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Inuit knowledge and use of wood resources on the west coast of Nunavik, Canada

Savoir inuit et utilisation des ressources en bois sur la côte ouest du Nunavik, Canada

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Article abstract

Driftwood and shrubs are the primary wood resources available in most areas of coastal Nunavik. Today, they are mainly used as fuel for campfires, but historically they were very important for the ancestors of present-day Inuit. This article documents Inuit traditional knowledge about the origin, availability, gathering, and exploitation of wood resources in this region located in the Low Arctic and the Subarctic. Interviews were conducted with 27 Inuit between 60 and 89 years of age in the villages of Ivujivik, Akulivik, Inukjuak, and Umiujaq on the east coast of Hudson Bay. Our data reveal, among other things, that Inuktitut names for pieces of driftwood were based on shape, aspect, colour, and texture. This traditional knowledge was very accurate and highly diverse in the southern villages because of their significant exposure to driftwood. Wood from shrubs (i.e. willows, birches, and alders) was mainly harvested in the fall and used to make fires, mattresses, sleeping mats (*alliat*), and other objects. According to the participants, driftwood originates in southern Hudson Bay and James Bay and is washed up on the beaches in late summer and the fall. In the far north of Nunavik, where driftwood is small and slender, Inuit used to collect it during the summer from a boat (*umiaq* or *qajaq*). Further south, it was gathered during the winter by dogsled.

Inuit knowledge and use of wood resources on the west coast of Nunavik, Canada

Stéphanie Steelandt[*], Najat Bhiry[*], Dominique Marguerie[**], Caroline Desbiens[***], Minnie Napartuk[****], Pierre M. Desrosiers[****]

Résumé: Savoir inuit et utilisation des ressources en bois sur la côte ouest du Nunavik, Canada

Le bois flotté et les arbustes sont les principales ressources en bois présentes dans la plupart des régions côtières du Nunavik. Aujourd'hui, ces matières premières sont utilisées pour le feu dans les campements mais dans le passé, elles tenaient une place importante dans la vie des ancêtres des Inuit. Cet article documente le savoir traditionnel inuit concernant l'origine, la disponibilité, la collecte et l'exploitation des ressources en bois dans cette région située en Bas-Arctique et en Subarctique. Des entrevues ont été réalisées avec 27 Inuit âgés de 60 à 89 ans habitant à Ivujivik, Akulivik, Inukjuak et Umiujaq, des villages de la côte est de la baie d'Hudson. Nos données révèlent que, entre autres, les noms en inuktitut des pièces de bois flottés leur étaient donnés en fonction de leur forme, leur aspect, leur couleur et leur texture. Les savoirs traditionnels sont plus précis et diversifiés dans les villages les plus au sud car le bois flotté y est plus abondant. Le bois d'arbustes (saules, bouleaux et aulnes) était principalement coupé en automne pour faire du feu, des matelas, des tapis (*alliat)* ou d'autres objets. Selon les participants, le bois flotté proviendrait du sud de la baie d'Hudson et de la baie James, et s'échouerait sur les plages à la fin de l'été ou en automne. À l'extrême nord du Nunavik, où le bois flotté est petit et grêle, les Inuit le collectaient durant l'été par bateau (*umiaq* ou *qajaq*) alors que plus au sud, c'était en hiver, en utilisant des traîneaux à chiens.

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Driftwood and shrubs are the primary wood resources available in most areas of coastal Nunavik. Today, they are mainly used as fuel for campfires, but historically they were very important for the ancestors of present-day Inuit. This article documents Inuit traditional knowledge about the origin, availability, gathering, and exploitation of wood resources in this

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region located in the Low Arctic and the Subarctic. Interviews were conducted with 27 Inuit between 60 and 89 years of age in the villages of Ivujivik, Akulivik, Inukjuak, and Umiujaq on the east coast of Hudson Bay. Our data reveal, among other things, that Inuktitut names for pieces of driftwood were based on shape, aspect, colour, and texture. This traditional knowledge was very accurate and highly diverse in the southern villages because of their significant exposure to driftwood. Wood from shrubs (i.e. willows, birches, and alders) was mainly harvested in the fall and used to make fires, mattresses, sleeping mats (*alliat*), and other objects. According to the participants, driftwood originates in southern Hudson Bay and James Bay and is washed up on the beaches in late summer and the fall. In the far north of Nunavik, where driftwood is small and slender, Inuit used to collect it during the summer from a boat (*umiaq* or *qajaq*). Further south, it was gathered during the winter by dogsled.

