were expected to be the same in both communities.

1.2.2 Ethnoecology/landscape perception

For the ethnoecology part of the project, we aimed to answer the question: What kinds of places or habitats do Inuit of Nunatsiavut recognize and name? Terms in Labrador Inuttitut

pertaining to their local environment and the habitats they distinguish were recorded to determine how they categorize and understand their landscape. Although toponyms are often more straightforward to elicit, the focus here was to uncover knowledge of generic place *kinds* rather than names for *specific* places (toponyms).

1.3 Project permissions and ethics:

Approval for this project was granted by the Faculty of Arts and Science Research Ethics Board of the University of Montreal (Comité d'éthique de la recherche de la Faculté des arts et des sciences, CÉRFAS; Appendix I). Permission was granted for work in the community and for collection of plants by the Nunatsiavut Government under Land Use permit no. LIL030017PR (Appendix II). All work with participants was done under prior informed consent (Appendix III).

Chapter 2: Comparative Ethnobotany

Inuit plant use in northeastern Canada: Comparative ethnobotany in Kangiqsualujjuaq, Nunavik and Nain, Nunatsiavut

Courtenay Clark and Alain Cuerrier

Abstract

In northeastern Canada, plants are an important part of traditional Inuit life, being used for food, tea, medicine, fuel, construction, cleaning, etc.. Based on semi-structured interviews with 35 informants (mostly Elders), we document and compare plant names and uses in Nain, Nunatsiavut and Kangiqsualujjuaq, Nunavik. Despite different dialects of Inuktitut and socioeconomic histories, plant names and uses were expected to be similar between communities owing to common boreal-subarctic environments and close cultural ties. Both communities reported the same number of taxa, with equivalent proportions of vascular/non-vascular taxa, growth forms, use categories, and medicinal uses. Forty-three species were used in each community, for a total of 78 species from 39 families. Despite high overlap in species distributions, only 35% of non-vascular species and 56% of vascular species were used in both communities. Correspondence was higher at the family level (64% of non-vascular and 75% of vascular families shared). Ericaceae was the most-used family, followed by Rosaceae, Pinaceae, Salicaceae, and phylum Bryophyta. Ericacea, Pinaceae, and Salicaceae also had the most medicinal species, top used ones being *Larix laricina*, *Rhodiola rosea*, *Juniperus communis*, *Picea mariana*, and *Vaccinium vitis-idaea*. Thirteen of 30 medicinal species were shared between communities; among these there was low correspondence regarding the conditions for which they were used. Edible taxa were shared the most at 52%. Plant uses unique to either Nain or Kangiqsualujjuaq may reveal separate bodies of traditional knowledge, or reflect an overall reduction of ethnobotanical knowledge in the Arctic due to relatively recent lifestyle changes.

Keywords: ethnobotany, plant uses, Inuit, Inuktitut, Nunavik, Nunatsiavut, traditional knowledge, Labrador

2.1 Introduction

Biocultural diversity is at risk throughout the world (Maffi 2005; Cuerrier & Arnason 2008). Globalization and cultural shifts mean that most indigenous languages worldwide are declining, and Inuktitut (the language of the Inuit) in the Canadian Arctic is no exception (Norris 2007). The loss or degradation of a culture's language often entails the disappearance of much of that culture's traditional knowledge, a phenomenon which has already started to become apparent in the Arctic, most obviously in the navigation and travel skills of younger hunters (Pearce *et al.* 2011). The health and food security of indigenous peoples worldwide is also being affected by climate change. Global warming is creating rapid environmental changes that are reducing the ability of Inuit to use traditional knowledge to make reliable predictions about the environment (Downing & Cuerrier 2011). Since many species in the Subarctic and Arctic are already at the margins of their distributions, temperature changes and the environmental variability they create are also causing increased stress to the biodiversity of these regions (Walsh 2008; Hampe & Petit 2005). Since biological, linguistic, and cultural diversity are all intrinsically linked, threats to any one type of diversity also constitute threats to the others; Canada's North thus faces the challenge of compounding stresses to its biocultural integrity.

Healthy ecosystems and the biodiversity they harbour are critical to the well-being of human populations, and more directly so for indigenous groups still living more closely with their traditional lands. Inuit of the Arctic and boreal-arctic transition zones of Nunavik and Nunatsiavut have occupied their territories in northeastern Canada for at least the last 300 years, and until about the middle of the 20th century, their diet was based mainly on sea mammals, fish, and caribou. Although the use of plants in Inuit culture has received much less attention than hunting and fishing activities in the literature, plants nevertheless played an important role in the traditional Inuit lifestyle, as can be seen from archaeological and paleoethnobotanical studies (Kaplan & Wollett 2000; Woollett 2007; Zutter 2009), ethnographies (e.g. Turner (1894), Hawkes (1916), various Moravian missionaries, European explorers, fishermen, etc.), and Inuit oral history (Brice-Bennett 1977). Various plant species (e.g. berries, young herbaceous shoots/leaves, tuberous roots, seaweeds) added an important

source of vitamins and antioxidants to the otherwise protein- and fat-rich diet. Most species were consumed opportunistically, as a raw snack picked while travelling on the land, but some plants were also fermented, dried, or used to make 'tea' (infusions), and occasionally provided crucial sources of emergency food. Many plants were used medicinally, both as treatments for specific ailments or simply for 'good health'. Various trees, shrubs, mosses and lichens were used as fuel for fire, providing both heat and light. Trees, woody shrubs, and grasses were used for construction. Still other plants were used for cultural activities, especially more showy, flower-bearing species. While some species are abundant and fairly ubiquitous, others only occur in specific habitats (e.g. coastal, protected valleys, areas with low shrub cover, etc.); many Inuktitut toponyms specifically indicate where certain plants are found, highlighting their importance to Inuit culture (Aporta 2009).

To date, the most extensive work on Inuit ethnobiology has focused on the far western Arctic, with various publications throughout the last century addressing Alaska specifically (e.g. Gorman 1896; Anderson 1939; Alexander 1949; Bank 1951a, b; Oswalt 1957; Lantis 1959; Young & Hall 1969; Nickerson *et al.* 1973; Ager & Ager 1980; Fortuine 1988; Griffin 2001; CAFF 2006). Various publications have touched on the topic of ethnobotany in the central Canadian arctic (Northwest Territories and Nunavut), addressing such topics as lists of plant names (Birket-Smith 1976), the ethnobotany and folk taxonomy of Inuit in Igloolik (Dritsas 1986) and Baker Lake (Paillet 1973), and medicinal plants (Ootoova *et al.* 2001; Black *et al.* 2008).Plant names and uses by Inuit have also been documented in Greenland (Le Mouël 1969; Birket-Smith 1976; de Bonneval & Robert-Lamblin 1979). Smith (1973) and Wilson (1978) summarise Inuit ethnobotany across various regions of the Arctic. Various dictionaries for dialects in Alaska (Webster *et al.* 1970; Wells & Kelly 1975; Jacobson & Centre for Alaska Native Language 1984; Fortescue *et al.* 2010), the central Arctic (Thibert 1958; Lowe 1983, 1984; Spalding & Kusugaq 1998), and Greenland (Gessain *et al.* 1982) also contain terminology relating to plants.

As far as concerns the Inuit of eastern Canada, some plant uses were addressed in early ethnologies by Turner (1894) for the Ungava District (eastern part of present day Nunavik, in northern Quebec), and Hawkes (1916) and Peacock (1947) for Labrador. Since then, the

ethnobotany and folk taxonomies of various communities in Nunavik have been compiled (Avataq Cultural Institute, 1990, 1991, 1992, 1994; Cuerrier & Avataq Cultural Institute 2004; Cuerrier & Elders of Kangirsujuaq 2005, 2011; Cuerrier & Elders of Umiujaq and Kuujjuarapik 2011; Cuerrier & Elders of Kangiqsualujjuaq 2012a, b). In the bordering Inuit territory of Nunatsiavut (northern Labrador), however, very little has been published with regards to ethnobotany. Some botanical terminology can be found in various Inuktitut-English/-French/-German dictionaries published in the last 150 years; several specifically addressing Labrador (Erdmann 1864; Peacock 1974; Memorial University of Newfoundland 1978; Andersen *et al.* 2007), others grouping all regions of the eastern Canadian Arctic together but using the dialect of northern Quebec/Ungava as a base (Dorais 1978, 1983; Schneider 1970, 1985; Qumaq Allatangit *et al.* 1990), while others simply treat Inuktitut as an arctic-wide language with little distinction made between the significant regional dialectal differences. While these provide a valuable starting point, many are outdated, incomplete, and in some cases, inaccurate.

The frequent grouping of Nunavik and northern Labrador in dictionaries is testament to the high mutual intelligibility between speakers from these two regions, stemming from the common morphology and syntax of their speech, and relatively few lexical differences (Dorais 1978). They nevertheless speak distinct dialects of Inuktitut, the most noticeable differences being phonological and morphophonological in nature, in addition to having different writing conventions[1] (Dorais 2010). Moreover, different contact histories also exist between the two groups, Moravian missionaries having established missions on the coast of Labrador starting in the late 18th century, while permanent settlements were not set up on the eastern coast of Ungava Bay until the second half of the 20th century (Brice-Bennett 1977). This has meant a significantly longer period of European contact and settlement for Labrador Inuit, resulting in a greater influence of European languages and western education system, which is reflected by a significantly smaller number of speakers of the Labrador dialect Inuttitut, especially among

[1] Additional detail on dialectal differences and writing conventions in Nunavik and Labrador can be found in Dorais 2010. Note that the glottal fricative ‘q’ in Nunavik is transcribed as a capital ‘K’ in Nunatsiavut (a different letter than the velar stop, small ‘k’).

younger generations (Statistics Canada 2006; Norris 2007). Nevertheless, the two territories have historically and continue to have important liaisons, similar to other geographically close Inuit groups in other parts of the Arctic (Collignon 2006). Shared routes through the Koroc River valley for inter-coastal travel provided a foundation for long-distance social networks, and meetings along the route while travelling or at culturally important places (e.g. Ramah metachert outcropping, or good hunting areas) would have facilitated language and knowledge sharing (KRG 2005).

Environmental differences also exist between the two groups' territories, the Ungava Bay coast being more northerly and thus somewhat colder. Compared to other, more productive biomes, the boreal-subarctic transition zone of north-eastern Quebec/northern Labrador houses a relatively small number of plant families and species, most of which occur in both regions (Meades *et al.*2000; Blondeau & Roy 2004; Blondeau *et al.* 2011). However, since Inuit have traditionally travelled great distances throughout their territories (Aporta 2004), Labrador Inuit may have traditionally had easier access to a greater number of plant species than the Inuit living on the coast of Ungava Bay, given that species richness increases toward the south. Even supposing that both groups travelled equivalent distances along their coasts, moving west along the coast of Ungava Bay would not significantly increase access to different species since the ecozone does not change significantly, while traveling south along the Labrador coast would give access to various different types of habitats, transitioning into boreal forest.

Based on ethnobotanical interviews, we document plant names and uses from two Inuit communities: Nain in Nunatsiavut, Labrador and Kangirsualujjuaq in Nunavik, Quebec. The similarity of their floras and lexicons, along with a history of cultural exchange, contrasted with differing socioeconomic histories and ease of access to the more diverse flora of southern Labrador, make these two communities an interesting case study for comparison. We examine the diversity of plants named and used in the two communities, highlighting similarities and differences, with a special focus on medicinal uses. A goal of this ethnobotanical research is to provide a means of conserving the invaluable biocultural diversity of Canada's north-eastern Arctic.

2.2 Methods

2.2.1 Study area

This study took place in two communities in northeastern Canada (Figure 2.1). Kangiqsualujjuaq (58°41' N, 65°57' W) is the easternmost village of the Inuit territory Nunavik (province of Quebec), located 25 km inland from the east coast of Ungava Bay at the mouth of the George River, with a population of 874 in 2011 (Statistics Canada 2012a). About 340 km to the south-east (Natural Resources Canada 2012a), on the coast of the Labrador Sea, lies Nain (56°33' N, 61°41' W), the northernmost village of the Inuit territory Nunatsiavut (province of Newfoundland and Labrador) with a population of 1,188 in 2011 (Statistics Canada 2012b). Both communities are basically at sea level, with Ungava Bay being exceptional for having one of the highest tidal ranges in the world. Nain has particularly high precipitation for its low elevation and consistently cold climate, with an average annual rainfall of 400.4 mm and average annual snowfall of 492.2 cm (compared to Kuujjuaq, close to Kangiqsualujjuaq, at 526.8 mm total precipitation). Nain is at the border between subarctic and polar climate, with average low in the winter of -23°C and average high in the summer of 16°C, with a daily mean temperature of -3°C (Environment Canada 2012a). Kangiqsualujjuaq has a similar climate, though slightly colder due to its more northerly location (Environment Canada 2012b). Both communities fall within the Canadian Shield plateau physiographic region, with Nain being at the northern edge of sporadic discontinuous (10-50%) permafrost, Kangiqsualujjuaq within extensive discontinuous (50-90%) permafrost, and an area of continuous (90-100%) permafrost inland between the two communities (Natural Resources Canada 2012b).

Figure 2.1 Study sites. Kangiqsualujjuaq, Nunavik, Quebec and Nain, Nunatsiavut, Labrador.

Source: *Eastern Canada*. 58°41' N, 65°57' W and 56°33' N, 61°41' W. Google Earth, 2012.

2.2.2 Data collection

Data was collected using semi-structured interviews with local informants, a well-established methodology for ethnobotanical investigation (Martin 1996). Both plant specimens (fresh and dried/pressed) and photos were used to guide the discussions. Each interview lasted between 30 minutes to 2 hours, depending on informants' knowledge and availability, with care taken to avoid informant fatigue. Interviews were conducted in English and Inuktitut in both communities, with the help of local interpreter/translators when needed. Interviews took place between August 6th – 27th, 2004 in Kangiqsualujjuaq and between July 19th – August 12th, 2010 in Nain, both in informants' homes or in an office, as well as in the field. Informants were mostly Elders, identified and recruited based on suggestions of our interpreters and other community members, as well as four public health workers in Nain. Interviews were audio and video recorded, informants consenting. In Kangiqsualujjuaq, 10 informants were interviewed (6 women, 4 men, median age 69.5). In Nain, 22 interviews took

place with 25 informants (16 women, 9 men, average age 68, median age 64), for over 23 hours of recorded audio. Our spelling of Inuktitut terms is based on the standardized Labrador Inuttitut writing system as outlined in the dictionary by Andersen *et al*. (2007).

Approval for this project was granted by the Faculty of Arts and Science Research Ethics Board of the University of Montreal (Comité d'éthique de la recherche de la Faculté des arts et des sciences, CÉRFAS). Permission was granted for research and the collection of plants in and around Nain by the Nunatsiavut Government under Land Use permit no. LIL030017PR, and by the Avataq Cultural Institute for Nunavik. All informants participated under prior informed consent, having been explained the objectives and methodology of the project, and of their right to withdraw from the study at any point.

2.2.3 Plant collection and identification

Plant specimens used in the interviews were collected within several kilometres of each community, except for Kangiqsualujjuaq where collecting also happened near Tasirkallak, a lake north of Kuururjuaq(Koroc River); voucher specimens have been added to the Marie-Victorin Herbarium (MT) at the Montreal Botanical Garden for reference. Occasionally informants described species for which a voucher specimen was unavailable, in which case these were identified using photos, or a best guess was made based on the description and knowledge of species in the area and are marked with a "?" in the analysis.

2.2.4 Data analyses

Plants that were recognized by informants are only reported here if they were attributed names and/or uses (not if they were simply recognized as occurring in the region). Plants that were named but not used are not included in analyses. Introduced or cultivated garden plants were also omitted from the analysis.

In order to better represent the Inuit botanical classification system and to avoid over- or under-representation of the number of species used in each community, some taxa were combined if they had both an Inuktitut name in common and the same uses, such as: seaweeds, kelps, and algae; lichens and rock tripes; mushrooms and other fungi; and various *Salix* species. Since multiple species, genera, families, or other polyphyletic divisions were often grouped together in Inuktitut for non-vascular taxa (i.e. mosses, clubmosses, lichens, fungi,

seaweeds, algae, and kelps), and since the degree to which these taxa were identified (e.g. to genera, family, class, or phylum) between the two communities was unequal, for some analyses, non-vascular taxa were addressed separately from the vascular taxa.

Since no extensive ethnobotanical work had previously been documented for Nunatsiavut, except for some brief accounts from early 20th century ethnologists (e.g. Hawkes 1916; Peacock 1947), our emphasis was to elicit names and uses for the greatest range of taxa possible. If after several interviews, no new names or uses were recorded for a particular species, that species was no longer emphasized in subsequent interviews in the interest of discussing other species which had not yet been named or reported as being used. This allowed a greater number of species to be presented to informants over the course of our time-constrained interviews, without excluding the more well-known species. Since we purposefully did not discuss every species with every informant, the use reports are necessarily an underrepresentation for the most commonly used plants. For this reason, measures such as the informant consensus factor (ICF) and fidelity level (FL) were not calculated, since both require information pertaining to the number of times species and uses are cited by individual informants (i.e. the number of use reports per category for ICF, and the number of informants independently citing a species for a particular/any use). Pearson's Chi-Square test (alpha = 0.05) was used to compare species, families, uses, and growth forms between the two communities (using statistical program JMP 8). Appendix IV shows expanded statistical tests done.

2.3 Results

2.3.1 Diversity of taxa used by Inuit

Seventy-eight discrete taxa were recognized by Inuit: 58 in Nain and 59 in Kangiqsualujjuaq (Table 2.1.1). Fifty-three of these correspond directly to Linnaean species. The remaining 25 taxa correspond to categories more inclusive than a single species (see Table 2.2 for the breakdown). For the purposes of analysis in this paper, the "higher taxa" in Table 2.2 were counted as families and the "lower taxa" as genera and species. Almost three-quarters of the reported families were used in both communities, while only half the species

Table 2.1.1 Vascular plant names and uses in Nain and Kangiqsualujjuaq.
In the USE columns, **bolded terms** indicate uses common to both communities; details for combustible, construction, cleaning, game, and other uses are *italicized.*
Abbreviations: K - Kangiqsualujjuaq, N - Nain, KN - both Kangiqsualujjuaq and Nain, TB - tuberculosis, sp. - species (singular), spp. - species (plural), subsp. - subspecies, ? - indicates uncertainty

Family	Latin name	English and French names	Inuktitut lexicon	Plant type	Use - edible	Use - medicinal	Use - combustible, construction, cleaning, game, other	Comments: term meanings, other referents, part names
Adoxaceae	*Viburnum edule* (Michaux) Rafinesque	squashberry, highbush cranberry; viorne comestible		herb	N- jelly			
Asteraceae	*Achillea millefolium* Linnaeus	common yarrow; achillée millefeuille	***(K) kakagutiit***	herb	**KN- flowers**			K- ***kakagutiit*** also refers to: *Diapensia, Saxifraga, Sibbaldiopsis*
	Arnica angustifolia Vahl	narrow-leafed arnica; arnica à feuilles étroites	***(N) igutsait nikingit, Kusaknikingit?***	herb				N- ***igutsait nikingit*** = "bee/bumblebee food"
	Matricaria discoidea de Candolle	pineappleweed; matricaire odorante		herb			N- tea	
	Taraxacum spp. F.H. Wiggers	dandelion; pissenlit	***(K) airarsajaq, suputaujalik, airaq*** ***(N) piguttuk***	herb	K- root N- leaves: raw, boiled; flowers: syrup; "dandelion wine"			K- ***airaq*** = "root" N- ***piguttuk*** = "flower"
Betulaceae	*Alnus viridis* subsp. *crispa* (Aiton) Turrill	American green alder; aulne crispé	***(K) urpigaq, urpigak, urpituinnak, urpilaq, qijuvik, urpik*** ***(N) mappattak, ippialuk, uppigak/uppigait***	shrub		N- green cones: TB prevention	**KN- combustible (KN-** ***firewood;*** *K- smoking arctic char*); K- tea (*old leaves*); N- construction (*wind shelter*); N- other (*house scent*)	K - ***urpik*** = "branch/shrub"; N- ***mappattak*** = "leaf"
	Betula glandulosa Michaux	dwarf birch; bouleau glanduleux	***(K) avaalaqiaq*** ***(N) avaalaKiak, avaalakiak, naKutik, sappatak***	shrub	N- young leaves, roots		**KN- construction** (*K- branches: mattress; roots: cord/rope; N- mattress/ground cover*); **KN- combustible** (*K- wood; N- firewood*); K- game (*roots: slingshot*)	N- ***naKutik*** , ***sappatak*** = "leaves/shrub" K- catkin: ***avaalaqiaq qimminguanga***
	Betula papyrifera Marshall	paper birch; bouleau à papier	***(N) Kaigulik***	tree			N- combustible (*firewood; bark: firestarter*); N- construction (*seal skin drying frames, tool handles*)	N- ***Kaigulik*** = "harp seal" (because, like a harp seal, in the early summer it will sink in the sea (the seal is skinny), but in the late fall it when it freezes it will float (like the fattened seal after feeding all summer)
Boraginaceae	*Mertensia maritima* (Linnaeus) Gray	oysterleaf, mertensia; mertensie maritime	**(N)** ***malitsuagak, malitsuak***	herb	N- leaves			
Campanulaceae	*Campanula rotundifolia* Linnaeus	bluebell, harebell; campanule à feuilles rondes	***(K) tikiujaq*** ***(N) tikkiujak, tikkingguat, sivaningguak, piuguniannak***	herb			**KN- game** (*N- place on fingers*)	N- ***tikiujak*** = "thimble-like" (***tikkik*** = "index finger")
Caprifoliaceae	*Linnaea borealis* Linnaeus	twinflower; linnée boréale	***(N) pangutukuluk, tikkiujak, kutsojak piguttuk***	herb				N- ***pangutukuluk*** = "crawling"

Caryophyllaceae	*Honckenya peploides* (Linnaeus) Ehrhart	seabeach sandwort; honckénye faux-pourpier	***(K) maliksuagaq, maliksuaraq, malitsuaraq*** ***(N) malitsuagak, malitsuagait***	herb	K- edible N- leaves, flowers		N- game (*play-money*)	N- ***malik*** = "wave"
	Silene acaulis (Linnaeus) Jacquin	moss campion; silène acaule	***(K) anurisiutik, quaraq, airaq***	herb	K- root			K- ***airaq*** = "root"
Cornacea	*Cornus canadensis* Linnaeus	bunchberry; quatre-temps	***(K) saunilik, urpikulik, urpiqulik, aupaalutuk*** ***(N) sigalak/sigalâk, imukkuluk, kimminaujak, KaKuttak***	herb	K- fruits; N- berries: raw, fermented for intoxication		K- other (*leaves: insect repellent*); N- game (*rub leaves to get tingly feeling*)	K- berry: ***aupaalutuk*** ; N- berry: ***sigalak/sigalâk*** , ***imukkuluk*** , ***kimminaujak***
Crassulacea	*Rhodiola rosea* Linnaeus	roseroot; orpin rose	***(K) tullirunaq, tullirunnak, utsuqammat, utsuqamma, utsutamaak, utsutamaaq, utsuhamuq, ursuharmmat*** ***(N) tulligunnak, utsuKammak***	herb	K- edible; N- root, young leaves, flowers (less commonly)	K- adaptogen ("allows body to better fight sickness"); N- root: poultice for wounds/ cuts/ boils/ infections, impetigo and skin problems, eye infection, toothaches, colds, "good for the brain"		K- leaves: ***uquajatuinnait*** ; rhizome: ***utsuqammat*** , ***utsuqamma*** , ***utsutamaak*** , ***utsutamaaq*** , ***utsuhamuq*** , ***ursuharmmat*** ; N- root: ***utsuKammak***
Cupressaceae	*Juniperus communis* Linnaeus	ground juniper; génévrier commun	***(K) qisirtutaujaq*** ***(N) Kisiktutaujak, Kisiktutik, Kilagittuk?***	shrub	N- "homebrew"	K- whole plant, stronger with berries: tea as a general tonic especially for TB, urinary tract infections, dermatological problems; diuretic; cure-all N- boughs: tea for scurvy, colds, sickness, cough; berries: pain relief, considered poisonous in excess	N- other (*Christmas tree*)	K- ***qisirtauti*** = "spruce branches" N- berries: ***kigutanginnaujak*** , ***kigutanginnak Kisiktutaujak*** , ***ummaujak***
Cyperaceae	*Eriophorum* spp. Linnaeus (*E. angustifolium* Honckeny, *E. scheuchzeri* Hoppe)	cottongrasses (narrow-leaved cottongrass, one-spike cottongrass); linaigrettes (linaigrette à feuilles étroites, linaigrette de Scheuchzer)	***(K) suputaujalik, suputisaq, suputaujaq, suputik , ivitsukak*** ***(N) suputik, suputaujak, pualujak, ivitsukak tuttuk***	grass		K- swab for newborns' navels, bandage/dressing covered with a lukewarm cotton cloth N- earaches, swab/bandage, newborns' bellybuttons	**KN- combustible** (*N- firestarter*); **KN- other (*flowers/cotton puffs: seasonal indicator - when the seeds start blowing off it is time to hunt caribou because their hides will be best, i.e. thick and with little damage from insects*)**	K- silk: ***qakurtalik*** ; ***suputaujalik*** also refers to *Taraxacum* spp. with similar fluffy flower heads when gone to seed N- ***suputik*** = "cotton/wool"
Diapensiaceae	*Diapensia lapponica* Linnaeus	diapensia; diapensie de Laponie	***(K) kakagutiit, airaq*** ***(N) sivulipakuluk***	herb	K- roots, flowers		N- other (*seasonal indicator: first flowers to bloom in the spring*)	K- root: ***airaq*** ; flower: ***kakagutiit*** ; ***kakagutiit*** : term used for several plants, all with small white flowers; ***airaq*** : taproot, likely named after 'type species' *Oxytropis campestris*
Dryopteridaceae	Dryopteris expansa (C.Presl) Fraser-Jenkins & Jermy		***(K) napaartujaapik***	fern				

			(N) napâttujak				N- other (*bookmark; gift to someone you love/like*)	
Ericaceae	*Arctous alpina* (Linnaeus) Niedenzu	alpine bearberry; busserole alpine	***(K) kallaqutik*** ***(N) kallak***	herb	K- edible? (berries) N- edible? (berries: not generally eaten; jam?)		**KN- other (*berries: necklace*)**	K- berry: ***kallak*** , ***kallait*** ; N- whole plant: ***kallaKutik*** ; berry: ***kallak*** = "thunder" (because their bellies would rumble when they ate them)
	Cassiope tetragona (Linnaeus) D. Don	four-angled mountain heather; cassiope tétragone	***(K) itsutik ?***	herb			K- cleaning (*brush for clothing?*)	
	Empetrum nigrum Linnaeus	black crowberry, blackberry; camarine noire	***(K) paurngaqutik*** ***(N) paungak, paungngak, paungatuinnak***	shrub	K- berries N- berries: raw, jam, pies, cakes, pudding, custard, "homebrew", with codliver oil	N- whole plant: boiled for TB	**KN- construction** (*K- mattress; N- whole plant: boiled for dye*); **KN- combustible** (*N- boughs: firestarter, firewood, smoking char/ salmon/ trout, emergency smoke signal, smoke as mosquito repellent*); K- tea; K- other (*insect repellent*)	K- berry: ***paurngaq*** , ***paurngait*** ; N- whole plant: ***paungaKutik*** ; berry: ***paungak*** , ***paungngak*** , ***paungatuinnak***
	Kalmia polifolia Wangenheim	bog laurel; kalmia à feuilles d'andromède	***(N) kutsojak piguttuk***	herb				N- ***kutsojak piguttak*** = "pink flower"
	Moneses uniflora (Linnaeus) A. Gray	one-flowered wintergreen; monésès uniflore		herb			N- tea (*leaves: tea flavour*)	
	Rhododendron groenlandicum (Oeder) Kron & Judd	common Labrador tea; thé du Labrador	***(K) mamaittuqutik, mamaittuqutik mikinirsaq, misartaq*** ***(N) mamaittuKutik, mamaittuKutet***	shrub		K- usually just dried leaves, also stems, roots: tea for coughs, colds, TB, tonic for better respiration N- leaves, stems: tea for colds especially with phlegm, sickness, TB	**KN- combustible** (*N- leaves: smoked*); **KN- tea** (*N- leaves, stems*)	
	Rhododendron lapponicum (Linnaeus) Wahlenberg	Lapland rosebay; rhododendron de Laponie	***(K) mamaittuqutik, mamaittuqutik mikinirsaq***	shrub			K- tea (?)	note: this tea is potentially toxic
	Rhododendron tomentosum Harmaja	northern Labrador tea; petit thé du Labrador	***(K) mamaittuqutik, mamaittuqutik mikinirsaq*** ***(N) mamaittuKutik, mamaittuKutet, mamaitukuluk***	shrub		K- usually just dried leaves, also stems, roots: tea for coughs, colds, TB, tonic for better respiration N- aerial parts: tea for fever, flu, colds, TB	K- combustible; **KN- tea** (*N- aerial parts*)	
	Vaccinium caespitosum Michaux	dwarf bilberry, dwarf blueberry, 'ground hearts'; airelle gazonnante	***(K) Kigutanginnalikait, nalikak, kigutanginnaqutik, kiqutingaqauti, kigutangirnaqutik*** ***(N) pungajuk, kigutanginnakuluk***	shrub	K- edible N- berries: raw, jam	K- boughs, young leaves: tea for diarrhea		(note: these terms may also include a low-growing prostrate form of *V. uliginosum* .) K- berry: ***kigutanginnaq*** , ***kigutangirnnaq*** (singular: ***kigutanginnak*** ; dual: ***kigutanginnaak*** ; plural: ***kigutanginnaluit*** ; green: ***kigutanginnasait*** ; blue: ***kigutanginnait***) N: ***pungak*** = "close to the ground", berry: ***pungajuk*** , ***kigutanginnakuluk***

	Vaccinium oxycoccos Linnaeus	bog cranberry, marshberry; canneberge commune	***(N) kimminaujak***	herb	N- berries: jam, "too sour to eat raw"			N- berry: ***kimminaujak*** = "like redberries (*Vaccinium vitis-idaea*)"
	Vaccinium uliginosum Linnaeus	bog bilberry, alpine blueberry; airelle des marécages	***(K) kigutanginnaqutik, kiqutingaqauti, kigutangirnaqutik***	shrub	K- edible	K- boughs, young leaves: tea for diarrhea		(note: *V. uliginosum* often grows upright, but may also form a low-growing mat. This prostrate form is included with the *V. caespitosum* entry above.) K- berry: ***kigutanginnaq***, ***kigutangirnnaq*** (singular: ***kigutanginnak***; dual: ***kigutanginnaak***; plural: ***kigutanginnaluit***; green: ***kigutanginnasait***; blue: ***kigutanginnait***)
			(N) kigutanginnak, kigutanginnait, kigutanginnakuluk		N- berries: raw, cooked, jam; flowers; leaves		N- construction (*berries: dye*)	N- whole plant: ***kigutanginnaKutik***, ***kigutanginnaKautik***; berry: ***kigutanginnak***, ***kigutanginnait***, ***kigutanginnakuluk***; stem: ***Kisittotik***; leaves: ***pigutsiak***
	Vaccinium vitis-idaea Linnaeus	mountain cranberry, partridge berry, lingonberry, redberry; airelle rouge	***(K) kimminaqutik, kimminaqautik***	herb	K- edible	K- berries: oral problems, especially thrush, coughs; juice from berries: eye infections; seed inside the berries: thrush, stomach aches, sore throat; whole plant: cavities		K- berries: ***kimminaq***, ***kimminaak***, ***kimminait***
			(N) kimminak, pungajuinnika?		N- berries: raw, jam, desserts, bread, frozen; flowers	N- berries: boiled and drank to "feel better"		N- whole plant: ***kimminaKutik***; berry: ***kimminak***, ***pungajuinnika***?; flowers: ***kimminatsait***
Equisetaceae	*Equisetum* spp. Linnaeus (incl. *E. arvense* Linnaeus, *E. sylvaticum* Linnaeus)	horsetails; prêles	***(K) ivitsualaaraq***	pteridophyte			**KN- cleaning** (K- *hand cleaner/"towel"; N- washing pots)*	
			(N) napâttujak					N - ***napâttujak*** = "tree-like"
Fabaceae	*Oxytropis campestris* (Linnaeus) de Candolle var. *johannensis* Fernald	Saint John River locoweed; oxytrope du fleuve Saint-Jean	***(K) airaq***	herb	K- roots			K- also *Diapensia lapponica, Persicaria vivipara, Silene acaulis, Taraxacum* spp.; root: ***airaq***; taproot, seems to be the 'type species' after which other species with edible taproots are named by extension
Grossulariaceae	*Ribes glandulosum* Grauer	skunk currant; gadellier glanduleux	***(K) mirqualaqautik, mirqualiqautik, miqqualiqautik, miqqualiqutik, mikquaaliqautik***	shrub	K- red berries			K- red berries: ***mirqualik***, ***miqqualik***, ***mikquaalik***; green, immature berries: ***mirqualiksait***, ***mikquaaliksait***
			(N) kimminaujak, mikKulik, ummilikkuluk, ummilikuluk		N- berries: raw, jelly, "homebrew"			N- ***kimminaujak*** = "almost like ***kimminak*** (redberries, *Vaccinium vitis-idaea*)" whole plant: ***kimminaujaKutik***; berry: ***kimminaujak***, ***mikKulik***, ***ummilikkuluk***, ***ummilikuluk***

Myricaceae	*Myrica gale* Linnaeus	sweet gale, bog myrtle; myrique baumier	***(K) uqaujaq***	shrub	K- leaves		K- combustible (*wood*)	
Onagraceae	*Chamerion angustifolium* (Linnaeus) Holub	fireweed; épilobe à feuilles étroites	***(K) paunnaq, paunna, tirluk*** ***(N) paunnaluk, paunaujak, igutsak piguttuk***	herb	K- edible N- whole plant: brew	K- leaves: tea for stomach aches, fevers, sore throats, general tonic, to give sick people back their thirst	K- tea N- other (*old leaves: smoked*)	K- terms also refer to *C. latifolium*
	Chamerion latifolium (Linnaeus) Holub	river beauty, dwarf fireweed; épilobe à feuilles larges	***(K) paunnaq, paunna, tirluk*** ***(N) paunnak***	herb	K- edible N- aerial parts	N- tea for colds	**KN- tea** (*N- brown leaves*); N- other (*decoration*)	K- terms also refer to *C. angustifolium*
	Epilobium palustre Linnaeus	marsh willowherb; épilobe palustre	***(K) paunnaq***	herb			K- tea	K- term also refers to *Chamerion angustifolium*, *C. latifolium*, and *Pedicularis groenlandicum*
Orobanchaceae	*Pedicularis groenlandica* Retzius	elephant's-head lousewort; pédiculaire du Groenland	***(K) ivitsukajaq, paunnaq***	herb			K- tea	
	Pedicularis labradorica Wirsing	Labrador lousewort, Inuit/Eskimo turnip; pédiculaire du Labrador	***(N) nakatannaujak, nakatannak, kaimaKutaujak, amak/amâk***	herb	N- root			N- ***nakatannaujak*** = "turnip-like"
Pinaceae	*Abies balsamea* (Linnaeus) Miller	balsam fir; sapin baumier	***(N) Killagittuk***	tree			N- construction (*gum: boat sealant*); N- other (*Christmas trees*); (N- note: not used for firewood because "the wood is too wet, no heat")	
	Larix laricina (Du Roi) K. Koch	tamarack, eastern larch, juniper tree; mélèze laricin	***(K) pingik, pingiq, pingi*** ***(N) pingik, Kisittotik, Kisiktottik***	tree		K- branches, without needles/stump: tea as general tonic, for fever; inner bark: poultice for cuts/wounds/boils, boiled to make disinfecting wash for cutaneous infections N- inner bark, sap: poultice/bandage for cuts/sores, eczema, boils, pain relief; inner bark/needles: burns, colds, sore throat, cough, flu	**KN- construction** (*K- wood: construction, cord/rope, smoking; strobiles: dye, floats for fish nets; galls: lures, arts, hammers; N- "not ideal because too heavy", snowshoes, sled 'Kamotik' runners*); **KN- combustible** (*K- branches; N- firewood "burns longest"*); N- games (*galls*)	N- branch: ***pingik akigunga***
	Picea glauca (Moench) Voss	white spruce; épinette blanche	***(N) napâttutuinnak, nappatuk, Killagittuk (napâttutuinnak, napâttuk, Kautsikitut)***	tree	N- *Picea* spp.: "spruce beer"; sap: for something sweet; hard gum: chewing gum	N - medicinal (brewed for colds); *Picea* spp.: (boughs: tea; sap: cuts, infections; hard gum: cuts, colds, toothaches/cavities, heartburn)	N- combustible (*firewood*); N- other (*Christmas tree*); (following uses also for *Picea mariana):* N- cleaning (*season/clean pots*); N- combustible (*firewood*); N- construction (*boughs: cabins, sled* **Kamutik**, *paddles, kayaks,* **umaiavik** *(covered in seal skins), mattress; gum: sealing cracks in roof; cones/buds: dye for clothes*)	

	Picea mariana (Miller) Britton, Sterns & Poggenburg	black spruce; épinette noire	***napaartutuinnaq, napaartuq***	tree	K- resine/gum ***kutsuk*** : chewing gum	K- young cones, resine/gum: tooth aches, cleans cavities; hard gum: chewed to make poultice for cuts; branches with needles: wash for skin infections and dry/itchy skin; bandage/dressing	**KN- cleaning** (*N- season/clean pots*); **KN- combustible** (***KN- firewood,*** *K- smoking*); **KN- construction** (***KN- branches: mattress*** , *K- ground cover;* ***KN- resine/gum: sealing cracks*** *; K- cones: floats for fish nets; K- cones/bark: dye for nets; N- cones/buds: dye for clothes; K- roots: cord/rope; K-gum: cover holes in sealskins; N- boughs: cabins, sled* **Kamutik** *paddles, kayaks,* **umaiavik** *(covered in seal skin))* ; K- other (*Christmas tree*)	K- crown?: ***napaartuup nuvuraanga*** ; N- ***napâttuk Kinnitak*** = "black tree" (possibly a translation from the English name)
			(N) nappâtuk Kinnitak, napâttuk, Kautsikitut (napâttutuinnak, napâttuk, Kautsikitut)		N- *Picea* spp.: "spruce beer"; sap: for something sweet; hard gum: chewing gum	N- *Picea* spp.: boughs: tea; sap: cuts, infections; hard gum: cuts, colds, toothaches/cavities, heartburn		
Poaceae	*Poaceae* Barnhart	grasses; poacées	***ivitsukak, ivitsait, ivik***	grass			N- cleaning (*brush*); N- construction (*basket weaving; mixed with gum to seal cracks in chimney and roof*); N- other (*church decoration*)	
	Leymus mollis (Trinius) Pilger	sea lymegrass, American dunegrass; élyme des sables d'Amérique	***(K) ivik, ivigak, ivitsukaq, ivisuka***	grass	K- edible		**KN- construction (*KN- baskets;*** *K- old yellow leaves: insulation for boots* **kamiit)**	K- flower head: ***iviup nuvunga*** , ***nuvuraq*** ; old yellow leaves: ***pinik***
			(N) ivik, ivisukak, senngailik		N- lower stem	N- stomach problems		
Polygonaceae	*Bistorta vivipara* (Linnaeus) Delarbre	alpine bistort; renouée vivipare	***(K) airaq***	herb	K- rhizome			K- root: ***airaq*** ; taproot, likely named after 'type species' *Oxytropis campestris*
	Oxyria digyna (Linnaeus) Hill	mountain sorrel; oxyrie de montagne	***(K) qunguliq***	herb	K- edible			
			(N) Kungulik, sennalukkuluk, piguttukkuluit		N- leaves, stalk, flowers?	N- stomach aches, relieves thirst		
	? Rheum officinale Linnaeus	rhubarb; rhubarbe	***(N) sennaluk, amak***	herb	N- raw, jam	N- root: good for teeth		N- ***sennaluk*** = "sour"
Rosaceae	*Potentilla* sp. Linnaeus (yellow flowers)	cinquefoil, buttercup, potentilla; potentille	***(K) napaurnajaq***	herb				
	Rubus arcticus subsp. *acaulis* (Michaux) Focke	plumboy, stemless raspberry; ronce arctique	***(K) arpiligaqutiit, arpiligait, arpilikaqutik, arpiligaqautik***	herb	K- fruits		K- tea (*leaves, fruits*)	K- berry: ***arpiliqaq*** , ***arpilikak***
			(N) apiujak		N- berries			N- ***apiujak*** = "***appik*** -like" (***appik*** : *Rubus chamaemorus*); whole plant: ***apiujaKutik*** ; berry: ***apiujak***
	Rubus chamaemorus Linnaeus	cloudberry, bakeapple; chicouté	***(K) arpiqutik, aqpiqutik***	herb	K- berries	K- leaves: tea as general tonic, for sore throat, fever		K- yellow berry (ripe): ***auniq*** ; red berry: ***arpik*** , ***arpiq***
			(N) appik		N- berries: raw, jam, desserts, sauces, "homebrew"; leaves?			N- whole plant: ***appiKutik*** ; berry: ***appik***
	Sibbaldia tridentata (Aiton) Paule & Soják	three-toothed cinquefoil; potentille tridentée	***(K) kakagutiit***	herb			K- tea	K- also: *Achillea, Diapensia, Saxifraga*
	Sorbus decora (Sargent) C.K. Schneider	northern mountain-ash, dogberry; sorbier de montagne	***(K) aupaalurtaaluk, aupaaluktaluq***	tree	K- fruits			K- berry: ***aupaalurtaaluk*** , ***aupaaluktaluq***

			(N) kimminaujak		N- "dogberry wine" (though generally considered inedible)			N- berry: ***kimminaujak*** = "like redberries (*Vaccinium vitis-idaea*)"
Salicaceae	*Populus balsamifera* Linnaeus	balsam poplar; peuplier baumier	***(K) qairulik*** ***(N) uppialuk***	tree		K- catkins: dressing for newborns' navels		K- silk: ***qalasirsiutik***
	Salix spp. Linnaeus (***uqaujaq/uKaujak***) (incl. *S. arctophila* Cockerell ex A. Heller, *S. discolor* Muhlenberg, *S. glauca* Linnaeus, *S. herbacea* Linnaeus, *S. planifolia* Pursh)	willows (northern willow, pussy willow, grey-leaved willow, snowbed willow, tea-leaved willow); saules (saule arctophile, saule discolore, saule glauque, saule herbacé, saule à feuilles planes)	***(K) uqaujaq*** ***(N) uKaujak***	shrub	K- leaves, buds, galls, catkins N- young leaves, green unopened buds, red galls with or without caterpillar inside	K- leaves: sore throat; catkins: bandage, dressing for newborns' navels, and absorbing liquid from inflammations N- both ***uKaujak*** and ***uppigak*** : bark: aches	**KN- combustible** (*N- dried roots: firewood*); **KN- game** (*N- flutes*); N- construction (*raquets - snowshoes?)*	N- ***uKaujak*** = "tongue-shaped" (referring to the leaves); dried roots?: ***Kungilitikutit;*** *S. herbacea* also named ***Kupikulik***
	Salix spp. Linnaeus (***urpik/uppigak***) (incl. *S. arctophila* Cockerell ex A. Heller, *S. discolor* Muhlenberg, *S. glauca* Linnaeus, *S. planifolia* Pursh)	willows (northern willow, pussy willow, grey-leaved willow, tea-leaved willow); saules (saule arctophile, saule discolore, saule glauque, saule à feuilles planes)	***(K) urpik*** ***(N) uppigak***	shrub	K- edible	K- leaves: sore throat; catkins: bandage, dressing for newborns' navels, and absorbing liquid from inflammations N- catkins: calming nervous stomach; both ***uKaujak*** and ***uppigak:*** bark: aches	**KN - combustible** (*N- dried roots: firewood*); **KN- game** (*N- flutes*); N- construction (*raquets - snowshoes?)*; N- other (*insect repellent?)*	N- ***uppigak*** = "branches"; insect repellent use is for a species of "willow" described as growing near fresh water, smelling like lavender, similar to but not ***uKaujak***
	Salix uva-ursi Pursh	bearberry willow; saule raisin-d'ours	***(K) kutsiit***	herb			K- combustible	
Saxifragaceae	*Saxifraga tricuspidata* Rottbøll	prickly saxifrage; saxifrage à trois dents	***(K) kakillanaqutik, kakagutiit***	herb	K- flowers	K- leaves: tea for coughs		K- flowers: ***kakagutiit***

Table 2.1.2 Non-vascular plant names and uses in Nain and Kangiqsualujjuaq.
In the USE columns, **bolded terms** indicate uses common to both communities; details for combustible, construction, cleaning, game, and other uses are *italicized*.
Abbreviations: K - Kangiqsualujjuaq, N - Nain, KN- both Kangiqsualujjuaq and Nain, TB - tuberculosis, sp. - species (singular), spp. - species (plural), ? - indicates uncertainty

Family	Latin name	English and French names	Inuktitut lexicon	Plant type	Use - edible	Use - medicinal	Use - combustible, construction, cleaning, game, other	Comments: term meanings, other referents, part names
Phylum Bryophyta	Bryophyta	mosses; mousses	***(N) Kaittup piguttunga, pikKappiak, pungajuk***	moss			N- combustible (***pungajuk*** *: firestarter*); N- construction (***pikKappiak*** *: fill in cracks in cabins*)	***Kaittup piguttunga*** = "rock plant/flower" (grey/black *Racomitrium* sp.?)
	Bryophyta (***maniksajaq***)	mosses; mousses	***(K) maniksajaq, manirsajaq, maniqsajaq, maniq***	moss			K- combustible (wick, smoking)	
	Bryophyta (***niKak***)	mosses; mousses	***(N) niKak***	moss		N- cuts, wounds, boils, diapers/pads	N- combustible (*wick for soapstone lamp* ***Kullik*** *; to dry seal skins*); N- construction (*seal cracks for insulation*); N- other (*dog food*)	note: ***niKak*** also refers to reindeer lichen (*Cladonia* spp.)
	Bryophyta (***nunajaq***)	mosses; mousses	***(K) nunajaq, nunajatuinnaq***	moss			K- cleaning; K- combustible (*wick*)	***nunak*** = "land, earth"
Grimmiaceae	*Racomitrium lanuginosum* (Hedwig) Bridel-Brideri	racomitrium moss; racomitre laineux	***(K) nunajaq, nunajatuinnaq, maniq*** ***(N) udjuak, utjuak, imatsumiutik niKak***	moss		N- bandages, boils	K- cleaning; K- combustible (*firewood, smoking caribou hides and mitts, wick*); N- construction (*concealment of fox/fur traps; sled* ***Kamutik*** *runners; sealing house cracks/insulation*)	***nunak*** = "land, earth" N- ***imatsuk*** = "wetland", ***imatsumiutik niKak*** = "moss growing in a damp/wet place"
Sphagnaceae	*Sphagnum* spp. Linnaeus	sphagnum; sphaignes	***(K) militsajaq, uingilitarsajaq, urjuaq, tinguajaq*** ***(N) iKattaituk, iKaKaittuk***	moss		K- ***uingilitarsajaq***: diapers; K- ***urjuaq***: diapers, sanitary napkins; N- diapers	**KN- cleaning** (*K-* ***militsajaq****, ***uingilitarsajaq****; N- removing hair from seal hide*); N- combustible (***firestarter***); **KN- construction** (*K-* ***militsajaq****: trapping; K-* ***urjuaq****: camouflage for traps; N-fur traps*)	
Lycopodiaceae	*Huperzia selago* (Linnaeus) Bernhardi ex Schrank & Martius	Northern fir-moss; lycopode sélagine	***(K) itsutik, kakillanaqutik, itsutiujait***	lycopod			K- cleaning (*brush for clothing*); K- combustible	
	Lycopodium annotinum Linnaeus	stiff clubmoss; lycopode innovant	***(K) akiruviniujaq, itsutik, kakillanaqutik***	lycopod			K- cleaning (*brush for clothing*); K- construction (*ground cover/mattress*)	
	Lycopodium spp. Linnaeus	clubmoss; lycopode	***(N) pikKappiak, piguttuit***	lycopod			N- cleaning (*seal skins*); N- other (*their presence indicates there will be future flowers and trees in the area*)	
Lycoperdaceae	*Lycoperdon* spp. Persoon, *Calvatia* spp. Fries	puffballs; vesses-de-loup	***(K) supuusuit, tuttup niqingit, pujuit***	fungus			K- game	***tuttup niqingit*** = "caribou food"
Basidiomycota (unranked clade)	Basidiomycota	mushrooms, "toadstools"; champignons	***(N) maksujait, satani niKingit***	fungus	N- raw, cooked, fried, soups, with salt pork			***satani niKingit*** = "devil's food"
Cladoniaceae	*Cladonia* spp. Hill ex P. Browne (incl. *C. rangiferina* (Linnaeus) Weber ex F.H. Wiggers , *C. pleurota* (Flörke) Schaerer)	reindeer lichen, red-fruited pixie-cup; cladine/mousse à caribou, cladonie penchée	***(K) tingaujaq, tingaujarlak, tingaujarlaq, quajautik*** ***(N) niKak, tuttuk niKinggit, tuktunikingit***	lichen		N- diapers and pads	**KN- combustible** (*K; N- firestarter*); construction (*K- trapping; N- fill in cracks in house*); N- other (*dog food*)	K- uses asooociated with term ***tingaujaq***

Parmeliaceae	*Alectoria* spp. Acharius (incl. *A. nigricans* (Acharius) Nylander, *A. ochroleuca* (Hoffmann) A. Massalongo)	witch's hair (black witch's hair, pale yellow witch's hair); alectoire (alectoire noirâtre, alectoire jaune pâle)	***(K) tingaujaq***	lichen			K- combustible; K- construction (trapping)	
	Cetraria islandica (Linnaeus) Acharius	true Iceland lichen; cétraire d'Islande	***(K) tingaujaq, tuttup niqingit***	lichen			K- combustible; K- construction (trapping)	
Umbilicariaceae	*Umbilicaria* spp. Hoffmann (*U. muhlenbergii* (Acharius) Tuckerman?, *U. deusta* (Linnaeus) Baumgarten?)	rock tripes/navel lichen; tripes-de-roche	***(K) quajautik, quajautiit*** ***(N) Kuajautik***	lichen		**KN- boiled and liquid drank: TB**, K- asthma, pulmonary problems, spitting blood, N- bleeding lungs; N- boiled and rubbed on cut for blood poisoning/infection	**KN- cleaning** (K- hides; N- soap for body, seal skins)	
Phylum Chlorophyta	Class Chlorophyceae	colony of green algae; colonie d'algues vertes	***(K) aqajaq*** ***(N) KikKuak***	marine marine	N- edible	K- poultice/cover for wounds, cuts, gunshot wounds, inflammations; K- reduces inflammation by extracting water		***KikKuak*** refers to any seaweed (mostly brown, but also green algae), though ***kuannik/ikKlujak*** are preferred terms for those species of kelp
Phylum Ochrophyta	Class Phaeophyceae	seaweeds/ macroscopic algae; algues macroscopiques	***(N) KikKuak***	marine	N- edible	N- drink boiled juice for stomach aches, diarrhea	N- construction (insulation, fertilizer); N- game (pop them)	***KikKuak*** refers to any seaweed (mostly brown, but also green algae), though ***kuannik/ikKlujak*** are preferred terms for those species of kelp
Chordariaceae	*Dictyosiphon* spp. Greville	golden sea hair ?	***(N) nujaujak***	marine			N- combustible (firestarter?); N- other (mosquito repellent?)	***nujaujak*** = hair-like; disliked because gets caught in fish nets
Fucaceae	*Fucus* spp. Linnaeus with pneumatocysts *(Fucus evanescens* C. Agardh, *F. vesiculosus* Linnaeus), *Ascophyllum nodosum* (Linnaeus) Le Jolis	arctic wrack, bladder wrack/popweed, rockweed/knotted wrack/ "sea grapes"; ascophylle noueuse	***(N) Kukkiangguakkuluk***	marine			N- game (pop them)	*F. edentatus* Bachelot de la Pylaie synonym of *F. evanescens* C. Agardh
	Fucus evanescens C. Agardh	arctic wrack; fucus évanescent	***(K) qirqua*** ***(N) KikKuak***	marine	K- edible N- edible			
Order Laminariales	Order Laminariales (***itsuujaq/ikKlujaq***)	kelp/brown algae, "shark's blanket"; algues marines/ algues brunes	***(K) itsuujaq*** ***(N) ikKlujak***	marine	K- edible; N- raw, soup			K- ***itsuujaq*** refers to a type of kelp larger than ***kuanniq*** N- ***ikKlujak*** = "blanket"?, "shark's blanket" is a locally used term for this kelp
	Order Laminariales (***kuanniq/kuannik***)	kelp/brown algae, "shark's blanket"; algues marines/ algues brunes	***(K) kuanniq*** ***(N) kuannik***	marine	K- edible; N- stem/tube, leaf often removed: cooked, raw?			N- "shark's blanket" is a locally used term for this kelp
Laminariaceae	*Laminaria* sp. (***naajuraqutak***)	kelp; laminaire	***(K) naajuraqutak***	marine	K- stipe			

were shared, the remaining half split evenly between the communities (Figure 2.2). Figure 2.3 shows, for all families with more than a single species, the total number of species used per family, the number of species used in each community, and the number of species shared between both communities.

Table 2.2 Taxa not corresponding directly to Linnaean species.

	Higher taxa	Lower taxa	
Level	**'Families'**	**Generic taxa**	**Specific taxa**
Genus	Salicaceae	Salix spp.	***uqaujaq/uKaujak***
	Salicaceae	Salix spp.	***urpik/uppigak***
	Asteraceae	Taraxacum spp.	
	Cyperaceae	Eriophorum spp.	*E. angustifolium*, *E. scheuchzeri*
	Dryopteridaceae	Dryopteris spp.	including *D.expansa*
	Equisetaceae	Equisetum spp.	*E. arvense*, *E. sylvaticum*
	Cladoniaceae	Cladonia spp.	including *C. rangiferina*, *C. pleurota*
	Sphagnaceae	Sphagnum spp.	
	Lycopodiaceae	Lycopodium spp.	
	Lycoperdaceae	Lycoperdon and Calvatia spp.	
	Parmeliaceae	Alectoria spp.	
	Umbilicariaceae	Umbilicaria spp.	
	Chordariaceae	Dictyosiphon spp.	
	Laminariaceae	Laminaria sp.	kelp ***naajuraqutak***
	Fucaceae	Fucus and Ascophyllum spp. with pneumatocysts	
Family	Poaceae	graminoids	
Class	Phaeophyceae	kelp	***itsuujaq/ikKlujaq***
	Phaeophyceae	kelp	***kuanniq/kuannik***
	Phaeophyceae	seaweed	***KikKuak***
	Chlorophyceae	green algae	
Phylum	Bryophyta	mosses	
	Bryophyta	mosses	***maniksajaq***
	Bryophyta	mosses	***niKak***
	Bryophyta	mosses	***nunajaq***
Unranked taxon	Basidiomycota	mushrooms	

Figure 2.2 Distribution of families and species across Nain and Kangiqsualujjuaq.