Introduction

"I think it is important that our grandchildren know how wood was used in Nunavik" (Aibillie Echalook). This statement by an elder from the village of Inukjuak reflects the special importance of this natural resource for the inhabitants of this Arctic region where trees are rare or absent. It also reveals the importance of passing on wood-related techniques and activities to the younger generation.

In the Canadian High Arctic, Alaska, and Greenland, several studies have documented driftwood availability and its exploitation by Inuit and other northern residents (Alix 2004, 2005, 2006, 2007, 2009; Alix and Brewster 2004; Arnold 1994; Dyke and Savelle 2000; Grønnow 1996; Laeyendecker 1993; Lepofsky et al. 2003). In northeastern Canada (Nunavik and Nunatsiavut), little is known about wood acquisition and use (Lemieux et al. 2011; Lemus-Lauzon et al. 2012). Yet wood was used, as attested by the Qijurittuq site (IbGk-3) on Drayton Island near Inukjuak (Figure 1), where numerous pieces of wood 2 to 3 m long have been found. This wood formed the roof structures of semi-subterranean houses (Lemieux et al. 2011).

The following article documents what the Nunavimmiut (inhabitants of Nunavik) traditionally knew about availability and exploitation of wood resources (driftwood and shrubs) in eastern Hudson Bay. The following questions guided our research: 1) Where are the sources of driftwood found on the west coast of Nunavik? 2) How were driftwood and shrubs gathered? 3) Were there any variations in how the raw material was selected?

Wood conveys values and reflects a distinctive worldview, especially of nature and living things (Denzing and Lincoln 2005: 1; Stevenson 2010: 9). This knowledge is extremely valuable because it originates from experiences accumulated over thousands of years through direct contact between a cultural group and the environment in which it evolves (Berkes 2008: 6). In Nunavik, as in numerous other cultures, this traditional knowledge is transmitted orally from generation to generation. Over time, with the settling of Inuit in villages and the education of youth in schools, oral transmission of

cultural knowledge began to diminish. Nevertheless, Inuit elders still possess extensive knowledge about how their ancestors lived, especially because they and their parents lived a nomadic lifestyle during their childhoods. Thus, their knowledge of the environment, especially about availability and exploitation of wood resources on the west coast of Nunavik, results from a multitude of experiences.

Study regions

Interviews were conducted during the summer of 2011 in four villages on the east coast of Hudson Bay: Ivujivik, Akulivik, Inukjuak, and Umiujaq (Figure 1). All of these villages have numerous archaeological sites dating to the Palaeo-Eskimo (3800 to 800 BP) and Neo-Eskimo (around 800-700 BP to the present) periods. Semi-subterranean sod houses, caches, tent rings, and graves have been located there (e.g., Avataq Cultural Institute 2008, 2009, 2010, 2013). Such finds attest not only to the long history of human occupation, but also to environmental change. In particular, sea-level variations affected the littoral zone, as shown by raised beaches that formed following the retreat of the Tyrrell Sea (e.g., Plumet 1974).

Ivujivik is in an Arctic environment influenced by prevailing strong air currents that cross Hudson Strait from east to west. Arctic tundra predominates, specifically grass tundra (Payette 1983). Currently, the village has approximately 370 inhabitants**.** Akulivik is about 150 km south of Ivujivik on the shrub tundra (Payette 1983). Many remains of winter sod houses have been recorded in the area and their presence may be linked to open winter water, which would have made it a good site for sea mammal hunting (Avataq Cultural Institute 2013). Akulivik has 615 inhabitants. The community of Inukjuak is 225 km south of Akulivik in the Arctic climate zone and lies on the shrub tundra (Payette 1983). Up to 1,597 Inuit live in this village. Finally, the Umiujaq region (which includes Richmond Gulf) is about 225 km south of Inukjuak. Triangular in shape, Richmond Gulf occupies an area of approximately 710 km². The freeze-up of Hudson Bay from January to May gives the region a continental climate, the vegetation being forest tundra (Payette 1983). Umiujaq has a population of 444. The population in all four villages is young, with a median age of approximately 20.