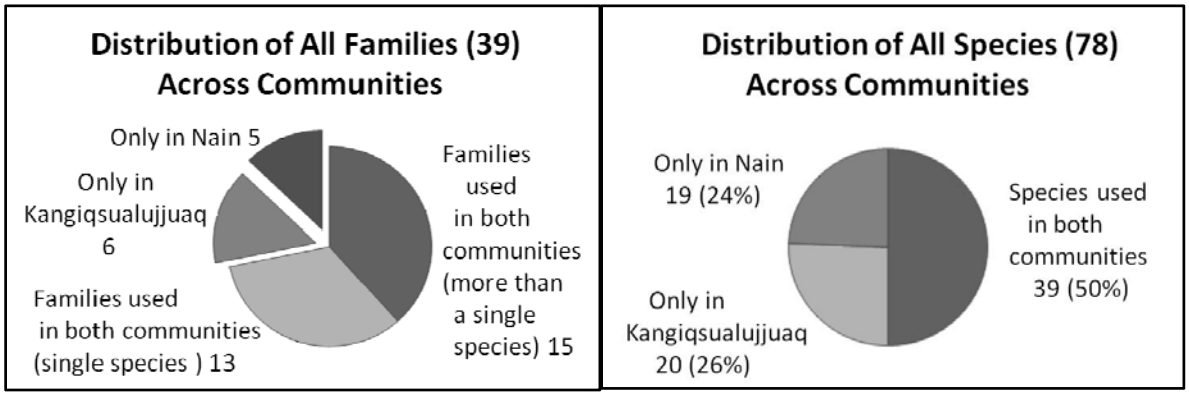
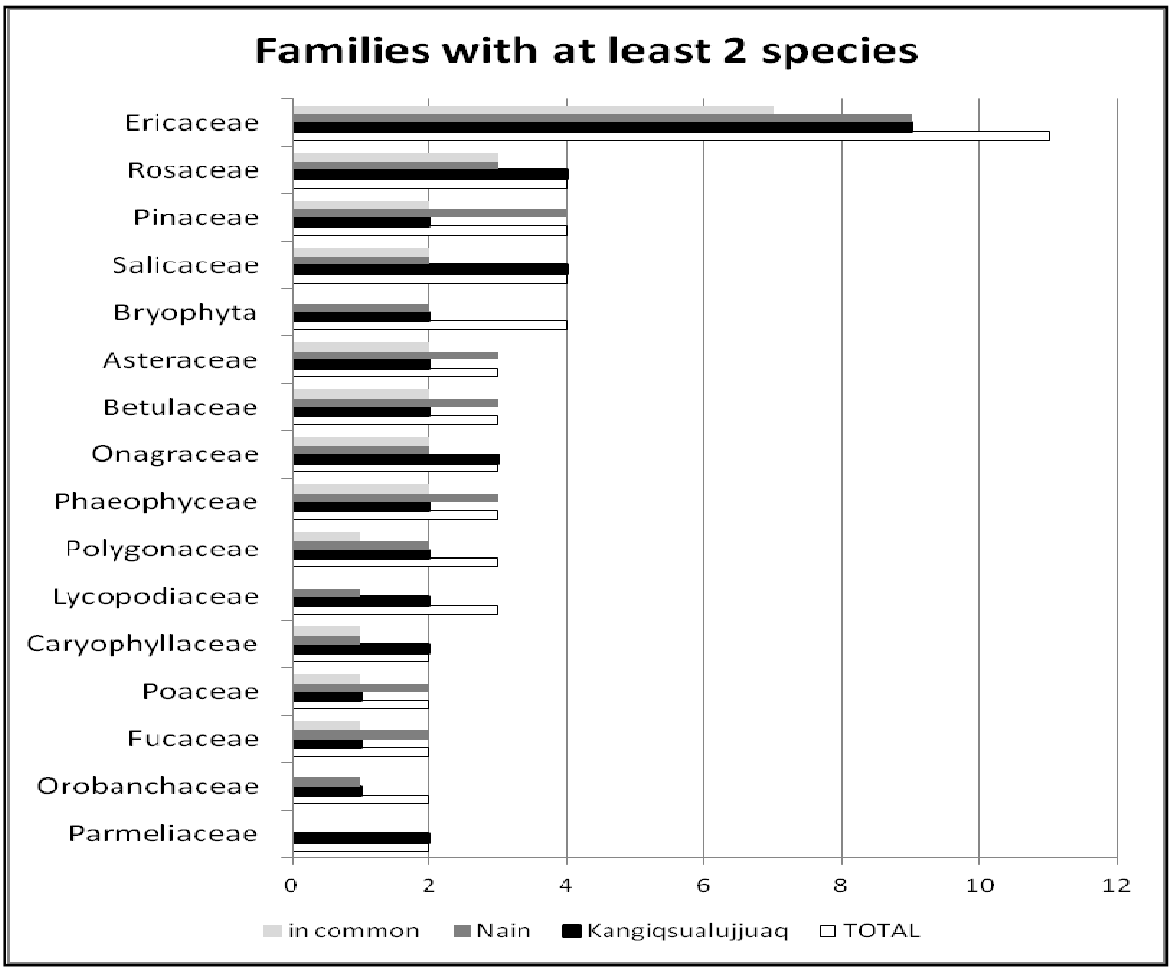


Figure 2.3 Families with at least 2 species used in Nain and Kangiqsualujjuaq. Note: Parmeliaceae was the only family with more than a single species to be used uniquely in one community, i.e. all other families with 2 or more species were represented in both communities. Orobanchaceae and Bryophyta were the only families to be used in both communities that did not share species between the communities.



Of the vascular plants, 25 families were used, with over 43 genera (multiple genera from the family Poaceaea), and over 55 species (Table 2.3). Four vascular plant species were named but had no reported uses and are thus not included in this analysis. There was no significant difference in the number of vascular species, genera, or families used between the communities (Pearson Chi-square = 0.009, p = 0.9953). Both communities used 43 vascular species from 22 families, representing 34 genera in Nain and 35 in Kangiqsualujjuaq. Over half the vascular species (31) were used in both communities (the other 24 species distributed evenly between the two communities), while over three-quarters of the families (19) were shared.

Table 2.3 Total and shared vascular and non-vascular taxa in Nain and Kangiqsualujjuaq. Unique taxa were reported in only one community. There was no statistical difference between communities for vascular taxa (Pearson Chi-square = 0.009, p = 0.9953), non-vascular taxa (Pearson Chi-square = 0.024, p = 0.9883), or all taxa combined (Pearson Chi-square = 0.027, p = 0.9864).

		Shared (% of total)	Nain total (unique)	Kangiqsualujjuaq total (unique)	Total
vascular	**species**	31 (56%)	43 (12)	43 (12)	**55**
	genera	26 (60%)	34 (8)	35 (9)	**43**
	families	19 (76%)	22 (3)	22 (3)	**25**
non-vascular	**species**	8 (35%)	15 (7)	16 (8)	**23**
	genera	9 (47%)	13 (4)	15 (6)	**19**
	families	9 (64%)	11 (2)	12 (3)	**14**

The family Ericaceae was the most widely used with 11 species, followed by Rosaceae, Pinaceae and Salicaceae with 4 species each (Figure 2.3). Asteraceae, Betulaceae, Onagraceae, and Polygonaceae had 3 species each, followed by Caryophyllaceae, Poaceae, and Orobanchaceae with 2 species each. A single species was reported for each of the remaining families: 8 species that were used in both communities (from families Campanulaceae, Cornaceae, Crassulaceae, Cupressaceae, Cyperaceae, Diapensiaceae, Equisetaceae, and Grossulariaceae), and six that were used uniquely in one community (Nain: Adoxaceae, Boraginaceae, and Caprifoliaceae; KG: Fabaceae, Myricaceae, and Saxifragaceae). Although the single-species families used exclusively in one community

represent almost a quarter (24%) of all vascular *families* used, they represent only 11% of the vascular *species* used. If these are excluded and only the shared families are considered, 63% (31/49) of the species and 70% (26/37) of the genera were used in common (compared to 56% (31/55) and 60% (26/43) if not excluded, respectively).

23 non-vascular species were used, from 19 genera and 14 families (Table 2.1.2, Table 2.3). There was no significant difference in the number of non-vascular species, genera, or families used between the communities (Pearson Chi-square = 0.024, p = 0.9883). 35% of species and 64% of families were used in both communities. Four specific taxa of mosses (Phylum Bryophyta) made this the most used 'family', followed by three specific taxa in each of Class Phaeophyceae (kelps and seaweed) and Lycopodiaceae, and two specific taxa from Fucaceae and Parmeliaceae (Figure 2.3). A single specific taxon was reported for each of the remaining 9 families: Class Chlorophyceae (green algae), Cladoniaceae, Grimmiaceae, Sphagnaceae, and Umbilicariaceae all used in both communities; Basidiomycota, and Chordariaceae uniquely in Nain; and Lycoperdaceae, and Laminariaceae uniquely in Kangiqsualujjuaq.

Of the taxa mentioned, the majority (30) were herbs, followed by shrubs (13), bryophytes and lycopods (9), kelps and seaweeds (8), trees (7), lichens and fungi (6), grasses (3), and pteridophytes (2), with no significant difference between the communities (Pearson Chi-square = 1.365, p = 0.8502). Figure 2.4 shows the proportion of growth forms used, herbs being used most predominantly. Most plant parts were mentioned as being used, depending on the species, including: aerial parts (leaves/needles, stem/stalk, flowers, berries, buds/cones), sap/gum/resin, root/rhizome, branches/boughs, wood, and the whole plant. Table 2.4 lists the Inuktitut names for plant parts and organs and Table 2.5 provides more details for berries specifically.

Figure 2.4 Growth forms of taxa used in Nain and Kangiqsualujjuaq. There was no statistical difference between the communities in terms of numbers of each growth form used (Pearson Chi-square = 1.365, $p = 0.8502$). Abbreviations: bryolyco = bryophytes and lycopods; fungus = puffballs, mushrooms, rock tripe, and lichens; marine = green and brown algae (seaweeds and kelps).

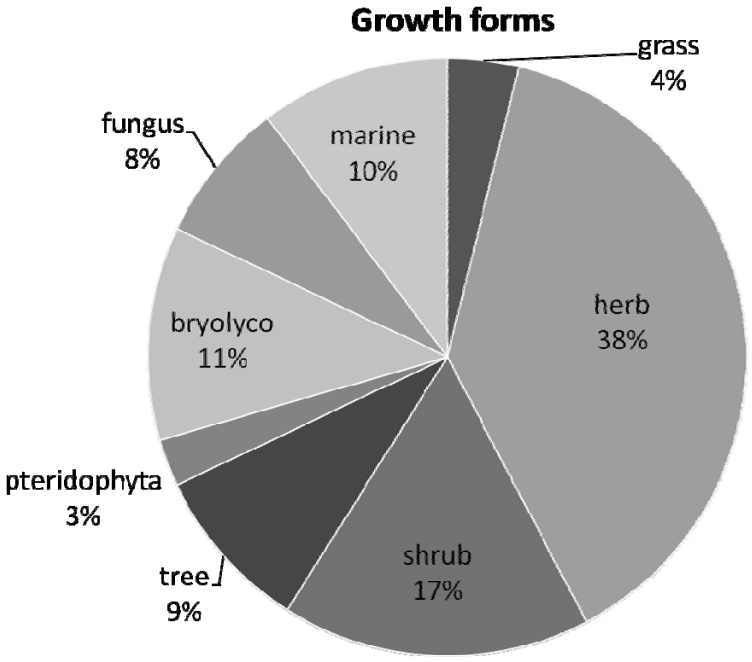


Table 2.4 Plant parts and organs.

Plant part/organ	Kangiqsualujjuaq	Nain
plant	***pirurtuq***	***piguttuk***
flower	***pirutsiaq***	***piguttuk***
silk/cotton	***qakurtalik, aqlasisiutik, nuvuraq***	***suputik***
catkin	***qimminguaq, qimminguaqujait, urpiitpaurngangit, mirqulik, miqqulik***	***piguttuk, uppialuk ?***
cone, strobiles	***qimminguaq***	***paungak, napâttupaungnga, napattuk paungngak***
berry	***paurngaq***	***paungak, paungngak, paungait, paungatuinnak***
berry - ripe	***auniq***	***aunik***
gall	***pingaluk, atsitumuat, pattaujaq, pingiup unguunanga, unguunaaluk, akiruq, paurngaq***	***pullak, piuluKutik, paungak***
bud	***manguq, nuvugak, paurngaq***	***paungakuluit, kangasotik ?***
distal part, still growing	***nutaijurtuq, nuvugaq, nuvuqaq***	
leaf, leaves	***uqaujaq, uqaujait, uqaujavalaat, uquajatuinnait***	***mapattak, sappatak, uKaujak***
leaves - old, yellow	***pinik***	
needles, needle-bearing branches	***qisirtauti, qisirtautik, akiruq***	***Kisittotik***
bark	***amiraq***	***amigak***
resine/gum (hard)	***kutsuk, kutsutuinnaq***	***kutsuk, kutsok***

resine/sap (runny)	***qulliaq, qurliak***	***Kulliak***
branch/branches	***urpik, akiruq, palliq (old)***	***uppigak, akiguk***
stem/trunk	***naparutaq***	***nappajuk, napâttuk***
trunk (base of tree)	***palliq (old)***	***miminnak***
stump		***kipakuk***
wood	***umaak, umaaq, qijuq***	***pannak (dry), Kausinnik (wet, live)***
wood - rotten	***puvaq, puvaujaq, puvaujak***	
roots	***amaak, amaa, airaq, mangua, nuvugak***	***amak, ammak***

Table 2.5 Berries.

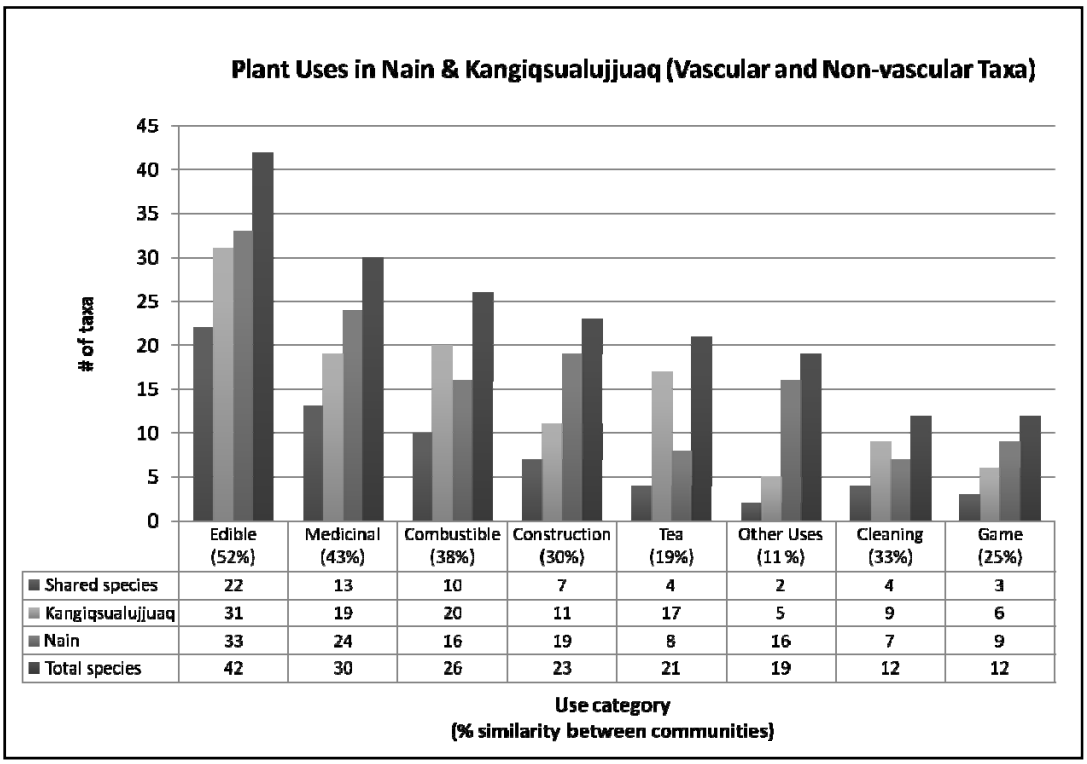
Family	Latin name	Kangiqsualujjuaq	Nain
Cornaceae	*Cornus canadensis*	***aupaalutuk***	***sigalak/sigalâk, imukkuluk, kimminaujak***
Cupressaceae	*Juniperus communis*	***qisirtutaujaq***	***kigutanginnaujak, kigutanginnak Kisiktutaujak, ummaujak***
Ericaceae	*Arctous alpina*	***kallak, kallait***	***kallak***
Ericaceae	*Empetrum nigrum*	***paurngaq, paurngait***	***paungak, paungngak, paungatuinnak***
Ericaceae	*Vaccinium caespitosum*	***kigutanginnalikait, nalikak***	***pungajuk, kigutanginnakuluk***
Ericaceae	*Vaccinium oxycoccos*		***kimminaujak***
Ericaceae	*Vaccinium uliginosum*	***kigutanginnaq, kigutangirnnaq***	***kigutanginnak, kigutanginnait, kigutanginnakuluk***
Ericaceae	*Vaccinium vitis-idaea*	***kimminaq***	***kimminak, pungajuinnika?***
Grossulariaceae	*Ribes glandulosum*	***mirqualik, miqqualik, mikquaalik***	***kimminaujak, mikKulik, ummilikkuluk, ummilikuluk***
Grossulariaceae	*Ribes glandulosum* (green immature berries)	***mirqualiksait, mikquaaliksait***	
Rosaceae	*Rubus arcticus* ssp. *acaulis*	***arpiliqaq, arpilikak***	***apiujak***
Rosaceae	*Rubus chamaemorus*	***arpik, aqpiq***	***appik***
Rosaceae	*Rubus chamaemorus* (yellow fruits)	***auniq***	***aunik***
Rosaceae	*Sorbus decora*	***aupaalurtaaluk, aupaaluktaluq***	***kimminaujak***

2.3.2 Uses

Taxa were categorized based on the most frequently mentioned uses as: edible, medicinal, tea, combustible, construction, cleaning, games, and other. The greatest number of species was reported for the edible category (42 species), followed by medicinal (30), combustible (26), construction (23), tea (21), other uses (19), cleaning (12), and games (12) (Figure 2.5). Edible taxa also had the greatest proportion of shared species between the communities (52%); less than half the species reported for all other categories were used in both communities. More vascular than non-vascular taxa were used for each category except for cleaning, and exclusively vascular taxa were used for tea (Figure 2.6). However, a greater

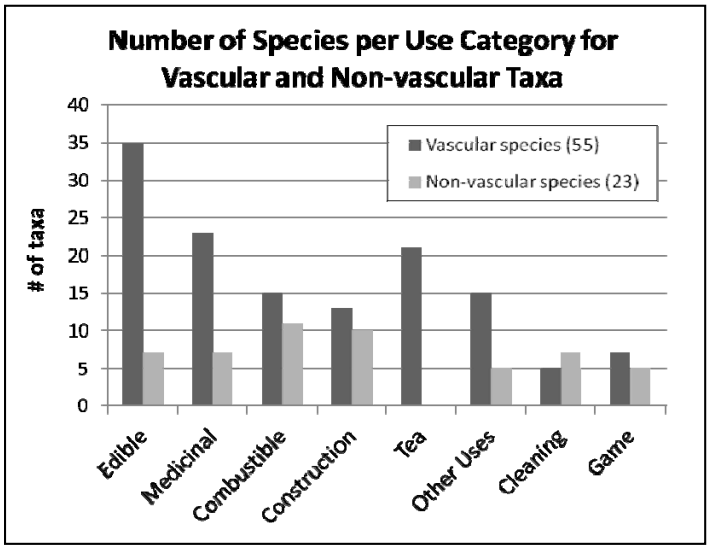
proportion of non-vascular taxa were used for each category except for categories edible, tea, and other uses.

Figure 2.5 Plant uses in Nain and Kangiqsualujjuaq. 39 of 78 total species were used in both communities (50%).



	Edible (52%)	Medicinal (43%)	Combustible (38%)	Construction (30%)	Tea (19%)	Other Uses (11%)	Cleaning (33%)	Game (25%)
Shared species	22	13	10	7	4	2	4	3
Kangiqsualujjuaq	31	19	20	11	17	5	9	6
Nain	33	24	16	19	8	16	7	9
Total species	42	30	26	23	21	19	12	12

Figure 2.6 Distribution of vascular and non-vascular taxa across different uses. Use categories are in descending order of number of total species, from left to right. Proportion of species that each use category makes up for vascular/non-vascular taxa: edible 26%/14%; medicinal 13%/17%; combustible 11%/21%; construction 10%/19%; tea 16%/0%; other uses 11%/10%; cleaning 4%/13%; game 5%/10%. The number of species used per category is not different between communities for vascular plants (Pearson Chi-square = 8.354, p = 0.3024), for non-vascular taxa (Pearson Chi-square not valid), or for all taxa combined (Pearson Chi-square = 12.328, p = 0.0903).

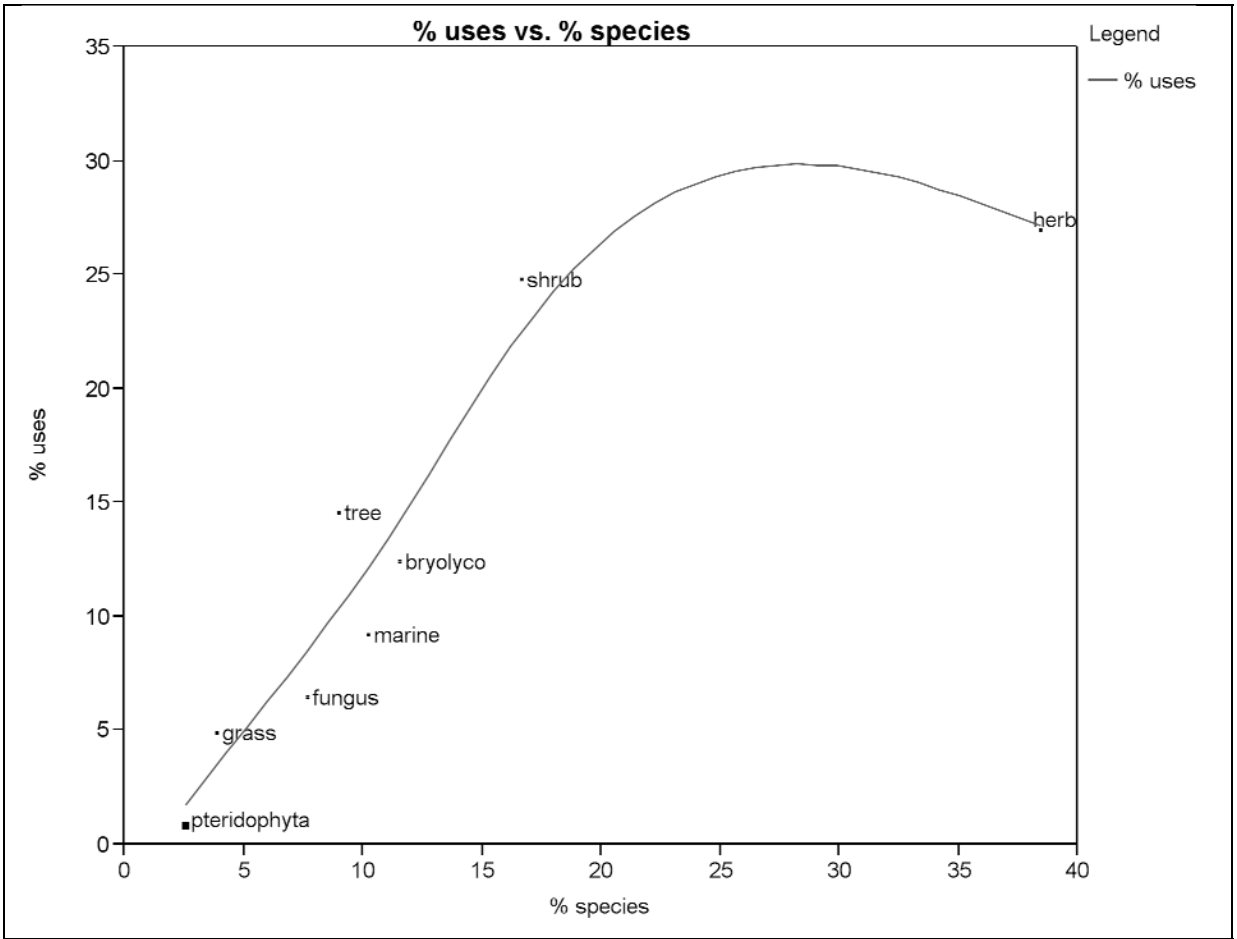


The number of species used per category is not different between the communities for vascular plants (Pearson Chi-square = 8.354, $p = 0.3024$), for non-vascular taxa (Pearson Chi-square not valid), or for all taxa combined (Pearson Chi-square = 12.328, $p = 0.0903$). However, the set of species used per category is not the same in Kangiqsualujjuaq as the set used in Nain, i.e. the number of species used in common was less than the total species used for each category (Pearson Chi-square = 7.455, $p = 0.3831$). The number of species used was not large enough to detect statistically significant differences between species use for any category individually.

Relative to the number of species representing each growth form, herbs were used less than expected, and trees and shrubs were used more than expected (see Figure 2.7). The proportion of growth forms varied depending on use category (Figure 2.8). The largest difference among proportion of growth types used was for edible taxa, which were mostly herbs (52%), followed by shrubs (22%) and marine taxa (14%). Medicinal species were mostly shrubs (30%), followed by herbs (27%), and trees (13%). Combustible taxa were

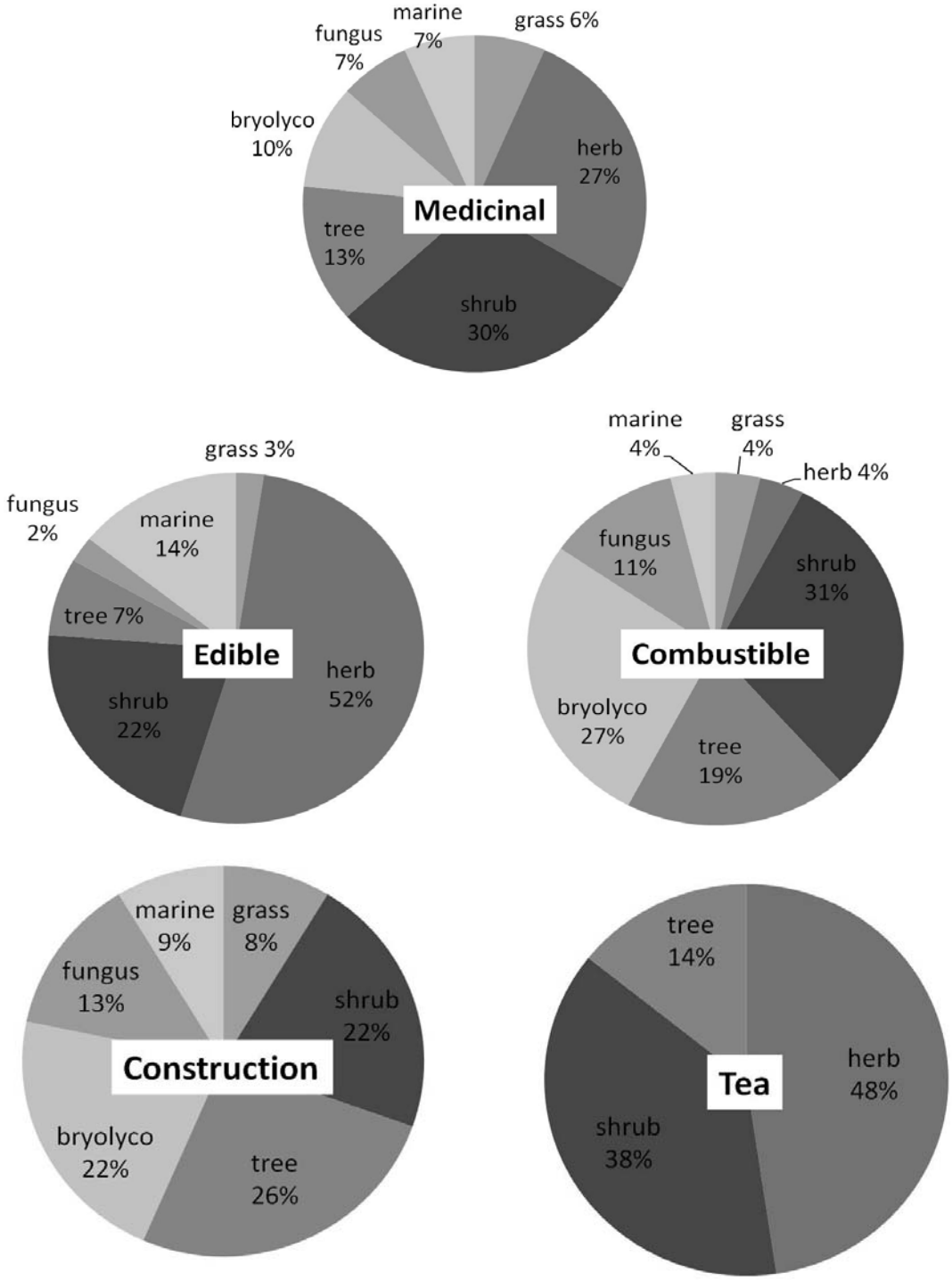
mostly shrubs (31%), bryophytes and lycopods (27%) and trees (18%). Construction taxa were represented most by trees (26%), then shrubs and bryophytes and lycopods (22% each). Tea species were exclusively herbs (48%), shrubs (38%) and trees (14%).

Figure 2.7 Growth forms used more and less than expected. Herbs were used less than expected. Shrubs and trees were used more than expected.



	species	%	uses	%	residual
pteridophyta	2	2.564103	2	1.075269	-1.48883
grass	3	3.846154	9	4.83871	0.992556
herb	30	38.46154	50	26.88172	-11.5798
shrub	13	16.66667	46	24.73118	8.064516
tree	7	8.974359	27	14.51613	5.54177
bryolyco	9	11.53846	23	12.36559	0.82713
fungus	6	7.692308	12	6.451613	-1.24069
marine	8	10.25641	17	9.139785	-1.11663
	78		186		

Figure 2.8 Proportion of growth forms for different uses. Abbreviations: bryolyco = bryophytes and lycopods; fungus = puffballs, mushrooms, rock tripe, and lichens; marine = green and brown algae (seaweeds and kelps).



Both spruce species (*Picea mariana, P. glauca*) were reported for seven of the eight use categories, followed by *Empetrum nigrum* with 6 use categories, and *Salix* species, *Larix laricina*, *Alnus viridis* subsp. *crispa*, and green algae all cited for 5 use categories (Table 2.6).

Table 2.6 Taxa used for at least 3 categories. Bold taxa are non-vascular. 'Shared categories' indicates the number of times a species was used for the same use category in both communities. (Abbreviations: spp. = species; incl. = including)

Family	Specific taxa	Growth form	Use categories	Shared categories
Pinaceae	*Picea mariana*	tree	7	5
Pinaceae	*Picea glauca*	tree	7	0
Ericaceae	*Empetrum nigrum*	shrub	6	3
Salicaceae	Salix spp. ***(uqaujaq/uKaujak)***	shrub	5	4
Pinaceae	*Larix laricina*	tree	5	3
Salicaceae	Salix spp. ***(urpik/uppigak)***	shrub	5	3
Betulaceae	*Alnus viridis* subsp. *crispa*	shrub	5	1
Chlorophyceae	**green algae**	**marine**	**5**	**1**
Sphagnaceae	**Sphagnum spp.**	**bryophyte**	**4**	**3**
Betulaceae	*Betula gladulosa*	shrub	4	2
Cupressaceae	*Juniperus communis*	shrub	4	2
Onagraceae	*Chamerion latifolium*	herb	4	2
Cladoniaceae	**Cladonia spp. *(*incl. *C. rangiferina, C. pleurota)***	**lichen**	**4**	**2**
Ericaceae	*Vaccinium uliginosum*	shrub	4	1
Onagraceae	*Chamerion angustifolium*	herb	4	1
Bryophyta	**moss *niKak***	**bryophyte**	**4**	**0**
Grimmiaceae	*Racomitrium lanuginosum*	bryophyte	4	0
Phaeophyceae	**seaweed *KikKuak***	**marine**	**4**	**0**
Cyperaceae	Eriophorum spp. *(E. angustifolium, E. scheuchzeri)*	grass	3	3
Ericaceae	*Rhododendron groenlandicum*	shrub	3	3
Ericaceae	*Rhododendron tomentosum*	shrub	3	2
Poaceae	*Leymus mollis*	grass	3	2
Cornaceae	*Cornus canadensis*	herb	3	1
Ericaceae	*Vaccinium caespitosum*	shrub	3	1
Rosaceae	*Rubus chamaemorus*	herb	3	1
Poaceae	graminoids	grass	3	0
Salicaceae	*Populus balsamifera*	tree	3	0
Saxifragaceae	*Saxifraga tricuspidata*	herb	3	0

Edible taxa were mostly eaten raw, some simply chewed, others boiled, and occasionally fermented or steeped to create a "homebrew". Berries had the greatest variety of preparations mentioned, including: raw, frozen, jam, jelly, sauces, desserts, pies, cakes, pudding, custard, homebrew, fermented, with cod liver oil, and in bread. Medicinal uses are discussed below. To make "tea" (technically tisanes), the leaves, berries, aerial parts, and/or boughs of various species were steeped in hot water (infusions) or boiled (decoctions). Combustible taxa included bark, boughs, dried roots, and dry lichens and mosses being used as wicks, fire starters, firewood, for smoking fish and skins, to create emergency smoke signals, and to deter mosquitoes. Taxa in the construction category were used in the construction of various things for housing (cabins, wind shelters, insulation/sealing cracks, mattress/ground cover), transportation (sleds, sled runners, snowshoes, paddles, kayaks), and other objects such as tools, cord/rope, traps and camouflage for traps, lures, floats for fish nets, seal skin drying frames, basket weaving and dye for clothing. Species used for cleaning purposes were generally used for their abrasive qualities as a brush or to 'season pots', as well 'soap' for the body and to clean hides. Games included placing on fingers, popping, play-money, rubbing leaves to get a tingly feeling, flutes, and slingshots. Other uses included seasonal indicators, dog food, Christmas tree, necklace, house decoration, church decoration, garden flower, insect repellent, fertilizer, and house scent.

2.3.3 Medicinal uses

Medicinal uses were grouped into 7 categories based on similarity of ailment/problem, taking into account groups used in Cook (1995) and Black *et al.* (2008). Treatments were generally administered once, or until the problem improved. Dosage was not generally reported specifically, the quantity of a species used varying depending on the nature of the condition.

30 species were used from 19 families. The family Ericaceae was used the most with 6 species, followed by Pinaceae and Salicaceae with 3 species each, then Onagraceae and Polygonaceae with 2 species each (Table 2.7). *Larix laricina* and *Rhodiola rosea* were the most diversely used species, reported for six of the seven medicinal categories, followed by

Juniperus communis, *Picea mariana,* and *Vaccinium vitis-idaea* used for 5 categories each (Table 2.8).

Table 2.7 Families with species used medicinally. 'Total species used' indicates the total number of species used from each family for any use.

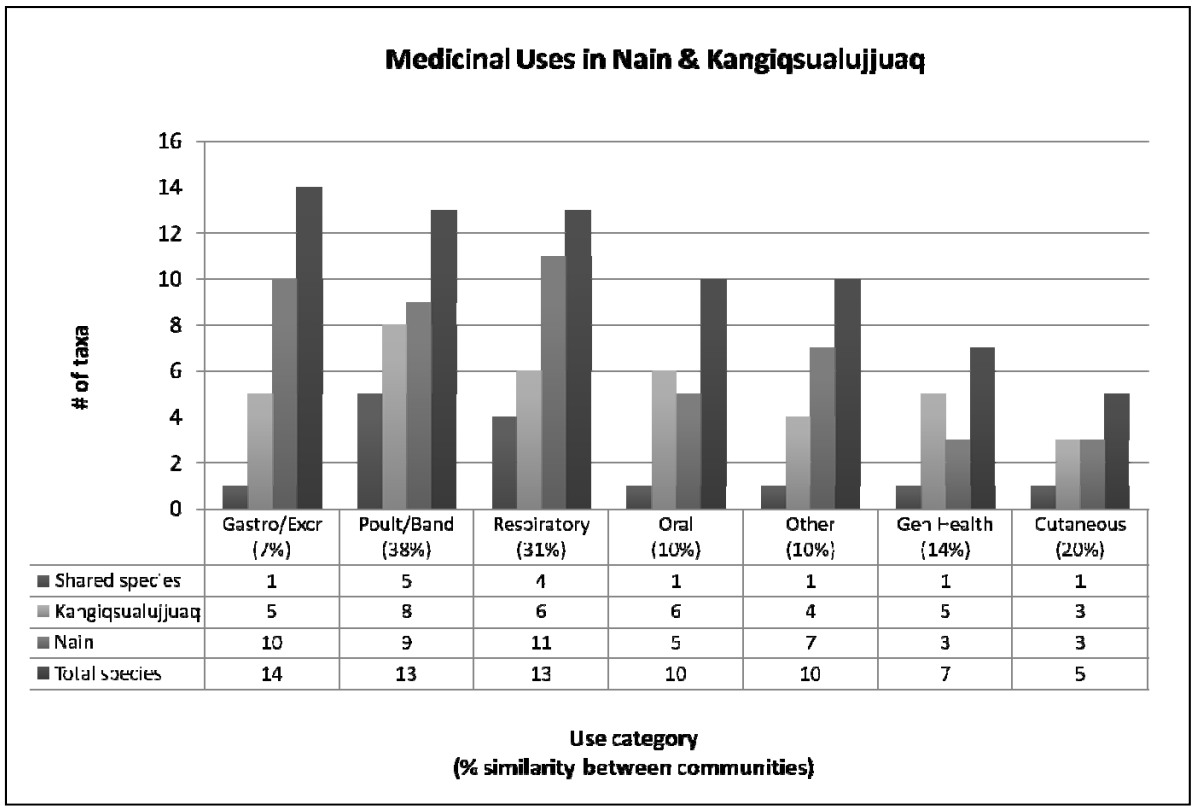
Family	Species used medicinally	Total species used	% of used species in family used medicinally
Ericaceae	6	11	55
Pinaceae	3	4	75
Salicaceae	3	4	75
Onagraceae	2	3	67
Polygonaceae	2	3	67
Chlorophyceae	1	1	100
Cladoniaceae	1	1	100
Betulaceae	1	3	33
Bryophyta	1	4	25
Crassulaceae	1	1	100
Cupressaceae	1	1	100
Cyperaceae	1	1	100
Grimmiaceae	1	1	100
Phaeophyceae	1	3	33
Poaceae	1	2	50
Rosaceae	1	4	25
Saxifragaceae	1	1	100
Sphagnaceae	1	1	100
Umbilicariaceae	1	1	100

Table 2.8 Specific taxa used for more than a single ailment category. The remaining 15 medicinal taxa were all used for only one ailment category. Use reports are the number of species-ailment category combinations reported for both communities (possible total of 14 if a species was used for all 7 categories in both communities).

Family	Specific taxa	Growth form	Categories	Use reports	Community
Pinaceae	*Larix laricina*	tree	6	9	both
Crassulacea	*Rhodiola rosea*	herb	6	6	both
Cupressaceae	*Juniperus communis*	shrub	5	8	both
Pinaceae	*Picea mariana*	tree	5	7	both
Ericaceae	*Vaccinium vitis-idaea*	herb	5	5	both
Salicaceae	Salix spp. ***(uqaujaq/uKaujak)***	shrub	4	4	both
Salicaceae	Salix spp. ***(urpik/uppigak)***	shrub	4	4	both
Onagraceae	*Chamerion angustifolium*	herb	4	4	Kangiqsualujjuaq
Pinaceae	*Picea glauca*	tree	4	4	Nain
Umbilicariaceae	Umbilicaria spp.	fungus	3	4	both
Rosaceae	*Rubus chamaemorus*	herb	3	3	Kangiqsualujjuaq
Cyperaceae	Eriophorum spp.	grass	2	3	both
Ericaceae	*Rhododendron groenlandicum*	shrub	2	3	both
Ericaceae	*Rhododendron tomentosum*	shrub	2	3	both
Chlorophyceae	Chlorophyceae (green algae)	marine	2	2	both

Figure 2.9 shows the number of species used in each community for each ailment type; there was no difference between the communities. The gastrointestinal/excretory category was treated with the greatest number of species (14), although only *Juniperus communis* was used in both communities. 13 species were used as a bandage, dressing, or poultice, for a total of 15 species when also including species used for other cutaneous problems (5 species separately). 13 species were used for respiratory problems; oral and other problems had 10 species each; 7 species were reported for general health. There was very low correspondence between communities regarding which species were used to treat the same ailments, and likewise which ailments were treated by a certain species. Although 43% of medicinal species were used (medicinally) in both communities, a species was used for the same ailment category in both communities only 19% of the time.

Figure 2.9 Medicinal uses of all taxa in Nain and Kangiqsualujjuaq. 13 of 30 medicinal species were used in both communities (43%). There was no statistical difference in the number of species used between the communities (Pearson Chi-square not valid).



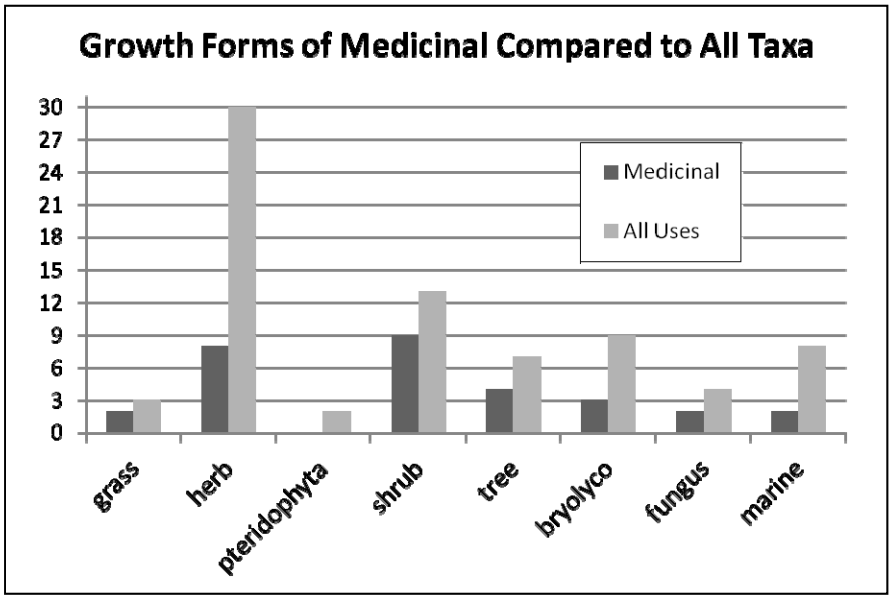
	Gastro/Excr (7%)	Poult/Band (38%)	Respiratory (31%)	Oral (10%)	Other (10%)	Gen Health (14%)	Cutaneous (20%)
Shared species	1	5	4	1	1	1	1
Kangiqsualujjuaq	5	8	6	6	4	5	3
Nain	10	9	11	5	7	3	3
Total species	14	13	13	10	10	7	5

The gastrointestinal/excretory category had species to treat heartburn, ulcers, stomach aches, diarrhea, to calm "nervous stomach", as well as species used as diuretics, to give sick people back their thirst, to treat urinary tract infections, and those considered to be "poisonous in excess". Species used for respiratory problems addressed coughs, colds, colds with phlegm, flu, tuberculosis ("bleeding lungs", spitting blood), asthma, as well as being used as a tonic for "better respiration". Species applied topically were used as a poultice, bandage, or dressing to cover boils, burns, cuts, sores, wounds, gunshot wounds, inflammations (to "absorb liquid", extract water), as well as dressings for newborn's navels, and as absorbent material for diapers and menstrual pads. Generally, these were applied directly and held in place by a piece of cloth of animal skin. Other species were used as a disinfecting wash for cutaneous infections, dry/itchy skin, eczema, impetigo, and other dermatological problems. Often the plants were pounded to help extract the 'juices' before application, and/or boiled in the case of washes. The oral category included species used to treat thrush, sore throat, and other oral problems, as

well as toothaches, cavities, and species that are "good for teeth" in general, or used as chewing gum. A general health category was also included, which comprised of species said to be cure-alls, or used as a general tonic, for sickness, or to feel better. These were consumed raw or drank as infusions or decoctions. Other medicinal uses that were grouped together: aches, pain relief, earaches, eye infection, blood poisoning, fever, scurvy, and "good for the brain".

Of the medicinal species, the majority were shrubs (9), followed by herbs (8), trees (4), and bryophytes and lycopods (3). Grass, fungus and marine growth forms all had 2 species, while pteridophytes were not used at all (Figure 2.10). Of the larger groups, roughly two-thirds of the shrub and tree species were used medicinally (69% and 57%, respectively), compared to only 27% of herb species. There was no difference in the proportion of growth forms used between the communities. Three of seven total tree species were used medicinally in Nain compared to three of only four total tree species in Kangiqsualujjuaq, meaning that Kangiqsualujjuaq used a higher proportion of their trees medicinally.

Figure 2.10 Growth forms of medicinal taxa. Proportion of each growth form used medicinally: grass 67%, herb 27%, pteridophyte 0%, shrub 69%, tree 57%, bryolyco 33%, fungus 50%, marine 25%. There was no statistical difference in the growth forms used between the communities (Pearson Chi-square not valid).



2.4 Discussion

Despite high overlap in species distributions (Blondeau *et al.*, 2011), only slightly more than half the total species were used in both communities. This could be due to differences in environment and ecotopes, and therefore proximity to and ease of availability of certain species. Commonness must also be taken into account, since simple presence in a territory does not necessarily imply that it is easily accessible. For example, *Picea glauca*'s distribution extends north into Nunavik, including the region around Kangiqsualujjuaq, but it is less widespread than *Picea mariana* with which it is phenotypically very similar at high northern latitudes. While not reported as used in Kangiqsualujjuaq in this study, Inuit in that community would likely use *Picea glauca* if they encountered it; in fact, post-study, an Inuk in Kangiqsualujjuaq mentioned using *P. glauca* to make tent poles. There were other instances of closely related species being used in one of the two communities, for example *Pedicularis labradorica* (Orobanchaceae) used in Nain and *Pedicularis groenlandica* used in Kangiqsualujjuaq. When categories more inclusive than just species are examined, the similarity of use becomes much higher: 29 families were shared (74%) compared to only 10 families used exclusively in one community (each with only a single species reported, five per community).

Most species have been previously documented in ethnobotanical studies for other parts of the Arctic, or northern North America. The majority of the species found during a paleoethnobotanical study at the archaeological dig site Uivak in Labrador (Zutter 2009) were reported by both communities, adding further evidence to other recent studies in the Arctic showing that traditional knowledge passed down orally can remain robust across many generations (e.g. Aporta 2009, Pearce *et al.* 2011). It helps that many of our interviewed Elders in Nunavik, and to a lesser extent those in Labrador, learned about the botanical world not only through narratives, but also to a large extent through personal experience stemming from the semi-nomadic lifestyles of their younger years. The consistency of species used is likely also partially a function of the relatively low biodiversity in the arctic and sub-arctic ecozones. Many plant names were similar between the communities, particularly for culturally salient species one could call most important (e.g. trees, the most used shrubs, berries). The

overlap of names and uses between Nain and Kangiqsualujjuaq, and especially informants' awareness of different names or uses for the same species in other communities, supports the existence of a pan-Arctic network of material and cultural exchange, as suggested by Aporta (2009). Knowledge, and perhaps also plants, were likely shared between members of the two regions during meetings at specific locations, or when groups met during travel along shared routes (KRG 2005).

A wide range of species was used from a diversity of habitats, but there was low specificity for medicinal uses of plants, both within and between communities: single species were often used for a variety of ailments, and each ailment was treated by a variety of species. Also, the ailments treated by a species were not necessarily the same between communities, and likewise the species used for an ailment category did not overlap much between communities. The medicinal categories for which the largest number of species were reported were topical (cutaneous/poultice/bandage) and respiratory problems, consistent with the most commonly treated ailments reported by Ootoova *et al.* (2001) for Baffin Island. Black *et al.* (2008) however, found that Inuit of Qikiqtaaluk on Baffin Island used the greatest number of taxa for general health, followed by infections and gastrointestinal problems, with a surprisingly low number of taxa used for respiratory problems.

Pharmacologically effective plants are expected to have higher informant consensus values (Trotter & Logan 1986), so would also be expected to be more widely known within and across communities, and species with active compounds have likely been selected by other indigenous groups (although not necessarily for the same treatments) (Moerman & Estabrook 2003). Four of the communities' medicinal families ranked within the top ten medicinally used families of native North America reported by Moerman (1996) (Ericaceae, Rosaceae, Pinaceae, and Salicaceae, representing 13 of the 23 species used), but also one species was used from the least used family, Poaceae (ranked low due to its large size and resulting high number of non-medicinal species). Of the 21 vascular plant families reported with edible species by the communities in question, 5 of these were among Moermann's (1996) top 10 most used families (Rosaceae, Ericaceae, Grossulariaceae, Pinaceae, and Polygonaceae). Two of the other top 10 families, however, are not represented in the boreal-

arctic ecotone (Cactaceae, Fagaceae), so their absence in the list of edible taxa of Inuit is not surprising. Inuit also made use of two families that were ranked within the ten least used edible families of North America (Asteraceae and Caryophyllaceae), although this low ranking, like Poaceae, is mostly due to Asteraceae's relatively large size (and therefore elevated number of non-edible species).

Herbaceous plants were the growth form most used, not surprising given the relative abundance of herbaceous species in the Subarctic/Arctic. Compared to the number of tree species available however, trees were used much more frequently. For this analysis, each species was classified as a single growth form, but it must be noted that tree and shrub species in arctic and sub-arctic climates have high phenotypic variability (Brandt 2009). So, while for example *Picea mariana* might reach a height of 3 metres in a sheltered valley (and thus unmistakeably be classified as a 'tree'), it might only reach a height of 1 metre if growing on an exposed, windy rocky outcropping, and be much wider than its height, calling into question whether this is really still a 'tree' growth form. Informants were quick to classify obviously upright species as *napâttuit* ('trees'), but while they recognized prostrate specimens as the same species as their upright counterparts, they were less comfortable classifying them as typical *napâttuit*. In higher latitudes of the Arctic, above the tree line where all plant life is more or less prostrate, perhaps height is less of a distinguishing factor than is woodiness (which could make them useful for fuel), as suggested by Paillet (1973).

The method of harvest of most plant species used is relatively sustainable, since the plants parts being used most frequently are self-renewing yearly, such as the fruits, buds, bark, leaves, or branches. Species are most at risk of over-harvest when the root or the whole plant is used, thereby killing the plant. This is only the case for a couple species, such as *Rhodiola rosea*, whose populations could be at risk of overharvesting in certain areas (Cuerrier *et al.* 2013).

More specificity in terminology could be clarified with more time spent in the communities for such questions as specific preparations and parts used medicinally, the meanings and etymology of names, and tracking the history of equivalent terms to families originating from different villages. Especially in the case of Nain, families were relocated

twice in the last century from previously separate villages (Brice-Bennett 1977). Informants often reported the names they would use for a plant, as well as what their wife/husband might call it if they were from a different family of village – an example of the diversity of ethnobotanical knowledge present in Inuit communities of northeastern Canada.

Both communities reported the same number of taxa, with highly similar distribution of these taxa between vascular or non-vascular taxa, growth forms, uses in general, and medicinal uses. Yet, half the taxa reported were used in only one community, and even of the shared taxa, what they were being used for was often different, even for the medicinal taxa. Is this a reflection of true differences in plant knowledge and use between the two groups of people? Or perhaps what is presently known and remembered in each community is already only a fraction of a more robust and detailed body of traditional knowledge that existed before the shift to permanently settled village life, with the accompanying influences of non-Inuit culture and language? Further investigation might confirm knowledge of and uses of the taxa reported in only one community for the other, but this may become more difficult with time if the trend of knowledge loss is not reversed, given that the fraction of community members with robust botanical knowledge, who grew up living off the land, has already declined significantly compared to several decades ago. In any case, these data provide a starting point for more in-depth analysis and comparison across Inuit groups, as well as other indigenous groups that occupied similar biogeographical areas. By recording traditional knowledge from a diversity of regions, communities, and families, and even demographics within families, there is a greater chance of discovering a more complete body of knowledge. What might be remembered in one location may have been forgotten in another, although that knowledge may have existed at an earlier time.

Plant knowledge is still firsthand for the older generations (although in some cases this may be more anecdotal than from personal experience), but a shift to sedentary lifestyles and modern medicine means that most youth have little knowledge of traditional plant uses. This is especially difficult to acquire given the communication barrier of not speaking the language of one's community's elders, as is the case in Nain. But even in Kangiqsualujjuaq where Inuktitut is spoken by all generations, botanical and other specialized terms are lacking, with

the exception perhaps of the edible berries and other important plants, such as those used for fuel. Reintegration of these traditions (e.g. by including plants among other more well-known and still used traditional foods) could have positive effects for health as well as cultural identity (i.e. language and tradition conservation; Mead *et al.* 2010; Downing & Cuerrier, 2011). Diversity of knowledge is an important reason for continued research in other communities across the Arctic because some less commonly used species may have been used wherever they occurred (i.e. across their entire distribution), but this knowledge may already have been lost in the small populations of individual arctic villages. Furthermore, given the variety of uses reported for the same species both within and between the two communities surveyed, although the species used may be the same, the specific uses by people in other villages might be different. A better understanding of which plants are named and used by Inuit across the Arctic, Subarctic, and boreal zones can help inform study regarding their distribution (both present and historical), add different perspectives to northern ecology, and contribute to culture, language, and biodiversity conservation – increasingly important initiatives in the current context of climate change and globalization.

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Chapter 3: Ethnoecology

Nunatsiavut, 'Our beautiful land': Inuit landscape ethnoecology in Labrador, Canada

Courtenay Clark and Alain Cuerrier

Abstract: For Inuit in the subarctic-boreal transition zone of northeastern Canada, an intimate knowledge of the environment and local biodiversity is crucial for successful traditional activities. This study examines what kinds of landscape features and habitats Inuit of Nunatsiavut recognize and name. During interviews, community members (mostly Elders) were shown photographs from the region, and were asked to describe and name salient types of places in Inuktitut (in their local dialect Labrador Inuttitut). The most frequently reported geographical units dealt with the region's topography (e.g. 'mountain', 'island', 'flat-place'), hydrology (e.g. 'river', 'bay'), and superficial characteristics (e.g. 'bedrock', 'permanent snow patch'). Ecological considerations were also prominent, such as plant associations and animal habitats (e.g. 'shrubby-place', 'wetland', 'caribou-return-to-place'). Areas were often characterized by a dominant species or substrate type, being named using the plural form of the species/substrate (e.g. ***napâttuk*** 'tree'/ ***napâttuit*** 'forest', ***siugak*** 'sand'/***siugalak*** 'sandy-area'). Some types of places reported by Inuit were significant mainly for traditional activities (e.g. 'berry-patch', 'seal-place', 'dry-wood-place', 'danger-place'), aiding navigation and resource finding. Integrating Inuit conceptions of ecosystems and their component landscape units with those of contemporary science can improve our understanding of subarctic ecology, help involve local stakeholders in sustainable development discussions, and inform land use planning. Climate change adaptation strategies can benefit from this collaboration, as can subarctic biodiversity and Inuit language/culture conservation initiatives.