Methods

During the summer of 2011, one-hour-long semi-directed interviews were conducted with 27 Inuit between 60 and 89 years of age. We sought participants over 60 since they would most likely know about traditional use of wood. We tried to balance the number of men and women interviewed in each village in order to represent the diversity of the population and to create a convenience sample (Stevenson 2010: 12). The participants were six Inuit from Ivujivik and Akulivik (three men and three women), nine Inuit from Inukjuak (five men and four women) and six Inuit from Umiujaq (four men and two women). The topics were: 1) names and characteristics of driftwood available on the beaches on the west coast of Nunavik; 2) gathering and use

of wood from shrubs (willow, birch, and alder); and 3) origin, availability, gathering, and use of driftwood.

Interviews were conducted with the aid of an "Inuktitut/English" and "Inuktitut/French" translator when required. Participants were recruited via a combination of the local press, calls to local radio stations, word of mouth (especially with the help of the interpreters), and "snowball" (or "chain") sampling. Most of the interviews took place at the participant's home while some were held in the municipal office or outside (e.g., on the beach). Some visual aids were used during the interviews to help participants describe relevant details. These included maps of the four villages and wood gathered around the villages. Audio and/or video recordings were made.

Interview data were transcribed and analysed using qualitative methods by combining common responses into categories and identifying links between the data (Creswell 1994: 173; Marshall and Rossman 1989: 209). This method encourages researchers to consider the social background of the participants (e.g., sex, time spent in the village, birthplace, relationship, job or role in the community) in order to avoid reckless generalisations (Mishler 1986: 16).

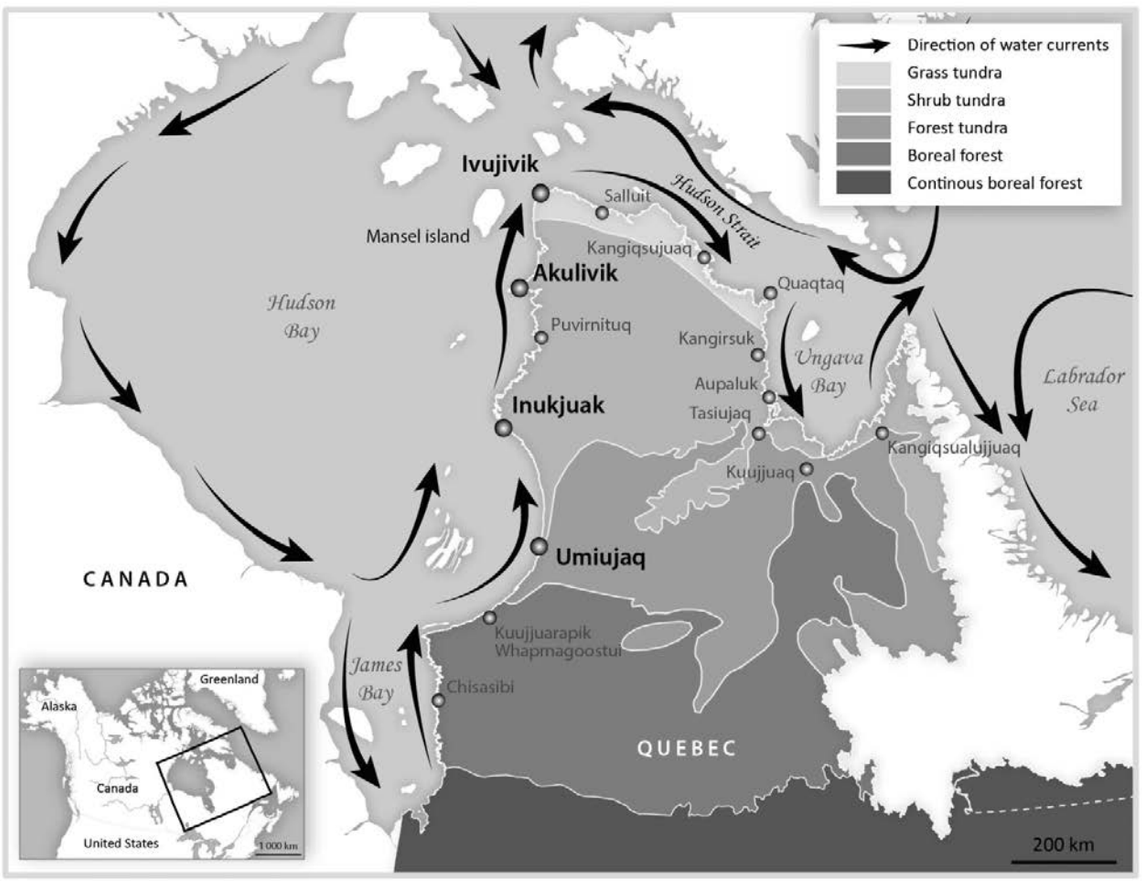

Figure 1. Location of the four study regions in Nunavik.