Keywords: landscape ethnoecology, subarctic ecology, Inuit, traditional ecological knowledge (TEK), Nunatsiavut, Labrador Inuttitut, Inuktitut, ecological classification, northeastern Canada

3.1 Introduction

Located in subarctic northern Labrador, the Inuit territory of Nunatsiavut is unique in the Arctic-wide homeland of the Inuit due to its location in an ecological transition zone between arctic tundra and open boreal forest (Lopoukhine *et al*. 1978; Brandt 2009). Climate change is affecting the sensitive plant communities in these ecozones (Convey *et al.* 2012; Henry *et al.* 2012), and is likewise having health, food security, and socio-economic impacts on the region's inhabitants (Furgal *et al.* 2002; Furgal 2008; Rankin 2010). Inuit, along with other indigenous groups worldwide, are expected to be among the populations most adversely affected by global warming and the rapidly changing environmental conditions it is causing (Downing & Cuerrier 2011).

Traditionally hunter-fisher-gatherers, the Inuit of Nunatsiavut have occupied the northern coast of Labrador for at least the last 400 years (Richling 2000). Despite the region's long history of European influence (the first Moravian mission was established in Nain in 1771), the most dramatic socio-cultural changes have occurred relatively recently as people have settled into permanent villages and adopted Euro-Canadian culture more extensively than in the days of the early settlers (Brice-Bennett 1977). Impacts of globalization and new livelihoods mean that Nunatsiavut's local dialect, Labrador Inuttitut (part of the Arctic-wide Inuit language Inuktitut), is virtually no longer being passed down orally to younger generations (Andersen & Johns 2005). Being replaced by English, Labrador Inuttitut is now spoken almost exclusively by older generations (Statistics Canada 2006). Because Inuit ecological knowledge is not traditionally recorded in writing, specific terminology and concepts, especially regarding local flora and landscape, are generally undocumented and are thus at risk of vanishing as older generations pass away without transmitting their knowledge to the younger ones (Wenzel 2004; Watson *et al.* 2003).

This traditional ecological knowledge (TEK) can be an invaluable source of information for anyone trying to understand the complex environment of the Subarctic. Landscape ethnoecology provides a means of conserving the subset of TEK that deals with how cultures name, categorize, perceive, and understand their environments (Hunn & Meilleur 2009). Like in western ecology, indigenous ecological classification systems have been shown

to take into account abiotic features, such as a region's physiognomy/topography, hydrology, soil characteristics, and disturbance regimes, but also the distribution of vegetation communities and other biotic features (Martin 1993; Shepard *et al.* 2001). A key distinguishing factor of indigenous understanding of the environment is the synthetic way in which it is viewed by many groups: not dealing with it one discipline at a time (e.g. from the separate fields of geology, hydrology, climatology, etc.), but rather as an integrated whole, with humans as an integral element – not fundamentally separate from the land as in standard western conceptions (Davidson-Hunt & Berkes 2003; Johnson 2010).

By including socio-cultural aspects of the landscape, ethnoecology provides a holistic approach that can be complementary to contemporary scientific methodologies, often producing different interpretations of landscape patterns and environmental phenomena, which can result in overall better prediction of habitat and resource distributions across a landscape (Berkes 1999, 2008). Inuit TEK has important potential to be integrated into resource management, education, and conservation initiatives, actively involving stakeholders in decisions important to their livelihoods and lifestyles (Zamparo 1996; Wenzel 1999; Aikenhead 2001). Knowledge of which places, or *kinds* of places, are important for people, plants, and wildlife is crucial for effective sustainable land use planning, such as predicting areas where potential impacts of non-renewable resource development would be most or least disruptive (Legat *et al*. 2001). Traditional ecological knowledge can also contribute to other domains of knowledge to help develop appropriate adaptation strategies to mitigate impacts of climate change and increasing pressures of globalization (Pearce *et al.* 2009). This type of research and documentation is particularly important and timely in communities where language barriers and cultural shifts have contributed to a break in the flow of traditional knowledge transmission (Pearce *et al.* 2011), such as is the case in Nunatsiavut and much of the rest of the Arctic (Tulloch 2004; Dorais 2010; Andersen & Johns 2005).

Various studies have looked at how hunter/fisher-gatherer cultures of North America perceive and understand their landscapes. In the west, Athabaskan geographic, toponymic and hydronymic knowledge has been addressed in Alaska by Kari (1989; 1996) and Kari & Fall (1987), and in the Yukon by Cruikshank (1981; 1990). Johnson (2000, 2008, 2010) describes

the landscape ethnoecologies of various Dene groups in northwestern Canada: Gitksan and Witsuwit'en (northwest British Columbia), Kaska Dena (southern Yukon), Gwich'in (Mackenzie Delta Region), and Sahtu'ine' (Great Bear Lake). Dogrib place names in the Northwest Territories are examined as indicators of biogeographical knowledge by Legat *et al*. (2001). Hunn & Selam and Family (1990) consider topographic, hydrograpic, and some biological terms of the Sahaptin, traditional foragers and fishers of the Columbia Basin in the western United States. Finally, Davidson-Hunt and Berkes (2003) discuss biogeophysical landscape vocabulary in the context of the socio-ecological environment of an Algonquian group, the Anishinaabe in northwestern Ontario.

Though some of the studies mentioned above address cultures living in boreal and subarctic environments, none have dealt with Inuit ethnoecologies in their arctic homeland. Several authors (e.g. Aporta 2009a; Krupnik *et al*. 2010; Heyes 2011) have examined Inuit understanding of sea ice and its associated terminology, arguably a vital aspect of Inuit "landscape" ethnoecology given its predominance throughout the year and its importance for travelling and hunting. Additionally, Collignon (2006) discusses geographies of Inuinnait of the Central (Canadian) Arctic, with a focus on Inuit place names.

Though not addressing landscape features or habitats specifically, place names, and examination of the *types* of places that get named, can produce important insights into the kinds of landscape features that are salient for the people using those names (Johnson 2010). Place names have been fairly extensively documented across the Arctic, particularly in Nunavik, Nunatsiavut's neighbouring Inuit territory to the west in northern Quebec (Müller-Wille 1984, 1987, 1989, 1991; Müller-Wille & Müller-Wille 1983; Saladin d'Anglure 1968; KRG 2011). Various projects have been undertaken in the last decades to record and map indigenous place names for the critical roles that they have played in northern Canadian land claims, as a means used by groups to express their land tenure (Castonguay 1979; Lester 1979). For example, Gitksan place names in northwestern Canada are proprietary, and families demonstrate their ownership of a region through their familiarity with its toponyms (Johnson 2010). Inuit place names have also been important in the development of their autonomous territories throughout Canada (Müller-Wille 1983, 1989; Scott 2001).

No explicitly ethnoecological studies have been done in Nunatsiavut, but some landscape categories can be gleaned from historical place names recorded in the region. Wheeler (1953) lists over 500 Inuit toponyms, primarily from the Nain-Okak region of northern Labrador, applied to over 50 types of geographical features (e.g. island, point, peninsula, isthmus, lake, river, etc.). Many of the place names are composed of a generic landscape term as the root word, modified by a postbase adding extra meaning such as its size or relation to other features. Analysis of Inuit place names from historical maps of coastal southern Labrador by Rankin *et al.* (2008) shows the same pattern of landscape features being named by a modified generic term, but does not provide further insight regarding what exactly these generic terms refer to. Wheeler points out that in many cases "our conceptions of geographic units do not correspond with those of the Eskimo," noting that Inuit landscape units are often more restricted in their reference, and appealing to more practical units, than those used in western cartography (such as to a particular treed section of a shoreline rather than the entire coast; 1953, p. 2). This raises the obvious question then of how *do* Inuit conceptualize geographic units, and how are they different from 'ours' (i.e., the Euro-Canadian view)?

Thus, the first step of this project aimed to answer the following question:

What kinds of landscape features do Inuit of Nunatsiavut recognize and name?

Understanding how Inuit conceptualize their local landscape, and having a working knowledge of the terminology they use to describe it, is a crucial first step toward having meaningful cross-cultural dialogue about subarctic ecology (Pulsifier *et al*. 2012; Furgal *et al*. 2010). Yet, knowing how Inuit differentiate landscape units does not necessarily explicitly reveal what they know about the distribution of vegetation, wildlife, or other culturally-salient places across the land. Indigenous understanding of ecological associations is often covert, and not necessarily obvious from a simple list of geographical terms (Johnson 2010).

The second part of this project thus asks the question:

What kinds of habitats do Inuit of Nunatsiavut recognize and name?

To this end, we expanded on the ecological knowledge implicit in Inuit understanding of landscape features, and recorded terms that denote types of places specifically pertaining to

plant communities, animal habitats, and other types of places important for traditional Inuit activities. Developing a better understanding of Inuit conceptions of the landscape and its relationship with its inhabitants (plants, animals, humans, and perhaps even spirits) can help a) inform western ecology's study of subarctic ecology, and b) provide a better foundation for land management discussions and conservation initiatives involving stakeholders with different underlying worldviews.

3.2 Materials and methods

3.2.1 Study area

Interviews took place in Nain ($56^0$33' N, $61^0$41' W), the northernmost populated village in the Inuit territory of Nunatsiavut (within the province of Newfoundland and Labrador), on the coast of the Labrador Sea in northeastern Canada. Nain is located at the northern edge of sporadic discontinuous permafrost (10-50%; Natural Resources Canada 2012) in the Canadian Shield plateau physiographic region. At the border between subarctic and polar climate, Nain has a daily mean temperature of -3°C, with an average summer high of 16°C and an average winter low of -23°C (Environment Canada 2012). The region has particularly high precipitation for its low elevation and consistently cold climate, with an average annual rainfall of 400.4 mm and average annual snowfall of 492.2 cm. Nain's population was 1,188 in 2011, primarily Inuit but among these a small percentage of European-heritage Canadians (Statistics Canada 2012).

A variety of plant habitats are represented, the most important being: marine coastal (upper and lower littoral); dry, rocky areas; aquatic and wet areas; and disturbed areas (by animals or humans; Blondeau *et al.* 2011). Tree growth at lower latitudes and altitudes is replaced by scrub vegetation and lichen tundra further north and at higher altitudes. As in other regions located in the forest-tundra ecotone, the predominant tree species are *Picea mariana*, *Larix laricina*, and *Picea glauca*, but Labrador is noteworthy for the presence of small stands of *Populus balsamifera* north of the general tree limit (Brandt 2009). Isolated patches of *Betula papyrifera* can also be found in sheltered valleys.

3.2.2 Data collection

Data was collected using semi-structured interviews with local informants, a well-established methodology for ethnobotanical investigation (Martin 1996). The first interview had our translator Wilson Jararuse review all terms deemed to be relevant to a discussion of landscape or animal/plant habitats extracted from two dictionaries (Andersen *et al.* 2007; Labrador Inuttut Dictionary, accessed online February 2011), checking these for present-day use, spelling, and pronunciation. For the rest of the interviews, to guide the discussions, photos were shown to participants. The majority of the photos were taken by the authors of locations with which informants often had personal experience, mostly close to Nain and some further north in the Torngat Mountains National Park. In order to expand the diversity of landscape elements addressed, these were supplemented by aerial photos from around the region and photos from publications of landscape features inaccessible within a day's travel (by foot or boat) of Nain (e.g. KRG 2005). Participants were asked to point out and name features of the photos that they perceived to be salient elements of the landscape.

Each interview lasted between 30 minutes to 2 hours, depending on informants' knowledge and availability, with care taken to avoid informant fatigue. Interviews were conducted in English and Inuktitut, with the help of local interpreter/translators when needed. Interviews took place in March 2011, in homes or at our temporary residence in Nain. Informal discussions also took place in the field, but this was limited by time and cost constraints, and by the restricted mobility of some elderly participants. Informants were identified and recruited based on suggestions of our interpreters and other community members, for a total of 18 informants (8 women, 10 men, average age 67.5, median age 65). Over 32 hours of audio was recorded from consenting informants, as well as video for the majority of interviews. Our spellings use the standardized Labrador Inuttitut writing system as outlined in the dictionary by Andersen *et al*. (2007), but reflect variations in speaker pronunciation, resulting that a single 'word' was not always transcribed the same way during interviews.

Approval for this project was granted by the Faculty of Arts and Science Research Ethics Board of the University of Montreal (Comité d'éthique de la recherche de la Faculté

des arts et des sciences, CÉRFAS-2010-11-241-A). Permission was granted for work in Nain and for collection of plants by the Nunatsiavut Government under Land Use permit no. LIL030017PR. All informants participated under prior informed consent, having been explained the objectives and methodology of the project, and of their right to withdraw from the study at any point.

3.3 Results & discussion

Physiographic landscape terms recorded primarily denoted hydrological and topographic features, as well as substrates, snow, and other surfaces. Ecological considerations also played a role, with various plant communities and animal habitats recognized. Other types of places were reported based on their significance to traditional human activities.

In most cases, the generic place terms were not reported as simple root words on their own, but were rather mentioned in context as part of a sentence. Because of the complexity of Inuktitut grammar, this meant that the root words usually occurred with a suffixed postbase (i.e. a type of morpheme, or unit of meaning, characteristic of Inuktitut and a couple of other languages, often adding more semantic content than the types of affixes that occur in English or French). In some cases it was obvious when affixes were used simply to make the utterance grammatical, but in other instances the affixes modified the root word to an extent that this new construction could count as a whole new word, representing a novel and independent concept (see Johns (2009, 2010a, b) and Andersen & Johns (2005) for a discussion regarding this and other difficulties of listing words in Labrador Inuttitut). We chose to record terms as they were reported to us, so as not to miss important nuances that may not have been immediately obvious. The challenge this presents was that of over 1400 entries, less than 85 words (approximately 6% of terms recorded) were reported the same way more than once, even after combining pronunciation variations of 'words' with the same reported meaning. Four root words were reported by 10-12 informants (***sitjak*** 'beach', ***kok*** 'river', ***tasik*** 'pond/lake', ***ujagak*** 'rock'), 17 reported by 5-8 informants, 25 reported by 3-4 informants, and 39 by 2 informants. The rest were reported in their particular form only once. An in-depth

analysis of the postbases used in these words is beyond the scope of this paper, but several of the more important and frequently occurring ones are discussed below.

Figure 3.1 illustrates some major features. Table 3.1 lists the most frequently mentioned terms. Some additional terms that were reported only once, or listed in one of the Labrador Inuttitut dictionaries but not mentioned in our interviews, were included in cases where they demonstrated unique concepts not otherwise reported. In some cases full definitions were not obtained; where there was doubt on our part, the direct quote from an informant's (or translator's) explanation/comment was reported, accompanied by our interpretation.

How does this compare to other peoples, and what fundamental questions of ethnoecology can we answer with these insights? While there exists considerable variability between different peoples in their naming and recognition of landscape features, there are nevertheless patterns and perhaps even elements of the environment which are universally named, although the exact conceptions and extent of these features may vary (Burenhult & Levinson 2008).

Figure 3.1 Landscape showing major features.

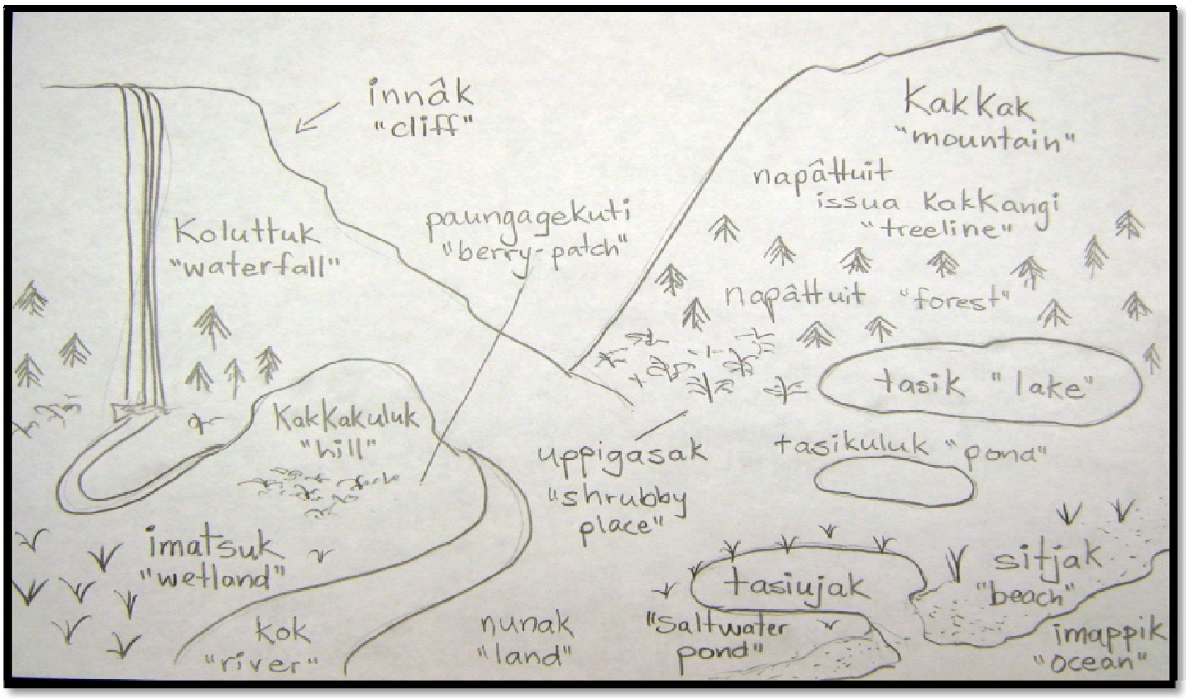

Table 3.1 Landscape terms in Nain, Nunatsiavut.

Inuktitut lexicon	Meaning	Comments: Uses, Significance
Topographic		
Kigittak	island	
Kigittakuluk	small island	
Kigittakulukuluk	very small island	"good for nothing!"[because it's too small to have important resources]
Kigittâluk	big island	
Kigittaumanik	"almost island"	
simikutak	island close to a cove or bay	
avakKutak	island in a river	
Kigttuk manilik	egg-island	manilik = eggs
tikigak, tikigatsuk	point, peninsula	
tikigatsukuluk	small point/peninsula	
nuvuk	point, tip, peak	
nuvukuluk	small point	
nuvutangak	big point	
natsak	high hill, sloped side of a mountain?	
natsasuak	steep high hill	
natsani paunngaluvinik	'there are a lot of berries on the hill	
KakKak	hill, mountain	
KakKakuluk	hill, small hill	
KakKâluk	big hill, mountain, big mountain	
KakKasuagaluk	big mountain	
situkKak	hill, slope	
sittuk, situngajuk	slide area (snow, ice, rock, land, etc.)	"falling straight down...waterfall, rocks, person, anything'
situjak	avalanche, rock face	"too steep to climb, steeper than natsasuak"
sittunik	talus, scree (rockslide, landslide)	
ujagak sittunik	fallen rocks, rock pile at the base of a slope	ujagak = rock
apputik situsimajut	avalanche, snow pile at the base of a slope	apputik = snow
uvingajak, uvinganik	slope	
innak	cliff, rockface	
innakuluk	small cliff	
innâluk	big cliff	
innaluit	cliffs, more vast than innak	
natingnak, natingajak	flat area, flat ground (e.g. in a valley)	
sittungajuk	flat area (on the ice)	
sikujak, manigak	flat land	
anniak, aniagâluk	flat area (anywhere, e.g. beach, between mountains, etc.)	"we might go along this area when we're hunting because it's flat'
Kaittujângudluni anniak	flat rock area	Kaittuk = bedrock
Koppak	crack (anywhere, e.g. in a rock, in a mountain, in ice on a river or the sea, etc.)	also means "middle line splitting one's body in half"
Kokpakuluk	small crack	
Kokpâluk	big or wide crack, crevasse	
Kunnik	crack, crevasse (deep and wide, going down a long ways, "bigger than Koppak")	
Kutsunak	crevasse	
kogutsunâk	gorge, ravine, small canyon, split between the rocks	
Kaiguk, Kaigusuk	cave, cache, any hole in the rocks	"where the sun never shines, can put food in there to store it, or ferment it"
Kogutsunâk	"almost like a cave", crack, tunnel?, ("bigger than a Koppak, you could crawl through it")	"when you're travelling you could sleep in it"
Killak	cave	"when it's bad weather, you can go inside and keep warm, away from the wind"
Hydrologic		
imak	water (salt water or fresh water), sea, ocean	
imaksuak	sea, ocean ("big water")	
imappik	sea, ocean	
tagiuk	saltwater, sea	
kok	river	
kokuluk	small river	
kogukuluk	very small river	
kogaluk	big river	
koksuak	big river	
kogutsuak	very long river	
kogaluk sittungajuk	straight river	also: ikkatuk kugalak
kogaluk sittungamituk	winding river	also: sugunggajuk kok
kok pang	mouth of the river	
KopviKojak	stream running down the hill	means "crying"
kogalupsiugunga	sandy river bank	siugak = sand
Koluttuk	waterfall	
Koluttukuluk	small waterfall	
Koluttualuk	big waterfall	
siaKiguk	water (river?) going over a rockface	"the river happens like this on top of Kaittuk"
sukKanik	stream on flat land before it falls as a waterfall	

tasik	lake, pond	also means "to stretch"
tasikuluk	small pond	
tasialuk	large lake	
tasitsuak	big lake	"lake that's so long you can't see the other end'
tasiliuttaumanik	dam (manmade)	
tasiumajuk, tasiumajukuluk	"almost like a pond"	might not have water during dry weather but fills with water when it's rainy weather
tasikuluk sitjamik	saltwater pond (small pond by the shore)	sitjak = shore
tasikuluk ulitjausuk	tidal pool? ("pond what the tide catches")	ulik = high tide
tasik KakKamijut	lake in the hills/mountains	
tasijut killingani	"edge of the pond and the plants around it"	killinga = edge
tasimiutak	"things that grow at the pond"	
pigunnatuit tasikulummi	"plants in/at the pond"	
tasiujak	saltwater pond, bay resembling a lake	
tasiujuk	"pond when the tide goes up"	
Kausittuk	standing water?, wet	"my husband says the mosquitoes come from where there's lots of water in the ground, that's where they comes up from, Kausittuk, from the water, where it's damp, that's where they grows and lays their eggs, in the swamp"
nunak Kausittuk	wet place on land, swampy place	
Kautsik	wet area with living plants? ("never dry, always wet, alive, not dry and dead… explains everything growing there")	
imatsuk	wetland, swamp, marsh, bog, fen, wet place	
imatsuit	wetlands	
imatsukuluit	many small ponds, area with puddles	
imatsugak, imatsugait	"place where it's always wet'	
imatsugalak	wetland	
imatsualuk	large wetland area	
imatinnik	damp area that used to be a pond/ that would become a pond if there was more water?	("when it's spring and the snow is melting - when there's water it's called tasikuluk, when there's no water, imatinnik")
imatsimiutak, imatsimiutait	"things that grow in the wetland"	
pigunnatuit imatsuni	"plants in the wetlands"	
suputet pigukviusunga	patch of cottongrass (*Eriophorum* sp.) plants growing in a wet/damp place	
imatsuk		
kangidsuk	bay, cove	
kangidsukuluk	small bay	
kangitsuak	really long bay	
kangidsumanikuluk	small bay "that wants to be a big bay'	
iKaluit kangiapvinga	river mouth into a bay? "where the char go in" (iKaluit = char	
sitjak	shore, beach, shoreline, "where the water meets the land"	
sitjangakangitsupsikanga	shore of a saltwater bay (in contrast to the shore of a freshwater lake)	
sitjaktininganinga	beach at low tide	
pigunnatuit sitjamik	plants that grow by the beach (pigunnatuit = plants)	
tinik, tiningajuk, tinitsualuk	low tide, low tide place	
tinitsuak	falling tide	
tinitunnik	lowest tide of the month	
tinittatumi	"the beach area, where the water falls"	
tiniup issua	low tide edge, "where the water falls to"	
ulik, ulingajuk, ulitsualuk	high tide, high tide place	
ulitsuak	rising tide	
ulitunnik	highest tide of the month	at full moon, or during a storm
ulittatumi	"the beach area, where the water rises"	
ulinniup issua	high tide edge, "where the water rises to"	
tinnitjiasuk	intertidal zone, place at low tide connecting land that gets covered by water when the tide rises	(contrasted with same place at high tide: ulitjiausuk)
ulitjiausuk	intertidal zone, place connecting land when the the tide is high and it's covered by water	(contrasted with same place at low tide: tinnitjiasuk)
ikKak	floor of a body of water (ocean, lake)	
ikkatuk, ikkatujak	shallow water, shallow water area	can see the bottom, even from the air, or from the hillside
ikkagojak	shallow water area between an island and the mainland	be careful when travelling
ikijasakuluk	small shallow channel	
ikkatuk kugalâk	"small (shallow) river on the beach, or a river coming down on flat land'	
ippiutak, ittilik, ittiliasuk	shallow water, piece of land that connects an island to the mainland, "shallow enough to walk across"	
attautajuk	part of land attaching two larger pieces of land (tide can't separate them because it won't go over it)	
ikKigasâk	"neck of the rattle, because you can see the islands are connected'	
itijuk	deep water	
ukualinâluk	"area with really deep water where you can't anchor'	
Kammanik	deep area (under waterfalls)	"a lot of char in that area"
mallik	waves	
ikulliak	calm water	
auKannik	strong current area where ice won't form, thin ice area, hole in the ice [polynya?]	dangerous when travelling over the ice
pujugak	mist off the water where the river (freshwater) mixes with salt water of the sea, it turns to fog	

Substrates, snow, surfaces		
siugak	sand	
siugâlak	sandy area, "lots of sand"	
siugajak	riverbed? (sandy area)	"because there's no water coming down"
makKak	mud, clay, muddy place, "mucky place'	"you would sink in it if you walked on it'
matjak/matsak	mud, "more earthy than sandy, different from makKak'	
makKâgalak	mixture of sand and mud, "sinky" area	
Kausituk	wet mud, muddy area	(Kautsik = "wet area, alive, not dried up")
panittuk	dry, hard mud; dry place	
nunak	land, shore, earth, ground, place of residence, country	"where it's growing,""just land, you've got the rocks there, the lichen there, just basically the land'
nunajak	ground, earth, soil, dirt	"where there's stuff growing, stuck on the rock", "area where things can start to grow"
nunaksuak	big land, mainland, world	"big ol' land"
nunak mikijuk	small bits of sod? ("small earth")	
nunaksiak	pretty/beautiful land	"that area that the bakeapples grow, it's a little bit more wet'
nunatsiavut	our beautiful land	
piguungatuit	plants growing on soil (versus on bedrock)	"things that grow on the earth, because they're not growing on the rock, on the Kaittuk" (contrasted with piguungatuit KaittukKanganik)
nunaupKanganik		
sanik	earth, soil	("what plants grow out of, the bushes, willows, berries")
itjuk	soil, the ground	"where the flowers will grow, where there's no itjuk nothing grows"
ujagak	rock	"rock on the mountain, in the lake, but not in saltwater area" (compared to ikkagok) ?
ujagaluit	many rocks, pile of rocks, big rock	"could also call Mount Sophie (a mountain) ujagaluit, it doesn't matter how big it is"
ujagakuluk, ujagakuluit	small rock(s), pebbles or slightly larger	
mikijuk ujagak	small rock	"small rocks, but bigger than sikKaliak"
sikKaliak	rock, gravel, "small broken up rocks"	
ujagalak	rocks, many different sized rocks, rock "all broken up", gravelly place	"gravelly place anywhere, out on the land, or in town (like a gravel road or bank of the airstrip)"
ujagasutjuk	boulder	"bigger than ujagak, but not a KakKak (which is) so big you could walk on it"; "MO: doesn't know why they [the boulders] are there, how they got there. She heard story about the rocks sometimes used to move, story about something inside the big rocks'
ikkagok	rock (in a saltwater area, compared to ujagak?)	
ikkagoaluit	place with many rocks	see ikkagojak = "shallow water area between an island and the mainland"
alluvik	"small rocks that you could step on across a brook, smaller than an island"	
Kaittuk	bedrock, solid/flat rock, ground, rock bank, rock face, granite, rock beach	"area where there's nothing growing on it (compared to itjuk 'soil')," "area there without grass growing on it," "all the steep parts where you can't climb are called Kaittuk," "rock beach typical of the outside islands", "utsuKammak, tuligunnak (*Rhodiola rosea*) grow on the Kaittuk"
Kaittisuak	vast expanse (of rock)	
Kaittujângudluni anniak	flat rock	anniak = flat
Kaittujak	bare rock area (not covered with earth)	"same thing as Kaittuk, it's called Kaittujak where they starts growing, because there's no itjuk (soil)"
piguungatuit	things (plants) that grow on the rocks	
KaitukKanganik		
Kaittutuinami piguttuit	vegetation on solid rock	
nillak	ice, frozen?	
nigak?, nillak nunaup atani	permafrost?, ice under the ground	atani = underneath
manituk	rough (ice) area	
manituâluk	very rough area	
manitunnituk	smooth (ice) area (compared to manituk)	
sittungajuk	flat (ice) area ("all straight")	see sittungajuk = slide area "falling straight down'
sittuk	straight, flat	
aujuituk	glacier, frozen ground	
apputik	snow	
appusinek	patch of snow (in the summer, area is frozen year-round)	
apputik/apputek	snow patches, smaller (and lower down the hill?) than appusinek	
angiuvak	snow patch that never melts, unmelted snow	
apputik auliktuk	melting snow patch	
apputik situsimajut	fallen snow, avalanche snow	
KakKak apputilik	snow on the hills	
mangaijakKutik	place with snow	"if you didn't have water with you, you could melt snow like this, boil it and have it for tea, it's not dirty'
maujak	deep snow	
aKittuk	snow that you would sink in if you walked on it	
Kangattâk	snow/ice overhang?	"had to travel under it at the edge of the river because the ice wasn't solid enough closer to the middle of the river"
Vegetation communities		
napâttuit	trees, forest	plural of napâttuk = tree, "plain tree" (spruce)
napâttuit	trees, sparse forest	"for example on the hills, sparse enough that you can still see through them (compared to napattusuat, "forest", where the trees are too dense to be able to see through)"
napâttusuat	dense forest	"when you're in the trees and can't see anything else'

napâttuluvinik	place with many trees, forested area	
napâttuni	in the trees, forest	
napâttukuluit	many small trees, young forest	napâttukuluk = small tree
akulligedlutik napattukuluit pigusimajut	lots of small trees/plants? mixed together	piguttuk = plant
napâttuagait	"small little trees, just starting to grow"	napâttuagak = small/young tree
napâttualuit, napâttulialuk	big trees, mature growth forest	napâttualuk = big/tall tree, "taller than a person", napâttusuak = very tall tree
napâttusigualuit	many trees, big forest	
adjigengitut napâttuit	mixed forest, mix of different species of trees	
napâttuKangituk	area with no trees, where the trees don't grow	
akKutiKannik	"you are travelling in/on the tundra"	
napattuKangitummi		
napâttuit issua KakKangi	timberline, "edge of the trees on the hill"	
upigasak	bushy place	upigak = willow/shrub
upigait	willows (shrubs, bushes)	'smaller, scattered around'
upigaluit	willows (shrubs, bushes)	'thicker, bigger willows'
upigatalik	shrubby place	
upigalialuk	very bushy/shrubby place	
unuktualuit	many bushes	
Killagittulimi	amongst the (needle-bearing) trees	"that's where the akkigilik (spruce ptarmigan) live"
Killagittuk, Killagittuit	needle-bearing tree(s) (*Abies balsamea* , by extension *Picea mariana*)	"worst kind of wood in the world for firewood"
pingiluvinik	place with lots of juniper trees (Larix laricina)	pingik = Larix laricina
pingialuit	many juniper trees (predominantly *L.laricina* forest)	
pingialunnut	"juniper tree (*L. laricina*) forest, not much plain trees (Picea sp.)"	"go here to find the dry wood"
nigipivingik	area with a lot of pingik where porcupines have been eating	"if he came across pingiks that had been eaten by porcupine, he would call it nigipivinik" [porcupine = illaKusik]
ivitsukak	grassy area, grass, grassy area along the shore	
ivitsuat	"grasses, where it's damp, wetland"	
paungaKautik	berry patch	paungak = *Empetrum nigrum* , also any berry
paungnalialuk	berry patch ("same thing as paungaKautik")	
paungatuinnak	berry-place	real berry place? from -tuinnak = true, real?
paungatapvet	place for blackberries, the area where you pick blackberries	
paungaluvinik	(it has/place with) a lot of berries/black berries	"only when a place has a lot of berries you could call it this, not in a year where a place doesn't have a lot of berries"
paungatalik	pile of berries, place for berries	
paungasik	place for blackberries	"higher up in the country, further inland, not right by the water like the place for appiks"
Ecological		
panittuk	dry place	
sunaKangituk	desert	"but you would never say sunaKangituk, it's better to say panittuk"
pannaKautik	dry wood patch	
KiuKaunnaituk	"no more dry wood"	
ikisimajuk, ikisimajutalik	burned-place, 'fire place'	(-ajuk = place, ikisimmak = fire)
ikualasimajuk	burned-place, 'it was burned in the fire	ikualuk = fire
talinganik	shady-place	talik = shade
-Kautik	patch of …	
iKaluKautik	patch of char	good place for char (mostly around brooks, rivers) [ikKaluk, ikKaluit = char]
ammumajuKautik	patch of clams	good place for clams [clam = ammumajuk]
uvilliKautik	patch of mussels	good place for mussels [mussel = uviluk]
maniKautik	patch of eggs	place for eggs [manik = egg]
aKiKiKautik	patch of ptarmigan/partridges	"where there's a whole lot of partridges, where the partridges go every year" (proper name?) [aKiKik = ptarmigan/partridge]
KikuaKautik	patch of seaweed	place with seaweed
kuaniKautik	patch of shark's blanket (kelp)	place for shark's blanket (kelp)
KunguliKautik	patch of sorrel	patch of Kungulik [sorrel], "grow in the Kogutsunâk", "grow way outside [of town], in patches, in cracks, Kunnik"
pannaKautik	patch of dry wood	"where there is dry wood" [dry wood = pannak]
paungaKautik	patch of berries, crowberries (*Empetrum nigrum*)	patch of berries, berry-place (even if no berries currently there
kigutanginaKautik	patch of blueberries (*Vaccinium caespitosum, V. uliginosum*)	blueberry-place, place plentiful for blueberries
kimminaKautik	patch of redberry (*Vaccinium uva-ursi*)	redberry-place
appiKautik	patch of bakeapples (*Rubus chamaemorus*)	place for bakeapples, patch of bakeapple
Animal habitat		
nukKangapvik	place where (any kind of) animal has been, [where there is evidence of an animal?]	
nukKangak, nunaKajuit	place where the caribou come back to every year, "because they have their certain food, and there's a river there where they can drink", [caribou = tuktuk, tuttuk]	"each herd has their own nukKangak... could be only 6 or 7 in a herd that come back to their nukKangak place", [nunaKangak maybe a proper name?]
sitjait	fox burrow	"holes in the ground, where foxes make their homes and rear their young (not on the beach, up inland in the country)" [fox = tigiganniak]
auttutak	bird's nest	
Kittungalupvik, Kitungaliuvik	place where ducks go to lay their eggs	
puijisiupvet	good place to find seals [seal = puijik]	

KulliligaKaluagaluk	good place for capelin [capelin = Killiligak]	
ikKaluKaluagaluk, ikKalivet	good place for char (mostly around brooks, rivers)	
ikKâllivit/ikKâllivik, ikKalungniavik	[char = ikKaluk, ikKaluit]	
uviluKasok, uviluKatsiutiumivuk	good place for mussels [mussel = uviluk]	
Places associated with people		
innullimi	village	
innuKangitumi	wilderness'? "place where there's no people, where nobody's living'	
nunalinni	community, village	
tupiffik	campsite (one tent)	
tupiffet/tuppipvet	campsite (seasonal, where people would return to, more than just one tent/family)	
akKutik	route/road, trail, pass	
akkusinit	trail/path, "walking place away from the main road", "any trail, even one made by animals"	
takijualuk	trail	
Orientation		
ini	place	
nanituinnak, namutuinnak	everywhere, anywhere	
avani	north	
kitâ	east	
sikinik	south	
kangik	west	
Kang, Kânga	top	
KakKaupKang, KakKasuapKânga	top of the hill/mountain	
KikKangani	middle	
KakKaupKikKangani	middle of the mountain	
atani		
KakKakatani, KakKaup atanni	bottom of the hill/mountain, valley	
ikKak	bottom	
issua	edge, border	
killinga	edge	
kappianattuk, kappianattutalik	"dangerous area"	

3.3.1 Topographic and hydrological features

Most large and obvious features of the landscape were recognized and named (see Table 3.1). Various suffixes modified the size of an object or the extent of an area. As shown in Table 3.2 below, ***-uluk*** is suffixed to indicate that its referent is small/smaller (and can be repeated for emphasis, ***-ulukuluk, - ulukulukuluk,*** etc.), while –***âluk*** and –***suak*** are agrandizing. Alternatively (depending on speaker preference, or perhaps a sub-dialectal difference), object terms may be preceeded by ***mikijuk*** 'small'or ***angijuk*** 'large' to effect this same modification. Some concept of absolute size seemed to be implied with each degree of modification (one informant estimated for us, in meters, what height a waterfall should typically be to correspond to each suffix addition). The base words themselves, however, tended to have a wide range regarding the size of the feature they could denote, for example, ***tasik*** being a perfectly acceptable term for any contained body of (fresh) water, ranging from a small pond all the way to a large lake (but not so small as a puddle (***tasiaguk)***, and maybe not so large as a lake whose opposite shoreline could not be seen (***tasialuk*** or ***tasitsuak***)). Likewise, ***KakKak*** can denote a range of convex features, being glossed as both hill and mountain. It seems modified terms can also be used to indicate their size relative to another smaller or larger feature, even if these do not correspond to the 'standard' sizes (e.g. the smaller of two ponds might be termed a ***tasilukuluk*** in one context, yet in another situation be referred to as a ***tasik*** in comparison to an even smaller ***tasikuluk***).

Table 3.2 Size affixes

Suffix / Root word	***-uluk*** (smaller)	***-ulukuluk*** (smaller still)	***-suak*** (larger)	***-âluk*** (larger)
tasik 'lake, pond'	***tasilukuluk*** (***mikijuk tasik***) 'small lake'	***tasilukuluk, tasilukulukuluk*** 'small pond'	***tasitsuak*** 'large lake'	***tasiâluk*** (***angijuk tasik***) 'large lake'
Kollutuk 'waterfall'	***Kollutukuluk*** 'small waterfall' (5-10 meters)	***Kollutukulukuluk*** 'very small waterfall' (<5 meters)		***Kollutuâluk***? 'high waterfall' (>50 meters)
KakKak 'mountain/hill'	***KakKakuluk*** 'small hill'	***KakKakulukuluk*** 'very small hill'		***KakKâluk*** 'big mountain'

Sometimes features were named according to their resemblance to another feature. For example, ***tasiujak,*** literally "pond/lake-like", denotes a saltwater pond, or a bay resembling a lake. The suffix ***-manik*** seems to indicate a notion of 'not genuine', as in ***Kigittaumanik*** 'almost-island', ***tasiliuttaumanik*** 'reservoir lake from a man-made dam', and ***kangidsumanikuluk*** 'small bay that "wants to be a big bay"'.

3.3.2 Substrates, areas, and surfaces

The suffixes ***–ujak*** and ***-ajuk*** seem to denote an area characterized by a particular trait:

–ujak:

'bedrock' ***Kaittuk*** → ***Kaittujak*** 'bare, bedrock area'

'shallow' ***ikkatuk*** → ***ikkatujak*** 'shallow water area'

'flat' ***natingnak*** → ***natingnajak*** 'flat ground, valley'

-ajuk:

'low tide' ***tinik*** → ***tiningajuk*** 'low tide area' (lower littoral zone)

'high tide' ***ulik*** → ***ulingajuk*** 'high tide area' (upper littoral zone)

'fire' ***ikisimmak*** → ***ikisimajuk*** 'burned area'

'straight' ***sittuk*** → ***sittungajuk*** 'straight (flat) area (on ice)' or 'straight (down) area' (implying a rock/landslide area or an avalanche track)

In a similar way, various agrandizing suffixes, when added to substrate or other landscape terms, seem to denote an area typified by that substrate or feature:

–alak:

'sand' ***siugak*** → ***siugalak*** 'sandy area'

'mud' ***makKak*** → ***makKâgalak*** 'sinky/mucky area'

'rock' ***ujagak*** → ***ujagalak*** 'rocky area'

'wetland' ***imatsuk*** → ***imatsugalak*** 'wetlands area'

–suak:

'water' ***imak*** → ***imaksuak*** 'sea, ocean'

'bedrock' ***Kaittuk*** → ***Kaittisuak*** 'vast expanse, tundra?'

'earth, soil, land' ***nunak*** → ***nunaksuak*** 'big land, mainland, world'

'tree' ***napâttuk*** → ***napâttusuak*** 'dense forest'

-âluk:

‘cliff’ ***innak*** → ***innâluk*** ‘place where there are large or many cliffs’?

‘flat’ ***anniak*** → ***aniagâluk*** ‘flat area’

Other examples:

‘island’ ***Kikittak*** → ***Kikittaukak*** ‘archipelago, several neighbouring islands’

Like many other cultures of northern Canada, the traditional Inuit way of life is mainly based on hunting, fishing, and gathering. As such, we might expect less developed edaphic categories than with other peoples whose main mode of subsistence is agricultural, since soil types are not as central to their livelihoods. For example, at least eight soil types are recognized by each of several agricultural groups in Mexico, including the Sierra Nahua, shifting cultivators of the mountainous Sierra Norte de Puebla (Taller de Tradición Oral & Beaucage 1996), and by the Chinantec and Mixe of the Sierra Norte de Oaxaca (Martin 1993). In contrast, no specific soil categories were reported by the Gitksan, Witsuit’en, or Kaska, all hunter-fisher-gatherers in northwestern Canada (Johnson 2010). Legat *et al.* (2001) lists habitat types discussed by Dogrib elders in Canada’s Northwest Territories, some of which included substrate distinctions such as ‘sandy’, ‘gravelly’, ‘muddy’, along with variable moisture levels of the soil (dry, moist, wet), but without such fine distinctions as made by the agricultural groups reported above. The categories recognized by this last group correspond most closely to those identified by Nunatsiavut Inuit, which mainly took into account superficial characteristics such as solidness and moisture level: ***siugak*** ‘sand’, ***makKak*** ‘mud, clay’, ***matjak*** ‘mud, more earthy than sandy, different from ***makKak’***, ***Kausittuk*** ‘wet (mud)’, ***panittuk*** ‘dry (mud)’, ***ujagak*** ‘rock’, and ***Kaittuk*** ‘bedrock’. Three terms for ‘earth, soil’ were also given (***nunak***, ***itjuk***, and ***sanik***), but any difference between these was not elucidated.

Although some vegetation types (mostly only individual species) were mentioned as growing specifically in association with a type of substrate (e.g. ***tuligunnak*** ‘*Rhodiola rosea*’ on the ***Kaittuk*** ‘bedrock’, or ***ivit*** ‘grass’ on the ***sitjak*** ‘beach’), habitat types specifically taking into account plant communities associated with different soil characteristics, such as listed by Dogrib elders (Legat *et al*., 2001), were not as extensively described by Nunatsiavut Inuit. However, other ecological associations were inherent when describing substrate types,

especially in a marine context, such as what type of beach would harbour sea urchins and mussels (***ujagalak*** 'rocky (beach)'), or clams (***makKâgalak*** 'muddy (beach)'). Some speakers even made a distinction between ***ujagak*** 'rock, on the mountain, in the lake, but not in the saltwater area', and ***ikkagok*** 'rock, in a saltwater area', though whether this was simply a matter of the location of the rock, or the specific mineral composition (or other characteristics) of the rock, was not clarified.

Given the prevalence of snow and ice cover in Inuit territories, and its importance for travel and resource acquisition, these could legitimately also be considered as part of their "landscape", or rather "ice/snowscape", ethnoecologies. As Johns (2010) points out, the number of Inuit words for snow or ice is not a question that can ever be answered in an exact way, but the fact that so many terms are used is a good indication as to the relevance of these landscape features in Inuit life. While this study did include a dozen terms or so denoting types of places distinguished by their snow/ice characteristics, they are but a small sampling of the rich snow/ice vocabulary used by Inuit. We tried rather to focus on non-ice/snow features, as these have been covered extensively in other areas of the Arctic by other researchers (e.g. Aporta 2009a; Krupnik *et al.* 2010; Heyes 2011). The relatively low distinction of vegetation communities in flat areas may be a result of these types of places being covered in snow for a large portion of the year and useful more for the ease of travelling they provide than the plant resources they harbour.

3.3.3 Ecological associations

3.3.3.1 Plant habitats

Certain plant communities are recognized to grow predictably in association with particular landscape features, and are often named according to their location.

pigunnatuit sitjamik 'plants that grow at the beach, by the shore'

pigunnatuit imatsuni, ***imatsimiutak*** 'plants that grow in the wetland'

pigunnatuit tasikulummi, ***tasimiutak*** 'plants that grow at the pond'

piguungatuit nunaupKanganik 'plants growing on land/soil' (contrasted to 'on ***Kaittuk'***)

piguungatuit KaitukKanganik, ***Kaittutuinami piguttuit*** 'plants that grow on the rock'

natsani paunngaluvinik 'there are a lot of berries on the hill'

These plant communities that are labelled according to where they are growing tend to be composed of multiple species, but unless a species is particularly salient – due, for example, to its size or usefulness – it suffices to call the area according to its associated landscape feature, rather than according to a dominant species. Anishinaabe have somewhat comparable constructions in that a landscape feature is used to locate a plant community according to its geographical association, but they specify extra information regarding what type of plant community it is, such as 'cottonwood point' (Davidson-Hunt & Berkes 2003). Sometimes the inverse situation also occurs, with places being named after the type of plant in the area, for example Killapait Mountain, named for its abundance of willows or cattail-bearing shrubs.

Nunatsiavut Inuit also recognized plant communities based on their predominant species, though not in direct association with a particular landscape feature. Areas abundant in a certain plant were labelled using the plural form of the dominant species, similar to how areas typified by a certain substrate or landscape element were also named using their aggrandized or plural form. For example, the term ***napâttuit*** literally translated means 'trees' (from its singular form ***napâttuk*** 'tree' – specifically *Picea* species, but also the generic term for any tree), but in context would be used to mean 'forest'. A forest can also be described in terms of its dominant species (if other than spruce), such as a forest composed predominantly of larch, ***pingialuit*** (from ***pingik*** '*Larix laricina'*), or fir, ***Killagittuit*** (from ***Killagittuk*** '*Abies balsamea*'). To specifically indicate that the forest is comprised of a variety of tree species, ***adjigengitut napâttuit*** 'mixed forest' can be used. Other examples of plant communities categorized based on their dominant species include:

ivitsukak 'grassy area' (from ***ivik*** 'grass', typically *Leymus mollis*)

upigasak 'bushy place'/***upigalialuk*** 'place with many bushes/shrubs'
(from ***upigak*** 'willow, shrub', including shrubby *Salix*, *Betula*, and *Alnus* species)

paungalialuk 'place with many berries'
(from ***paungak*** 'berry', specifically *Empetrum nigrum*)

This way of characterizing a plant community based on a particular area's dominant species is fairly common with other aboriginal groups, though rather than using the plural form of the species name, these places are usually labelled in the form of 'place of x', where 'x' is the dominant species. For example, Chinantec farmers in Mexico use a term meaning 'place of corn' (Martin 1993), while Gitksan in northwestern Canada name pine groves as 'place of pine' (Johnson 2010).

3.3.3.2 Patches

Plant communities that are named using the plural form of the dominant species, or as 'place of x', tend to be areas of significant extent, but finer grained distinctions in vegetation are also made. Smaller areas rich in a particular plant or animal resource are explicitly denoted by Inuit by adding the suffix ***-Kautik*** 'patch'. The Anishinaabe of northern Ontario name vegetation patches in a similar way by, through use of the morpheme ***–kwaa*** 'patch' and its variants (Davidson-Hunt & Berkes 2003).

This seems to be a versatile term that can be used to describe a place where a) there is *at present* an abundance of the plant (or other resource) in question (e.g. ***KikuaKautik***, 'shark's blanket (kelp) patch' – anchored to the sea floor and thus rather stable in location, but might also apply when several entwined kelps are floating, not fixed in place but still visible as a distinct conglomeration), or b) an area that is known to *usually* be plentiful (e.g. ***paungaKautik*** 'berry-patch', a place with many potentially berry-bearing plants), or perhaps even c) any type of habitat that would be *appropriate* for the resource even if one does not have immediate first-hand knowledge of whether the resource is in fact present (e.g. ***ammumajuKautik*** 'clam-patch', muddy beach at low tide).

The ***-Kautik*** conception seems to be in contrast to places recognized for their immediate presence of something. For example, ***paungaluvinik*** '(place where) there are many berries' only denotes an area if there are *currently* many berries (even applying to places that are not necessarily the actual habitat of the plant, such as a pile of berries ***paungatalik***), but this term does not apply to a usual berry patch that happens to not be abundant that year (***Kunulisimaiguit*** '(berries) not going to grow anymore, all dried up'), or to a patch that has already been picked (***numutsiviusimajuk***). ***Napâttuluvinik*** is similarly a 'place with many

trees', an alternate way of denoting a forested area, but perhaps emphasizing the current presence of trees.

Although the nominal base form was given for vegetated areas, often speakers gave us terms that locate speakers within the area in question, such as ***napâttuni*** 'in the trees/forest' or ***Killagittulimi*** 'among the (needle-bearing) trees'. Gitksan has similar constructions, such as ***sbagaytgangan*** 'among the trees/trees' to indicate mixed forest, or ***sbagaytgan am 'mel*** 'among the trees/cottonwood'.

For larger plants, such as shrubs or trees, and even tall grasses, it seems that within context, a postbase indicating that a term denotes a place (such as ***–talik***, ***–luvinik***, or ***-ajuk***) is not always necessary, the plural of the most abundant/largest species being sufficient to indicate the place of abundance by extension of reference.

3.3.3.3 Animal habitats

Various places are characterized by their association with animals, many of these being represented by primary lexemes (as opposed to secondary lexemes, or compound words), such as ***auttutak*** 'bird's nest' and ***sitjait*** 'fox burrow' (***tigiganniak*** 'fox'). Each herd of ***tuttuk*** 'caribou' have their own ***nukKangak***, described as a 'place where the caribou come back to every year', because they "have their certain food and there's a river where they can drink". Animal traces are also well-recognized, such as ***nigipivingik*** (***nigipingik***?) 'area with a lot of ***pingik*** 'juniper tree (*Larix laricina*)' where porcupines (***illaKusik)*** have been eating' (from ***nigik*** 'eat').

The suffix ***-apvik***/***-apvet*** was also used several times, with the apparent meaning of 'place where..., house of ...', such as in ***nukKangapvik*** 'place where an animal has been', ***Kittungalupvik*** 'place where ducks go to lay their eggs', ***puijisiupvet*** 'place where seals are' (***puijik*** 'seal'), and perhaps also in ***ikKalivet*** 'place where arctic char are' (***ikKaluk*** 'arctic char').

3.3.4 Implicit ecological knowledge

Knowledge of other plant and animal associations can also be covert, containing information about where to look for a particular resource or what types of places to avoid, but without explicitly mentioning the resource. For example, a ***Kogutsunâk*** 'cave' or ***Kunnik***

'crack' is known to be a good place to look for ***Kungulik*** 'mountain sorrel (*Oxyria digyna*)', just as ***tuligunnak*** 'roseroot (*Rhodiola rosea*)' is known to be abundant on the outside islands on the ***Kaittuk*** 'bedrock'. ***Killagittulimi*** 'amongst the (needle-bearing) trees' (from ***Killagittuk*** 'balsam fir (*Abies balsamea*)') is described as where the ***akkigilik*** 'spruce ptarmigan' live, ***Kammanik*** is the 'deep area under the falls' where arctic char are abundant, and ***Kausittuk*** 'wet', referring to a wet or swampy place, is known to be where the mosquitoes grow and lay their eggs.

3.3.5 Terms relevant to travelling

Various landscape terms were relevant to travelling, particularly highlighting dangerous areas or places to avoid, such as ***auKannik*** 'strong current area where ice won't form, thin ice area, hole in the ice', ***ikkagojak*** 'shallow water area between an island and the mainland', ***ukualinâluk*** 'area with very deep water where you can't anchor', or simply ***kappianattuk***, ***kappianattutalik*** 'dangerous area' ("you can expect something that is dangerous... because you know you're not supposed to go there [can apply to many different places]; need to let other people know about them"). Other terms denote places that would be useful while travelling, such as the ***akKutik*** 'route', ***akkusinit*** 'trail/path', ***anniak***, ***aniagâluk*** 'flat area' ("we might go along this area when we're hunting because it's flat"), ***ippiutak*** 'shallow water, piece of land connecting an island to the mainland', ("you could walk across here", or could be a caribou crossing). Areas appropriate for shelter were also named, such as ***Killak*** 'cave' ("when it's bad weather you can go inside and keep warm away from the wind") or ***Kogutsunâk***, 'almost like a cave' ("could sleep in it when you are travelling"). Places that can be important for food or water are named, such as ***Kaiguk*** 'cave, cache' ("can store or ferment food in it"), or ***mangaijakKutik*** 'place with snow' ("if you didn't have water with you, you could melt snow like this, boil it and have it for tea, it's not dirty").

3.3.5.1 Orientation

Cardinal orientation terms were used: ***avani*** 'north', ***kitâ*** 'east', ***sikinik*** 'south', ***kangik*** 'west', in addition to speaking about landscape features or locations being further inland (toward ***nunak***) from the coast or further out to sea ("inside" islands being closer than "outside" islands in local English), as well as up (northward) or down (southward) the coast.

Cardinal directions are a form of absolute abstract reference, which has been found to be correlated with other cultures that live in non-urban areas (Majid *et al*. 2004). Regardless of whether directionality is based on an absolute frame of reference (e.g. north, south) or in reference to self (e.g. left, right), a crucial role in navigation and travelling is played by landmarks (Burenhult & Levinson 2008), stressing the importance of one's ability to recognize landscape features.