Wood resources and related vocabulary

We also tried to determine the overall consistency, within distinct regions, of Inuktitut names for different kinds of trees, shrubs, and driftwood (Avataq Cultural Institute 2012) (Table 1). Our interviews with Nunavik elders supplement the existing linguistic research on the subject in the Arctic (Alix 2007; Arima et al. 1991; Heath and Arima 2004; Lemus-Lauzon et al. 2012; Fienup-Riordan 2007; Petersen 1986; Zimmerly 2000). Some similarities can be observed. *Pingik*, for example, refers to larch (*Larix sp.*) in Nunavik and Labrador (Lemus-Lauzon 2012: 124). A similar name, *pingek,* is also used in Greenland to refer to red driftwood, which is likely larch (Peterson 1986). Even in Nunavik, this vocabulary varies between different areas. As participants confirmed, the terms for wood can change from one village to another and even within the same village. These terms vary depending on where the elders and their parents and ancestors originated. In addition, this knowledge was transmitted orally and, when recorded during various studies, was often transcribed phonetically using English spelling.

In Ivujivik and Akulivik, the participants did not differentiate between the kinds of driftwood found on beaches, but they knew the names of some local shrubs, such as *avaalaqiaq* for Arctic dwarf birch (*Betula glandulosa*) and *urpiq* (plural: *urpiit*) for gray willow (*Salix glauca*). In Akulivik, Maggie Aliqu also noted a third kind of shrub that grows near the water called *urpigaq*, otherwise known as green alder *(Alnus viridis)*. In contrast to these northern villages, many different names are used for driftwood further south in Inukjuak and Umiujaq. The names differ by form, aspect, colour, texture, and other characteristics. In Inukjuak, Elisapi Weetaluktuk and Aibillie Echalook listed approximately 10 different kinds. Pictures of driftwood were seldom useful when shown to the participants to elicit a specific list of names (Figure 2). If the northern elders had visited or lived in the southern area (i.e. in Umiujaq or Kuujjuarapik), they knew more than 10 names. Adamie Niviaxie, whose father was a wood worker who built boats in Kuujjuarapik, gave 92 names, although some of them included names for wood used in different boat parts (*umiaq* or *qajaq*). Such terms vary extensively by region (e.g., Arima 1964; Arima et al. 1991; Bruemmer 1976; Heath and Arima 2004; Saladin d'Anglure 1967; Snaith 1997; Peterson 1986; Victor and Robert-Lamblin 1989; Zimmerly 2000). In Inukjuak, other elders who still make *qajait* in the traditional way did not list the same names or as many names, a sign of the influence of the region of origin. Some of these names are presented in Table 2.

In Umiujaq, all the participants referred to larch (*Larix sp*.) by the name *pingik*. Spruce (*Picea sp.*), called *napaartutuinnaq*, is also abundant and well known in this area but was not mentioned during our interviews (Avataq Cultural Institute 2012; Schneider 1985). There were many more references to *pingik* (*Larix sp.*) than to *napaartutuinnaq* (*Picea sp.*) because the flexibility and resilience of larch make it more suitable for the Inuit (Forest Product Laboratory 2010: 5-26). Larch was likely preferred here, as it was in the Canadian High Arctic by Thule groups from Alaska (Alix 2001: 389-393). Turner (1894: 241) notes that larch was preferred for sled

Table 1. Wood-related Nunavik Inuktitut vocabulary of the participants. Reviewed and completed by Minnie Napartuk from the Avataq Cultural Institute with reference to the Inuktitut-English dictionaries of Qumaq (1991) and Schneider (1985).