3.3.6 Relational and human-centric concepts

Some terms, apparently simplex words, expressed their relation to another landscape feature, such as ***simikutak*** 'island close to a cove or bay' or ***avakKutak*** 'island in a river'. Others were simple descriptions: ***nunak Kausittuk*** 'wet place on land', ***tasik KakKamijut*** 'lake in the hills/mountains', ***napâttuit issua KakKangi*** 'tree edge on the mountain' (alpine timberline), ***tasikuluk sitjamik*** '(saltwater) pond by the shore', ***tiniup issua*** 'low tide edge', ***ulinniup issua*** 'high tide edge', ***tasikuluk ulitjausuk*** 'high-tide pond' (tidal pool?), ***iKaluit kangiapvinga*** 'where the char go in' (river mouth into a bay?), and ***kogalupsiugunga*** 'sandy river bank'.

Some terms also dealt primarily with the human aspect, such as ***tupivik*** 'campsite (single tent)', ***tuppivet*** 'campsite (seasonal, multiple tents)', ***innullimi*** 'village' and ***innuKangitumi*** 'where there's no people', i.e. the area outside the village.

3.3.7 Disturbance events

Successional communities were not overtly described by Nunatsiavut Inuit, though they did name ***ikisimajuk*** 'burned place' and recognized this as a good place to find ***pannaKautik***, a 'dry-wood patch' for firewood collection. Disturbance events and the types of places they create were likewise not extensively named by the Gitksan, Kaska, or Dene of northwestern Canada (Johnson 2010), but this is not to say that environmental changes go unnoticed. In fact, several plants are used as seasonal indicators by Inuit, such as cottongrasses (*Eriophorum* spp.) which indicate to hunters when their downy seeds blow off in the wind that it is the ideal time for caribou hunting, since this coincides with when the caribou hides are thickest and least-damaged by insect pests (Clark & Cuerrier, this thesis).

Slide areas can all be referred to as ***sittuk*** (‘straight’) or ***sittungajuk*** (literally, ‘straight (-down) place’?). To specify, one could say ***ujagak sittunik*** for a rock slide or talus scree, ***apputik sittusimajut*** for an avalanche or the snow pile resulting from an avalanche. Interestingly, an alternate usage of the term ***sittungajuk*** ‘straight-place’ seems to denote a very flat area, as one would encounter on a frozen bay or the ocean. It was unclear whether this is a dedicated term (i.e. that it always refers to these types of places), or merely a contextual term used in situations where what is being referred to as ‘straight’ is obvious. Johns (2010) mentions this dedicated/contextual distinction as one of the difficulties of producing lists of words that denote ice in Labrador Inuttitut – a difficulty not isolated to ice terms.

3.3.8 Generic landscape terms, temporary descriptions of place, and permanent toponyms

Like many other indigenous groups, talking about generic types of places is not as obvious for Nunatsiavut Inuit as referring to specific places known through personal experience. Hunn & Selam and Family (1990) note that for the Sahaptin, fisher-foragers of the western United States’ Columbia Basin, people usually talk about specific places and the activities appropriate for that place, rather than about generic *types* of places. When talking about specific places, people often use proper place names, or toponyms.

Many of the generic place terms recorded here for Nunatsiavut are also used as specific place names, and many of these occur multiple times throughout the territory, for example Tasialuk. Some of these have even been incorporated into standard English toponyms, such as Tasialuk Lake (i.e., ‘big lake’ lake). This is the case for Inuit regions across the Arctic. Collignon (2006) classified over 1000 Inuinnait toponyms from the Central Canadian Arctic, and many of the place names were equivalent (accounting for phonological differences between dialects) to toponyms in Labrador (from Wheeler, 1953). While Aporta (2009b) stresses the importance of toponyms as nodes in creating a pan-Arctic network, connecting routes across the landscape, Collignon argues that the main utility of toponyms is not so much to aid navigation during travels, but rather to help recount the voyage to others, thereby humanizing the landscape and making it a place where people feel more comfortable because of their knowledge and inclusion in its history.

3.3.9 Future work

As with other indigenous cultures across northern Canada, Inuit place a strong emphasis on experiential learning and passing down knowledge through narratives (Davidson-Hunt & Berkes 2003; Pearce *et al.* 2011). Our photo-based interviews had several limitations, such as limited perception of details in photos due to poor eyesight of some elderly participants. We addressed this challenge by viewing photos on a laptop with zoom function, as well as supplementing photos with our own descriptions of the plants present and other salient features of the environment. While this study's methodology of using photos to guide discussions during interviews provided important baseline data in a time- and resource-efficient way, taking into account the low mobility of many participants, a more thorough understanding of Inuit landscape ecotopes would benefit from more contextualized study methodologies, such as through interactions with participants while out 'on the land'. As one participant expressed during our interviews, one must "see and learn, do and understand".

3.4 Conclusions

We have shown that Inuit of Nunatsiavut recognize and name a variety of kinds of places and habitats, based mainly on topographical and hydrological, but also ecological and practical considerations. The qualitative criteria Inuit use to recognize different ecotopes and habitats in Canada's eastern boreal-subarctic transition zone can complement the quantitative methods used in Western science, providing a more holistic approach to biocultural diversity conservation. Building on ethnobotanical work, this ethnoecology project is a step toward conservation of arctic biodiversity, as well as Inuit language and culture. As climate change renders environmental responses more difficult to predict, traditional knowledge of the environment will continue to contribute important alternative perspectives to contemporary Western science (Green *et al*. 2008; Downing & Cuerrier 2011; Henry *et al.* 2012). Collaboration between scientists and local groups will build the way forward toward increased adaptive capacity for Inuit, and indigenous groups worldwide.

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Chapter 4: Conclusion

4.1 Conclusion

Held within the Inuit communities of Nunavik and Nunatsiavut is the knowledge of numerous generations that have lived in close relationships with their local environments. Extensive terminology encodes culture and traditions in their individual dialects of Inuktitut, highlighting distinctions and making connections between types of places across the landscape and various kinds of plants. Relatively little of their detailed knowledge of the land and its flora is recorded in writing, owing to a tradition of oral rather than written history in Inuit culture. Lifestyle changes and reduced fluency in Inuktitut in younger generations are threatening the continued flow of this information, and unless this trend is altered, much of Inuit ways of understanding their surrounding biological world (and its associated terminology) is at risk of being lost. By documenting this traditional botanical and ecological knowledge through ethnobotanical and ethnoecological studies, this project is a step toward the conservation of Inuit language and culture, and provides alternate perspectives regarding subarctic biodiversity and ecology that, along with standard scientific paradigms, can strengthen our understanding of these subjects.

4.1.1 Ethnobotany discussion and conclusions

This project's first objective – recording Inuit uses and names for plants in Nain, Nunatsiavut, and comparing them to those in Kangiqsualujjuaq, Nunavik – was met. Forty-three species were reported in each of Nain and Kangiqsualujjuaq, for a combined total of 78 species from 39 families (plus four species that were named but not used). Despite having access to fairly similar floras, relatively few species were noted in both communities: only 35% of non-vascular and 56% of vascular species. Correspondence was higher at the family level, with 64% of non-vascular and 75% of vascular families shared between communities. Thirty species were used medicinally, and while 13 of these were used in both communities, there was low consensus regarding which types of ailments they treated. The prevalence of species and uses reported in only one of the two communities may be an indication of low sharing of botanical knowledge between these groups, despite historical cultural ties and similar dialects. However, given that other characteristics of the reported plant knowledge were similar between the communities, such as the number and proportions of vascular and

non-vascular taxa, growth forms, and uses, the low correspondence between communities may simply reflect similar levels of ethnobotanical knowledge loss, rather than a real difference in species used and what they were used for.

Nine of 42 edible species and 10 of 30 medicinal species were also reported as being used by other indigenous groups (Algonquian and Iroquoian) in eastern Canada (Arnason *et al.* 1981). The low correspondence is due in part to non-overlapping distributions of many of the species. In fact, for several of the species used in Nain or Kangiqsualujjuaq, a similar species from the same genus was used by one or more of the other groups (e.g. *Pedicularis groenlandica* was made into tea in Kangiqsualujjuaq and the root of *P. labradorica* was eaten in Nain, while Algonquin, Cree, and Ojibwa ate the root of *P. lanceolata*, and Iroquois used greens from *P. canadensis*; Arnason *et al.* 1981). The case is the same for various similar berry plants, such as *Vaccinium* (blueberries, bilberries and cranberries), *Rubus* (raspberries) and *Ribes* species (currants), which are eaten across their distributions, though the individual species vary depending on location.

Early eastern Arctic ethnographies mentioned 22 of the 78 taxa reported by Inuit in Nain or Kangiqsualujjuaq during our interviews, though not all the specific uses were the same (Table 4.1). Turner's (1894) notes about Inuit plant uses in the Ungava District were brief, and included only one name (***akpik***, *Rubus chamaemorus*), though his descriptions were more thorough for objects made of wood than what we recorded (probably because many of these things are now imported and made of metal or plastic, such as tools, dishes, utensils, toys, etc.). The same is the case for Hutton (1912), writing about Labrador – no Inuktitut names were given, but the uses mentioned were all corroborated during our interviews. Hawkes (1916) listed 16 edible berry species (6 not mentioned in our interviews: *Amelanchier canadensis, Fragaria virginiana, Gaultheria hispidula?* [*Maidenhair-berry*]*, Prunus pensylvanica, Ribes cynosbati, Vaccinium angustifolium*), plus 8 taxa used medicinally (including 2 new ones: house leek and tansy). The 6 new berry species may not have come up in Nain or Kangiqsualujjuaq interviews because they are more abundant at more southern latitudes in Labrador. In fact some of our informants told us of berries that they had never seen close to Nain (or rarely) but that they would pick in abundance when visiting the more

southerly and boreal Happy Valley-Goose Bay, such as *Viburnum edule*. Four of the five medicinal taxa listed by Peacock (1947) in Labrador were also used medicinally in Nain, though none of them were indicated for the same conditions, much in the same way that there was little consistency in usage between Nain and Kangiqsualujjuaq.

Table 4.1 Plant names and uses listed in early ethnographies of eastern Arctic Inuit.
Note: **Bold text** indicates names/uses that were not reported in Nain or Kangiqsualujjuaq. Latin names that are given without brackets are the same as the Latin name listed by author. Latin names listed in [square brackets] have been updated from a) a synonymous Latin name – either outdated or not spelled correctly according to current standards, or from b) an unambiguous common name. Latin names in [square brackets?] with a question mark are the most likely species, but indicate that the original source listed neither a Latin name nor an unambiguous common name.

Source	Plant names and uses
Turner 1894 (Ungava Bay, Nunavik)	* Edible: *Rubus chamaemorus* akpik, "bake apple" preferred edible berry * Construction, combustion, and other uses: moss: wicks [*Larix laricina*] larch: preferred for sleds, **bows** (and arrows), **knots carved into oblong shallow dishes (pu·ghu'·tak) for holding oil or food** trees, willows and alders: fuel, various structures and tools, including walls of buildings, tent poles, kaiaks, umiaks, paddles, and smaller implements such as spear shafts, **talismans**, **amulets**, **charms**, **dolls**, games, toys, **violins**, **various wooden bowls**, **buckets**, **cups**
Hutton 1912 (Labrador)	* Edible: [*Salix*] willow: young shoots eaten as a relish to their meat greens: little bits eaten with meat mushrooms: specifically NOT eaten * Construction and other uses: moss: wicks, bedding/mattress, insulation and to fill in cracks, mixed with clay and water to plaster sledge runners, house decorations trees: sledges and runners, construction and tools [*Abies balsamea?*] spruce fir: Christmas tree
Hawkes 1916 (Labrador)	* Edible species NOT recorded in Nain or Kangiqsualujjuaq ** no Inuktitut name: **[*Prunus pensylvanica*] Wild cherry, *Prunus pensylvanica*** ** new Inuktitut name: **[*Gaultheria hispidula?*] Maidenhair-berry, *mama'qtu·lik*** ***Fragaria virginiana* Wild strawberry, *a·riti'ŋatuk*** ** Inuktitut name recorded for a different species: **[*Amelanchier canadensis*] Indian pear, *Amelanchier Canadensis*, *aqpiu·yuk*** [Nain: apiujak = *Rubus arcticus*] **[*Ribes cynosbati*] Dogberry, *Ribes Cynosbati*, *kimi·nau'yuk*** [Nain: kimminaujak = *Ribes glandulosum*] **[*Vaccinium angustifolium*] Blueberry, *Vaccinium Pennsylvanium*, *kiɣu·taɣi'ŋnuk*** [Nain: kigutanginnak = *Vaccinium uliginosum*] --- * Edible species recorded in Nain/Kangiqsualujjuaq ** no Inuktitut name: *Empetrum nigrum* Crowberry *Vaccinium uliginosum* Shrub blueberry (Duckberry)

** new Inuktitut name:

[*Cornus canadensis*] Cracker berry or froth-berry, ***qa'qtalik***
[Nain: kimminaujak, K: aupaalurtaaluk]

Vaccinium caespitosum Ground blueberry, ***siŋ'atuk***
[Nain: kigutanginnakuluk, pungajuk, K: kigutangirnaqutik]

[*Vaccinium oxycoccus*] Marsh-berry, ***tuŋuyu·'paluk*** [Nain: kimminaujak]

[*Viburnum edule*] Squashberry, *Viburnum pauciflorum*, ***co·naxa·'tik*** [Nain: no name]

[*Cladonia* sp.?] species of reindeer-moss known as ***nunaxu'tuk***. [Nain: niKak, K: tingaujaq]
[K: nunajaq = *Racomitrium lanuginosum*]

** Inuktitut name recorded for a different species:

[*Arctous alpina? Vaccinium vitis-idaea?*] Foxberry, *poŋno'yuk*
[Nain: pungajuk = *Vaccinium caespitosum* (pungak = 'close to the ground')]
[Nain: pungajuinnika = *Vaccinium vitis-idaea*]

[*Rubus arcticus*] Dewberry, *Rubus articus* [*sic*], *po'ŋnuk*
[*Rubus arcticus* Nain: apiujak, K: arpiligak]
[Nain: paungak = *Empetrum nigrum,* any berry]

** same/similar Inuktitut name:

[*Rubus chamaemorus*] Baked-apple, *Rubus Chaemomorus*, *a'kpik*

[*Empetrum nigrum*] Blackberry, ***paugnatwi'nuk***

[*Vaccinium vitis-idaea* var. *minus*] Cranberry, *Vaccinium vitis-Idaea*, ***kimimino'k*** (It is an important article of food as it has good preservative qualities. It also might be called medicinal in that its acid juices counteract to a large extent the exclusive meat diet of the Eskimo.)

[*Vaccinium vitis-idaea* var. *minus*] Partridgeberry, *kiminu'k*

[*Laminariales, Fucus*?] the sea-weed, *iq ɬu'yuk*, is sometimes used as a food or **medicine**

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* Medicinal plants NOT recorded in Nain/Kangiqsualujjuaq:

[*Sempervivum* sp.?] House leek, *t'əlu·'inuk*: The tea from its steeped leaves is said to be a perfect cure for scurvy. The bruised leaves are good for sore hands.

[*Tanacetum vulgare*?] Tansy. Makes an effective tea for colds.

[*?*] Foxberry (*poŋno'yuk*, Lab.; *pognaxo'tik*, Ungava), Cobbler-blossom. **Down used on wounds and sores** (?). Leaves furnish **a dye for mats**.

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* Medicinal plants recorded in Nain/Kangiqsualujjuaq

** no Inuktitut name:

[*Rhododendron groenlandicum*] Crystal tea (Ledum latifolium [*sic*]): An infusion of the leaves is excellent for **reducing the temperature and cooling the blood in fevers**. Also used for **spring disorders and scrofula**.

[*Rhododendron tomentosum*] Indian tea (Ledum palustre [*sic*]): Makes a good **poultice for chills**.

** new Inuktitut name:

[*Taraxacum* sp.] Dandelion (*wi·su·'ktuk*, "yellow flower"). Greens used **to counteract meat diet**.

** same/similar Inuktitut name:

[*Laminariales, Fucus*?] Kelp (*qi'xuaq*). Two varieties, one said to be injurious, and the other an **antidote for skin diseases**.

[*Laminariales, Fucus*?] the sea-weed, *iq ɬu'yuk*, is sometimes used as a food or **medicine**

Peacock 1947 (Labrador)	* Medicinal plants: [*Juniperus communis*] juniper. The exudation of the juniper is also **applied to wounds** and is claimed to have great healing properties. *Lycoperdon gemmatum*: spores of the puff ball. **Remedy for cuts or wounds**, the spores are applied directly to the wound. [*Rhodiola rosea*] root of the Sedum. After the outer skin has been removed is **used internally as an anodyne.** [*Rhododendron tomentosum*] Ledum palustre. For influenza, they make an infusion which they drink, a half cupful at a time **to induce a sweat and to relieve pain**. [*Salix*] willow (salix). **For haemoptysis and heamorrhages from the lungs**, they made a stew of willow (salix) bush skins, but I can find no evidence that this treatment is used nowadays and therefore am unable to discover any dosage. Willow buds (Salix) are **eaten for scorbutic conditions [scurvy]**.

Note: Twenty-one species reported in interviews were previously recorded in early ethnologies: *Abies balsamea*?, *Arctous alpina*?, *Cladonia* sp.?, *Cornus canadensis*, *Empetrum nigrum* x 2, *Juniperus communis*, *Laminariales* (*Fucus*?) x 2, *Larix laricina* , *Lycoperdon gemmatum*, *Rhodiola rosea*, *Rhododendron groenlandicum*, *Rhododendron tomentosum* x 2, *Rubus arcticus*, *Rubus chamaemorus* x 2, *Salix* x 3,*Taraxacum* sp., *Vaccinium caespitosum*, *Vaccinium uliginosum*, *Vaccinium vitis-idaea* var. *minus* x 3, *Viburnum edule*, and moss x 2.

In summary, 57 species not previously reported in early ethnographies by Turner (1894), Hutton (1912), Hawkes (1916) and Peacock (1947) have been documented for Nain and Kangiqsualujjuaq, in addition to various different uses for 21 other species that had been previously recorded by these authors. Furthermore, 33 edible and 20 medicinal taxa were reported that are not listed in the extensive review of eastern North American indigenous groups by Arnason *et al.* (1981). The documentation of these new species and uses is a valuable addition to the literature on aboriginal plant use in northeastern North America and can be added to future comprehensive compilations.

4.1.2 Ethnoecology discussion and conclusions

The project's second objective – document the types of places recognized and named by Inuit in Nain, Nunatsiavut – was also met. The most frequently reported landscape features were topographical, hydrological, and ecological, including plant communities and animal habitat terminology. Some types of places were recognized primarily for their relevance to traditional activities, such as hunting, fishing, berry or other plant collection, and travelling.

Inuit recognized various types of plant communities, including associations at higher latitudes and elevations (for example, on the plateaus, hilltops, and mountains), characterized by arctic tundra vegetation, with lichens, shrubs, grasses and sedges dominating (KRG 2005). Other communities were recognized in the more sheltered valleys of watercourses, where predominantly boreal species make up continuous forest stands. Nunatsiavut's situation at

both the northern edge of distribution ranges for southern species, and at the southern edge of distribution ranges for northern species, means that warming temperatures will have significant impacts on the region's biodiversity (Hampe & Petit 2005). Climate change is affecting plant communities in this region and across the Arctic, but responses are complex and not easy to predict, depending on various site-specific factors (Convey *et al.* 2012; Henry *et al.* 2012). In addition to the threats to northern ecosystems, the health and food security of people who live in the North are also being impacted by the effects of global warming (Furgal *et al.* 2002; Furgal 2008).

Apart from recording TEK for its value in the conservation of cultural heritage, indigenous concepts and perceptions of the environment can complement and strengthen Western paradigms used in government, industry, and academic research, toward better adaptation strategies and biodiversity conservation efforts (Berkes 2008).

4.1.3 Future work

It must be noted however, that the information collected throughout this project is approached from the point of view of outside researchers whose mother tongues are not Inuktitut and who have not spent their lifetimes in the study areas. Future research should attempt to involve Inuit botanists and linguists to include "insider" perspectives. Furthermore, this research would ideally take part in an "experiential learning" context, discussing plants and ecosystems with Elders while actually out on the land, rather than indoors with picked plant specimens or photos.

Similar to other northern Canadian indigenous groups, Nunatsiavut Inuit were more comfortable describing or naming *specific* locations rather than producing generalized terms for types of places independent from their individual occurrences. Comparing these generalized terms to toponyms currently in use (from interviews and modern maps) and toponyms recorded in historical documents will provide a more in-depth understanding of past and present land use and occupation. As the southeasternmost Inuit territory in Canada, Nunatsiavut is endowed with unique vegetation communities that, within the Inuit homeland, occur almost exclusively in Nunatsiavut's boreal-arctic ecotone (Brandt 2009; Atkinson 1981). Investigation of toponyms and named ecotopes in other Inuit regions, such as provided

by Collignon (2006) for the Inuinnait of the Central Canadian Arctic, would also be illuminating given the language similarities but important differences in biogeographical components across the Arctic, such as in the high Arctic where there are no forests but where similar plant communities still exist.

4.1.4 Project outputs

Promoting interest in these topics is one of the first steps toward building a sustainable culture of conservation for both Nunatsiavut's environment and language, Inuttitut. To keep the community involved in this research, the findings from this project will be made available to the public and can be used toward the development of educational materials for use in the school system. A community workshop was hosted in September 2010 with preliminary findings from interviews conducted in the summer to encourage the sharing of knowledge between youth and elders. This workshop was successful in generating the desire in the community for future workshops once more work has been completed. Opening the channels for meaningful dialogue concerning plants and ecosystems is an important step towards sustaining interest in their conservation for generations to come.

Furthermore, focusing a community's attention on their surrounding vegetation and land-use will increase awareness of changes in these over time. Awareness of how the environment is changing is a crucial first step toward developing strategies to mediate the impacts of climate change, and toward helping communities adapt to the challenges of the 21st century in socially, culturally, and economically viable ways.

4.1.5 References (Introduction & Conclusion)

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Appendix I

Université de Montréal

Faculté des arts et des sciences
Vice-décanat à la recherche

No de certificat : CÉRFAS-2010-11-241-A

COMITÉ D'ÉTHIQUE DE LA RECHERCHE DE LA FACULTÉ DES ARTS ET DES SCIENCES (CÉRFAS)

CERTIFICAT D'ÉTHIQUE

Le Comité d'éthique de la recherche de la Faculté des arts et des sciences, selon les procédures en vigueur et en vertu des documents qui lui ont été fournis, a examiné le projet de recherche suivant et conclu qu'il respecte les règles d'éthique énoncées dans la *Politique sur la recherche avec des êtres humains* de l'Université de Montréal :

Titre : ***Plantes et Inuits : une étude ethnobiologique en territoire arctique (Inuit Ethnobotany and ethnoecology : Traditional knowledge of plants and their uses)***

Requérant : ***CLARK, Courtenay (code permanent [redacted], étudiante à la maîtrise, Département de sciences biologiques***

sous la direction de :

CUERRIER, Alain, professeur associé, Département de sciences biologiques

Tout changement anticipé au protocole de recherche devra être communiqué au CÉRFAS qui en évaluera l'impact au chapitre de l'éthique.

Toute interruption prématurée du projet ou tout incident grave devra être immédiatement signalé au CÉRFAS.

Selon les exigences éthiques en vigueur, **un suivi annuel est minimalement exigé afin de maintenir la validité de ce certificat**, et ce, jusqu'à la fin du projet. Le questionnaire de suivi peut être consulté sur la page Web du CÉRFAS.

[redacted]

Jean Leclair, président
Comité d'évaluation accélérée

Date de délivrance : 2011 / 02 / 21
AAAA / MM / JJ

Date d'échéance* : 2012 / 10 / 01
AAAA / MM / JJ

*correspond à la date prévue de fin du projet

[redacted]

Deirdre Meintel, présidente
CÉRFAS

Espace réservé en cas de prolongation

C.P. 6128, succ. Centre-ville, Montréal (QC) H3C 3J7
www.fas.umontreal.ca/recherche/ethique/index.html

Téléphone : 514-343-7338 / Télécopieur : 514-343-2185
[redacted]

Appendix II

NUNATSIAVUT
kavamanga Government

Nunaliginikmik amma Nunamiutanik
Ujaganik Imaniklu

Lands and Natural Resources

Lands Division
1A Hillcrest Road
P.O. Box 909, Stn "B"
Happy Valley-Goose Bay, NL
A0P 1E0
Telephone:
Email:

September 14, 2009 File no. A2009-065

Luise Hermanutz
Memorial University
Department of Biology
St. John's NL
A1B 3X9

Dear Ms. Hermanutz:

Land Use permit no. LIL030017PR
Research Activities
Kangidluasuk area, St. John's Harbour, Labrador

Attached is your Land Use permit no. LIL030017PR approved by the Minister of Lands and Natural Resources on the 2nd day of September, 2009. The permit is issued for a term of five (5) years commencing on the 1st day of August 2009 and expiring on the 31st day of July 2014.

The permit is subject to an annual permit fee of one ($1.00) dollar per annum and this fee is subject to review annually. Please ensure you abide by all of the terms and conditions of the permit and applicable legislation.

If you have questions about your application please contact me at or via email at

17 Sandbanks Road, PO Box 70, Nain, NL, Canada A0P 1L0 ▸ Tel: 709.922.2942 Fax: 709.922.2931 ▸ Email: nain_reception@nunatsiavut.com

Appendix III

Consent Form
Inuit Ethnobotany and Ethnoecology:
Traditional Knowledge of Plants and their Uses

Principal Investigators:

Courtenay Clark (M.Sc. Candidate, Ethnobotany) & Ashleigh Downing (M.Sc.Ethnobotany, Research Assistant)
Montreal Botanical Garden
Plant Biology Research Institute (Institut de recherche en biologie végétale - IRBV)
Department of Biological Sciences, Université de Montréal
4101 rue Sherbrooke Est, Montréal QC H1X 2B2
Email:

Supervisor:

Alain Cuerrier
Adjunct Professor, Botany / Ethnobotany
Montreal Botanical Garden
Plant Biology Research Institute (Institut de recherche en biologie végétale - IRBV)
Department of Biological Sciences, Université de Montréal
4101 rue Sherbrooke Est, Montréal QC H1X 2B2
Tel :
Email :

Description of the Project:

We are interested in working with the community of Nain, Nunatsiavut to document and preserve Inuit knowledge of plants, including: their names in Inuktitut; their uses (e.g. edible, medicinal, utility, etc.); how they fit into a folk classification system; and their habitats, distribution, and ecology.

To collect data for this project we will: a) Collect and document plants and fungi in and around Nain; b) Conduct interviews with consenting elders and other community members, both indoors as well as outdoors "on the land". Interviews may take place with single individuals or with groups of two or more participants at once. Participants will be shown plant specimens and photos from Nunatsiavut, and will be asked to identify and provide any names in Inuktitut they know for them, as well as any other information or stories they can remember about them (e.g. traditional uses, where they grow or were collected). Other activities may include filling in questionnaires or "sorting tasks" with plant specimens and/or cards; c) Document plant habitats and land use by Inuit in Nunatsiavut using maps during the interviews.

Our goal is to return the Inuit knowledge - supplemented with historical and scientific information - in an organized and accessible format, back to the people of Nunatsiavut for use by the general public and as reference material for continuous learning of future generations. The information collected will also be used towards completion of a Master's of Science degree, and may be included in various publications which will be made accessible to interested individuals upon request.

Withdrawal:

Contribution to this project is based on an individual's will to participate. If for any reason you feel uncomfortable about your participation, please let us know, and feel free to only answer questions that you feel comfortable in responding. You remain free to withdraw from the study at any time, and should you choose, you may also request that any audio/visual recordings made of you be destroyed.

Compensation

You will receive 25$/hour or 90$/half-day (180$/full-day) for your contribution to interviews, focus groups or guided visits. A copy of reports, articles and CD/DVD will also be made available to you upon request.

CONSENT

I wish to provide ORAL consent ☐ (to be checked off by interviewer or translator)

The participant _____ has been fully informed of the objectives of the project being conducted. The participant understands these objectives and consents to participate and to be interviewed for the project. The participant understands that steps will be undertaken to ensure that this interview will remain confidential unless they consent to being identified. The participant understands that a CD/DVD may be produced using extracts from the interviews. The participant consents to the use of materials from this interview for the CD/DVD, knowing that their confidentiality will be respected if they request so. The participant understands that, if they wish to withdraw from the study, they may do so without any repercussions.

To be filled out by interviewer/translator: *Participant Agrees* ☐ *Participant Disagrees* ☐

Date: _____ (to be signed by interviewer/translator)

Name: _____ Signature: _____

I wish to provide WRITTEN consent ☐

"I _____ have been fully informed of the objectives of the project being conducted. I understand these objectives and consent to participate and to be interviewed for the project. I understand that steps will be undertaken to ensure that this interview will remain confidential unless I consent to being identified. I understand that a CD/DVD may be produced using extracts from the interviews. I consent to the use of materials from this interview for the CD/DVD, knowing that my confidentiality will be respected if I request so. I also understand that, if I wish to withdraw from the study, I may do so without any repercussions."

Date: _____ Signature: _____

ANNONYMITY

I wish to take part in this interview but do not wish my comments to be attributed to me. ☐

OR

I would like the information that I share through this interview to be attributed to me. ☐

MEDIA RECORDINGS

I give my permission for the interview and/or focus group to be:

Audio-recorded ☐ *Video-recorded* ☐ *Photographed* ☐

Date: _____ (to be signed by interviewer or translator in case of oral consent)

Name: _____ Signature: _____

QUOTATIONS

I give my consent for direct quotations to be taken from this interview. If I have indicated that I wish my identity to remain confidential, my name will not be mentioned. Instead, I will be attributed a code, for reporting purposes, to protect my identity.

Date: _____ (to be signed by interviewer or translator in case of oral consent)

Name: _____ Signature: _____

WITNESS

Date: _____

Name: _____ Signature: _____

The proposal for this research has been reviewed by the Faculty of Arts and Science Research Ethics Board of the University of Montreal (Comité d'éthique de la recherche de la Faculté des arts et des sciences – CÉRFAS) and found to be in compliance with the University's ethics policy. If you have any complaints regarding your participation in this project, you may contact the Ombudsman at ombudsman@umontreal.ca or by phone at (514) 343-2100 (collect calls accepted).

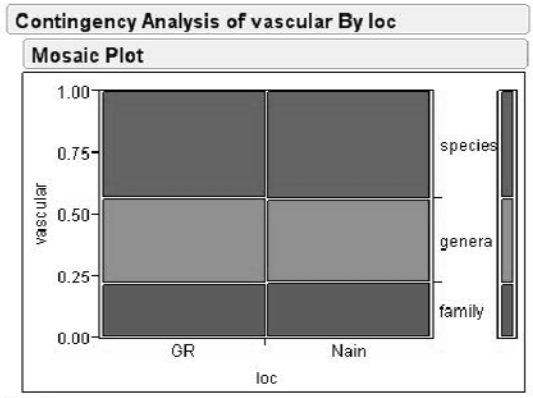
Appendix IV

Expanded statistical tests for Chapter 2 Inuit Ethnobotany.

1. Was there a difference in number of species, genera, or families used between Nain and Kangiqsualujjuaq for vascular plants?

There was no significant difference in the number of vascular species, genera, or families used between the communities (Pearson Chi-square = 0.009, $p = 0.9953$).

VASCULAR	Nain	Kangiqsualujjuaq	total
species	43	43	55
genera	34	35	43
families	22	22	25



Freq: freq

Contingency Table

		vascular		
Count / Total % / Col % / Row %	family	genera	species	
loc: GR	22	35	43	100
	11.06	17.59	21.61	50.25
	50.00	50.72	50.00	
	22.00	35.00	43.00	
loc: Nain	22	34	43	99
	11.06	17.09	21.61	49.75
	50.00	49.28	50.00	
	22.22	34.34	43.43	
	44	69	86	199
	22.11	34.67	43.22	

Tests

N	DF	-LogLike	RSquare (U)
199	2	0.00473406	0.0000

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.009	0.9953
Pearson	0.009	0.9953

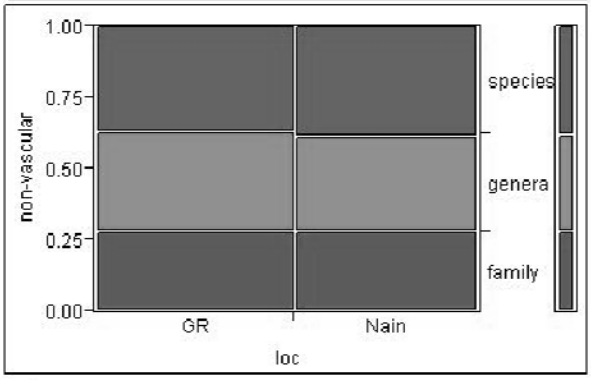
2. Was there a difference in number of species, genera, or families used between Nain and Kangiqsualujjuaq for non-vascular taxa?

There was no significant difference in the number of non-vascular species, genera, or families used between the communities (Pearson Chi-square = 0.002, $p = 0.9992$).

NON-VASCULAR	Nain	Kangiqsualujjuaq	total
species	15	16	23
genera	13	14	18
families	11	12	14

Contingency Analysis of non-vascular By loc

Mosaic Plot



Freq: freq

Contingency Table

loc	non-vascular	family	genera	species	
	Count				
	Total %				
	Col %				
	Row %				
GR		12	15	16	43
		14.63	18.29	19.51	52.44
		52.17	53.57	51.61	
		27.91	34.88	37.21	
Nain		11	13	15	39
		13.41	15.85	18.29	47.56
		47.83	46.43	48.39	
		28.21	33.33	38.46	
		23	28	31	82
		28.05	34.15	37.80	

Tests

N	DF	-LogLike	RSquare (U)
82	2	0.01176755	0.0001

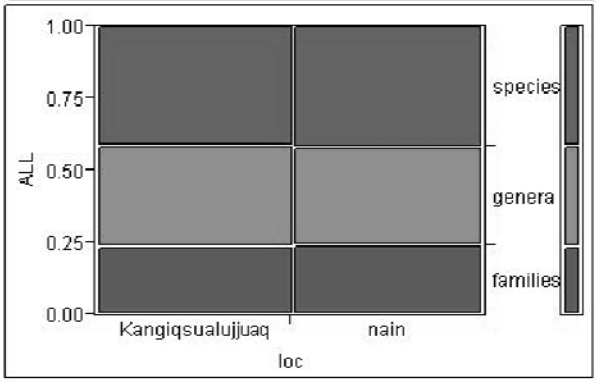
Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.024	0.9883
Pearson	0.024	0.9883

3. Was there a difference in number of species, genera, or families used between Nain and Kangiqsualujjuaq for all taxa?

There was no significant difference in the number of species, genera, or families used between the communities (Pearson Chi-square = 0.008, $p = 0.9960$).

Contingency Analysis of ALL By loc

Mosaic Plot



Freq: freq

Contingency Table

loc	Count / Total % / Col % / Row %	ALL: families	genera	species	
	Kangiqsualujjuaq	34	50	59	143
		12.10	17.79	21.00	50.89
		50.75	51.55	50.43	
		23.78	34.97	41.26	
	nain	33	47	58	138
		11.74	16.73	20.64	49.11
		49.25	48.45	49.57	
		23.91	34.06	42.03	
		67	97	117	281
		23.84	34.52	41.64	

Tests

N	DF	-LogLike	RSquare (U)
281	2	0.01364934	0.0000

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.027	0.9864
Pearson	0.027	0.9864

4. Was there a difference in growth forms used between Nain and Kangiqsualujjuaq?

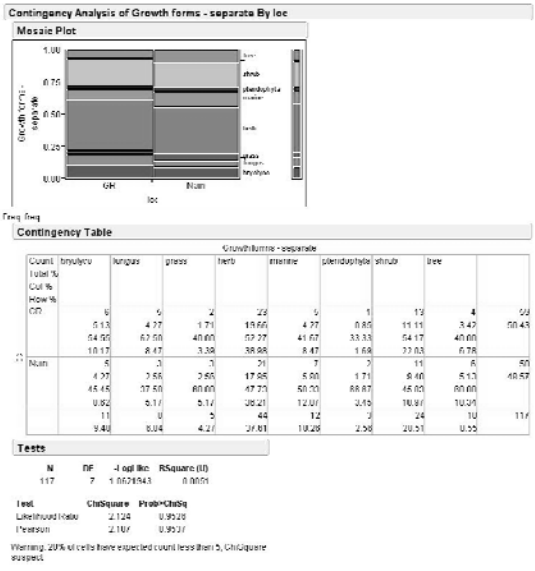
There was no significant difference in the growth forms used between the communities (Pearson Chi-square = 1.365, p=0.8502). The test is not valid when all growth forms are analysed separately, and is not significant when the growth forms are grouped.

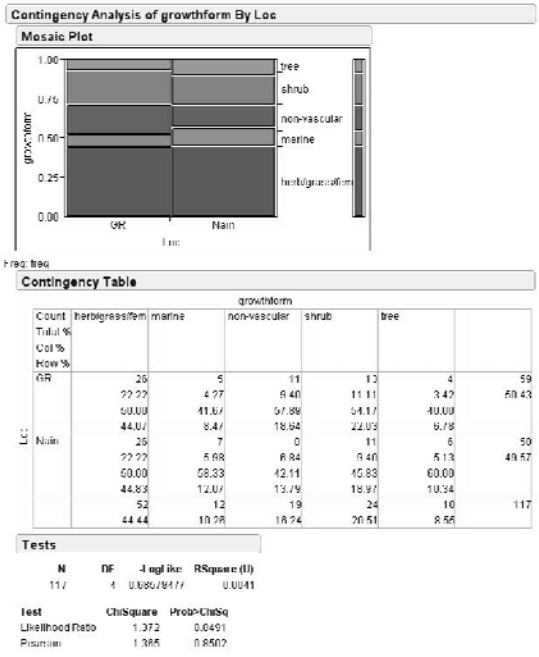
Growth forms – separate: Pearson ChiSquare suspect: 20% of cells have expected count less than 5.

Growth forms – combined: Pearson ChiSquare = 1.365, p = 0.8502 (note : terrestrial non-vascular combines bryophytes, lycopods, and fungus)

Growth forms - separate	Kang	Nain	All
pteridophyta	1	2	2
grass	2	3	3
herb	23	21	30
shrub	13	11	13
tree	4	6	7
bryolyco	6	5	9
fungus	5	3	6
marine	5	7	8

Growth forms - combined	Kang	Nain	All
herb/ grass/ pteridophyta	26	26	35
shrub	13	11	13
tree	4	6	7
terrestrial non-vascular	11	8	15
marine	5	7	8





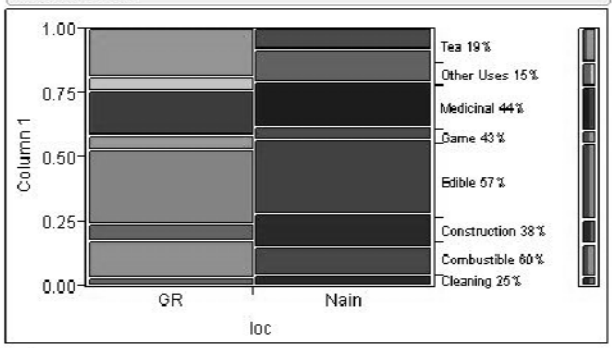
5. Was there a difference in the number of species per use categories between Nain and Kangiqsualujjuaq for vascular plants?

There was no significant difference in the number of vascular species per use category between the communities (Pearson Chi-square = 8.354, $p = 0.3024$).

VASCULAR	Shared species	Kangiqsualujjuaq	Nain	Total species
Edible 57%	20	27	28	35
Medicinal 44%	10	16	17	23
Combustible 60%	9	13	11	15
Construction 38%	5	6	12	13
Tea 19%	4	17	8	21
Other Uses 15%	2	5	12	15
Cleaning 25%	2	3	4	5
Game 43%	3	5	5	7

Contingency Analysis of Column 1 By loc

Mosaic Plot



Freq: freq

Contingency Table

		Column 1							
	Count Total % Col % Row %	Cleaning 25%	Combustible 60%	Construction 38%	Edible 57%	Game 43%	Medicinal 44%	Other Uses 15%	Tea 19%	
loc	GR	3 1.59 42.86 3.26	13 6.88 54.17 14.13	6 3.17 33.33 6.52	27 14.29 49.09 29.35	5 2.65 50.00 5.43	16 8.47 48.48 17.39	5 2.65 29.41 5.43	17 8.99 68.00 18.48	92 48.68
	Nain	4 2.12 57.14 4.12	11 5.82 45.83 11.34	12 6.35 66.67 12.37	28 14.81 50.91 28.87	5 2.65 50.00 5.15	17 8.99 51.52 17.53	12 6.35 70.59 12.37	8 4.23 32.00 8.25	97 51.32
		7 3.70	24 12.70	18 9.52	55 29.10	10 5.29	33 17.46	17 8.99	25 13.23	189

Tests

N	DF	-LogLike	RSquare (U)
189	7	4.2744854	0.0118

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	8.549	0.2867
Pearson	8.354	0.3024

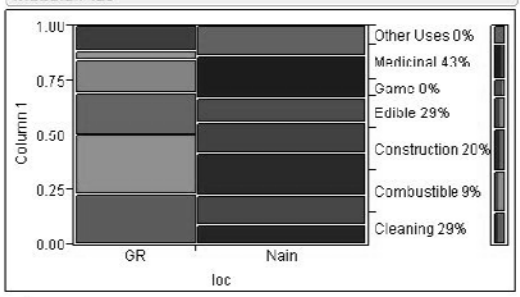
6. Was there a difference in the number of species per use categories between Nain and Kangiqsualujjuaq for non-vascular taxa?

There was no significant difference in the number of non-vascular taxa per use category between the communities (Pearson Chi-square suspect: average cell count less than 5, 20% of cells have expected count less than 5).

NON-VASCULAR	Shared species	Kangiqsualujjuaq	Nain	Total species
Edible 29%	2	4	5	7
Medicinal 43%	3	3	7	7
Combustible 9%	1	7	5	11
Construction 20%	2	5	7	10
Tea n/a	0	0	0	0
Other Uses 0%	0	0	5	5
Cleaning 29%	2	6	3	7
Game 0%	0	1	4	5

Contingency Analysis of Column 1 By loc

Mosaic Plot



Freq: freq

Contingency Table

loc	Count / Total % / Col % / Row %	Cleaning 29%	Combustible 9%	Construction 20%	Edible 29%	Game 0%	Medicinal 43%	Other Uses 0%	Tea n/a	
		Column 1								
GR		6	7	5	4	1	3	0	0	26
		9.68	11.29	8.06	6.45	1.61	4.84	0.00	0.00	41.94
		66.67	50.00	41.67	44.44	20.00	30.00	0.00	.	
		23.08	26.92	19.23	15.38	3.85	11.54	0.00	0.00	
Nain		3	5	7	5	4	7	5	0	36
		4.84	8.06	11.29	8.06	6.45	11.29	8.06	0.00	58.06
		33.33	41.67	58.33	55.56	80.00	70.00	100.00	.	
		8.33	13.89	19.44	13.89	11.11	19.44	13.89	0.00	
		9	12	12	9	5	10	5	0	62
		14.52	19.35	19.35	14.52	8.06	16.13	8.06	0.00	

Tests

N	DF	LogLike	RSquare (U)
62	6	5.3425649	0.0454

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	10.685	0.0986
Pearson	8.794	0.1855

Warning: 20% of cells have expected count less than 5, ChiSquare suspect

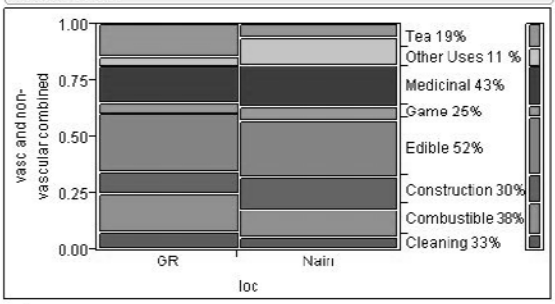
7. Was there a difference in the number of species per use categories between Nain and Kangiqsualujjuaq for all taxa?

There was no significant difference in the number of vascular and non-vascular taxa (combined) per use category between the communities (Pearson Chi-square = 12.328, $p = 0.0903$).

COMBINED	Shared species	Kangiqsualujjuaq	Nain	Total species
Edible 52%	22	31	33	42
Medicinal 43%	13	19	24	30
Combustible 38%	10	20	16	26
Construction 30%	7	11	19	23
Tea 19%	4	17	8	21
Other Uses 11 %	2	5	16	19
Cleaning 33%	4	9	7	12
Game 25%	3	6	9	12

Contingency Analysis of vasc and non-vascular combined By loc

Mosaic Plot



Freq: freq

Contingency Table

vasc and non-vascular combined

loc	Count / Total % / Col % / Row %	Cleaning 33%	Combustible 38%	Construction 30%	Edible 52%	Game 25%	Medicinal 43%	Other Uses 11 %	Tea 19%	
GR		9	20	11	31	6	19	5	17	118
		3.60	8.00	4.40	12.40	2.40	7.60	2.00	6.80	47.20
		56.25	55.56	36.67	48.44	40.00	44.19	23.81	68.00	
		7.63	16.95	9.32	26.27	5.08	16.10	4.24	14.41	
Nain		7	16	19	33	9	24	16	8	132
		2.80	6.40	7.60	13.20	3.60	9.60	6.40	3.20	52.80
		43.75	44.44	63.33	51.56	60.00	55.81	76.19	32.00	
		5.30	12.12	14.39	25.00	6.82	18.18	12.12	6.06	
		16	36	30	64	15	43	21	25	250
		6.40	14.40	12.00	25.60	6.00	17.20	8.40	10.00	

Tests

N	DF	-LogLike	RSquare (U)
250	7	6.3468026	0.0129

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	12.694	0.0799
Pearson	12.328	0.0903

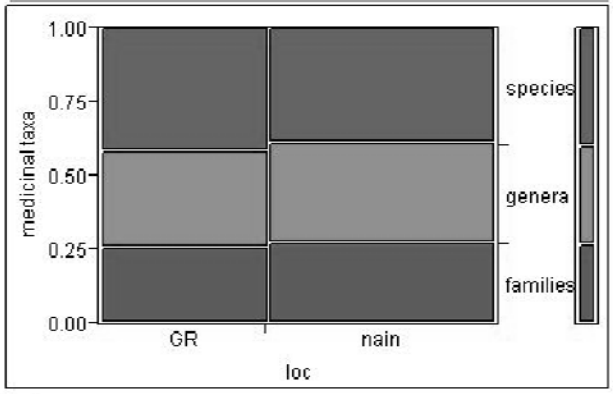
8. Was there a difference in number of species, genera, or families used between Nain and Kangiqsualujjuaq for medicinal plants?

There was no significant difference in the number of medicinal species, genera, or families used between the communities (Pearson Chi-square = 0.075, $p = 0.9633$).

MEDICINAL	shared	Nain	Kangiqsualujjuaq	total
species	13	24	19	30
genera	12	21	15	24
families	9	17	12	19

Contingency Analysis of medicinal taxa By loc

Mosaic Plot



Freq: freq

Contingency Table

	medicinal taxa			
loc	Count Total % Col % Row %	families	genera	species	
	GR	12 11.11 41.38 26.09	15 13.89 41.67 32.61	19 17.59 44.19 41.30	46 42.59
	nain	17 15.74 58.62 27.42	21 19.44 58.33 33.87	24 22.22 55.81 38.71	62 57.41
		29 26.85	36 33.33	43 39.81	108

Tests

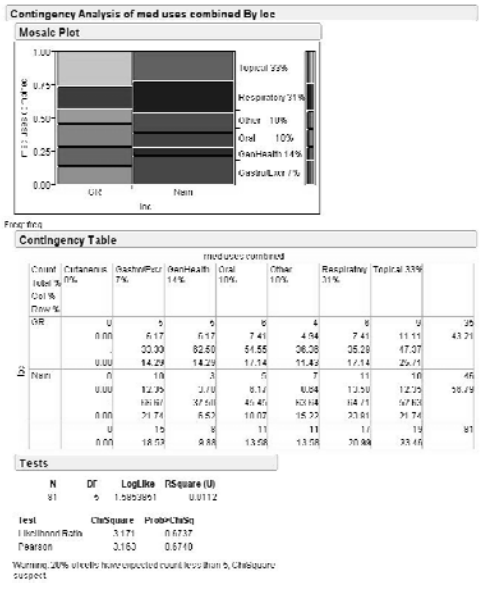
N	DF	-LogLike	RSquare (U)
108	2	0.03733398	0.0003

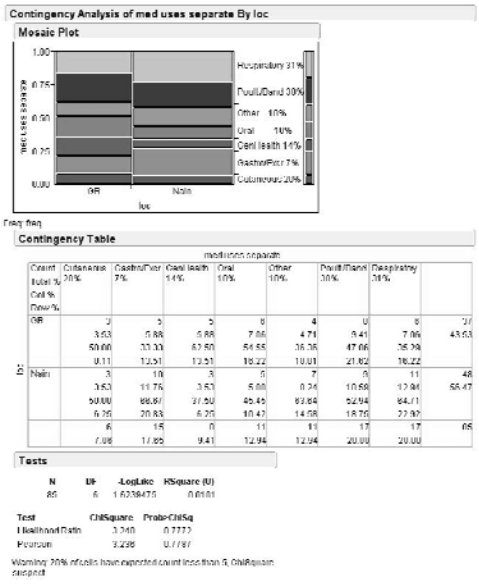
Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.075	0.9634
Pearson	0.075	0.9633

9. Was there a difference in the number of species per ailment categories between Nain and Kangiqsualujjuaq?

There was no significant difference in the number of species per ailment category between the communities (Pearson Chi-square not valid, even when grouping poultice/bandage with cutaneous).

SEPARATE	Gastro/Excr 7%	Poult./Band 38%	Respiratory 31%	Oral 10%	Other 10%	GenHealth 14%	Cutaneous 20%
shared species	1	5	4	1	1	1	1
GR species	5	8	6	6	4	5	3
Nain species	10	9	11	5	7	3	3
total species	14	13	13	10	10	7	5
COMBINED	Gastro/Excr 7%	Topical 33%	Respiratory 31%	Oral 10%	Other 10%	GenHealth 14%	Cutaneous 0%
shared species	1	5	4	1	1	1	
GR species	5	9	6	6	4	5	0
Nain species	10	10	11	5	7	3	0
total species	14	15	13	10	10	7	0



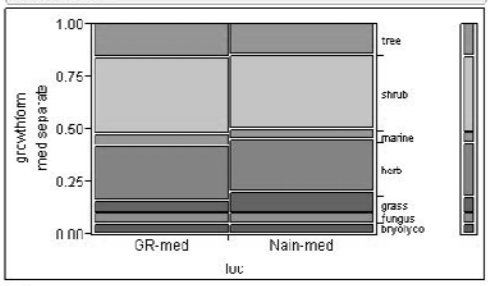


10. Was there a difference in the growth forms used per ailment category between Nain and Kangiqsualujjuaq?

There was no significant difference in the number of growth forms per ailment category between the communities (Pearson Chi-square suspect even if grouped all the way to grass/herb/pteridophyte, shrub/tree, and non-vascular).

Contingency Analysis of growthform med separate By loc

Mosaic Plot



Freq: freq

Contingency Table

loc	Count / Total % / Col % / Row %	growthform med separate								
		bryolyco	fungus	grass	herb	marine	pteridophyta	shrub	tree	
	GR-med	1	1	1	5	1	0	7	3	19
		2.56	2.56	2.56	12.82	2.56	0.00	17.95	7.69	48.72
		50.00	50.00	33.33	50.00	50.00	.	50.00	50.00	
		5.26	5.26	5.26	26.32	5.26	0.00	36.84	15.79	
	Nain-med	1	1	2	5	1	0	7	3	20
		2.56	2.56	5.13	12.82	2.56	0.00	17.95	7.69	51.28
		50.00	50.00	66.67	50.00	50.00	.	50.00	50.00	
		5.00	5.00	10.00	25.00	5.00	0.00	35.00	15.00	
		2	2	3	10	2	0	14	6	39
		5.13	5.13	7.69	25.64	5.13	0.00	35.90	15.38	

Tests

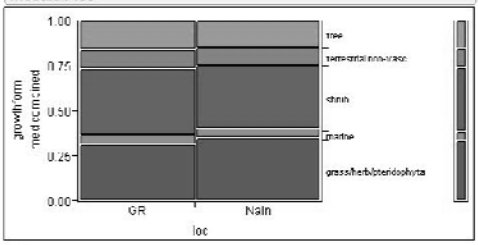
N	DF	LogLike	RSquare (U)
39	6	0.1570772	0.0024

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.314	0.9994
Pearson	0.308	0.9995

Warning: 20% of cells have expected count less than 5, ChiSquare suspect

Contingency Analysis of growthform med combined By loc

Mosaic Plot



Freq: freq

Contingency Table

		growthform med combined					
	Count Total % Col % Row %	grass/herb/pteridophyta	marine	shrub	terrestrial non-vasc	tree	
loc	GR	6 15.38 46.15 31.58	1 2.56 50.00 5.26	7 17.95 50.00 36.84	2 5.13 50.00 10.53	3 7.69 50.00 15.79	19 48.72
	Nain	7 17.95 53.85 35.00	1 2.56 50.00 5.00	7 17.95 50.00 35.00	2 5.13 50.00 10.00	3 7.69 50.00 15.00	20 51.28
		13 33.33	2 5.13	14 35.90	4 10.26	6 15.38	39

Tests

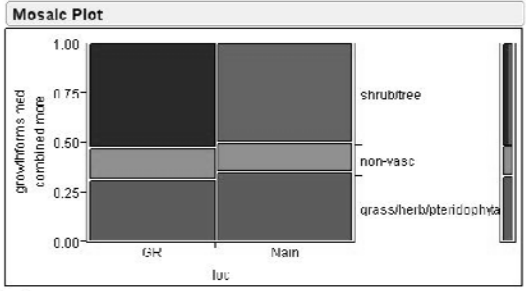
N	DF	-LogLike	RSquare (U)
39	4	0.0256764	0.0005

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.051	0.9997
Pearson	0.051	0.9997

Warning: 20% of cells have expected count less than 5. ChiSquare suspect

Contingency Analysis of growthforms med combined more By loc

Mosaic Plot



Freq: freq

Contingency Table

loc	Count / Total % / Col % / Row %	grass/herb/pteridophyta	non-vasc	shrub/tree	
		growthforms med combined more			
GR		6	3	10	19
		15.38	7.69	25.64	48.72
		46.15	50.00	50.00	
		31.58	15.79	52.63	
Nain		7	3	10	20
		17.95	7.69	25.64	51.28
		53.85	50.00	50.00	
		35.00	15.00	50.00	
		13	6	20	39
		33.33	15.38	51.28	

Tests

N	DF	LogLike	RSquare (U)
39	2	0.02567764	0.0007

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.051	0.9746
Pearson	0.051	0.9747

Warning: 20% of cells have expected count less than 5, ChiSquare suspect