	Inuktitut	**English description**	**Latin**
Part of tree vocabulary	*qijuvik*	trunk	
	uqaujaq	leaf	
	pirurvik or mannguq or amaaq or najuqqutaq	root	
	isaqrutaq	branch	
	niaqunnguaq	knot	
General vocabulary	*napaartuq*	tree	
	qijuk	wood	
	tipijaq or titjaluit	driftwood	
Tree species vocabulary	*pingik*	larch	*Larix sp.*
	napaartutuinnaq	spruce	*Picea sp.*
Driftwood vocabulary	*ikkiq**	hard red wood that goes everywhere when we cut it / gum	
	*sitijujaq or sitijutsajaq**	very hard wood	
	*akiruq**	kind of wood with knots that are very hard to work with	
	*ipa**	wood without any homogeneous lines. It does not break when bent and is thus usable for *qajaq* building	
	*ipaittuq**	tree wood that is smooth and difficult to cut / that you cannot cut straight	
	*qimumiaq**	straight wood	
	*palliit**	dead dry wood with no more bark and pale	
	*qitjangajuq**	twisted wood that is difficult to cut	
	*akiruittuit**	trees that have no branches	
	*tukimuatsiatuq**	wood that is not hollow	
	auniq or sutjuk* or puvallaq**	old wood that is easy to break and has a “rotten tree inside”/ rotten wood	
	*qitujartuit**	wood that bends (any kind of wood)	
	*isirittuq**	can still burn in the fire when wet and can be used for fast food preparation / great smoke	
	*uummait**	wet wood	
	*kanunngiq or kanungiq**	tree with no knots	

Shrub vocabulary	*avaalaqiaq*	Arctic dwarf birch	*Betula glandulosa*
	urpiq	gray willow	*Salix glauca*
	urpigaq	green alder	*Alnus viridis*
	*arpiit**	cloudberry	
	*paurngait**	blackberry	
	*kimminait**	red berries	
	*mamaittuqutik**	Labrador tea	
	*qunguliit**	mountain sorrel	
	*iviit**	grass	
	*malitsuagait**	small bluish plants	
	*airait**	edible roots	
	*kakagutik**	plant with red thorns	

* Only named in the southern villages (Inukjuak or Umiujaq).

Table 2. Examples of *qajaq* (‘boat’) vocabulary of elders in Inukjuak.

Inuktitut	**English description**
apummak	big piece of wood in *qajaq* on the upper boards (gunwales)
qullutik	big piece of wood in the middle, the lower part of the side of the *qajaq*
sianiq	big piece of wood in the bottom
natiujaq	double-ended piece, for small floor
natiq	the whole floor
masik	in front of the front curve of a *qajaq* (heavy curved deck beam supporting the front of the cockpit)
masiarusik	same as “masik” but smaller
tippik	*qajaq* rib
ittivik	behind the *qajaq* (deck beam behind the cockpit)
tunirjuk	top of the *qajaq* (deck stringer)

making in Ungava Bay. Taking all these factors into account, there seems to be a greater diversity of local knowledge about wood resources in the southern villages. Such greater awareness is mainly due to the proximity of trees and shrubs to the villages.

Figure 2. Driftwood gathered and shown to the elders during the interviews. Photo: Stéphanie Steelandt.

Inuit knowledge about shrubs and trees in Nunavik

Based on the responses of Inuit elders in the four villages, we conclude that wood from shrubs, such as gray willow (*urpiq*), green alder (*urpigaq*), and Arctic dwarf birch (*avaalaqiaq*), was cut mainly during the fall (i.e. September) before the first snowfall. During this period, shrubs lose most of their leaves, making their branches easier to collect and lash together. Two participants also mentioned that they would start cutting these shrubs in the summer during the berry-picking season. In Umiujaq, on the forest tundra, trees such as spruce and larch were sometimes cut during the summer. All of the participants from that region nonetheless said that winter was the best time for cutting: “For trees, they went to cut them in winter, same as today. For shrubs, it was in autumn” (Joshua Sala).

The Inuit were traditionally nomadic and would cut shrubs wherever they happened to be camping during the hunting season. Wood gathering around the camps appears to have been the job of women, who used knives (*ulu*) to cut branches from shrubs. Elders identified some preferred locations for wood gathering. In Ivujivik (Figure 3), Uniurtitak Ainalik indicated that Narquniq, about 2 km away, was a desirable location. Mattiusi Iyaituk mentioned Kuuvik, between Ivujivik and Akulivik. Both were places where they could go by dogsled to cut dwarf willow (*urpiq*).

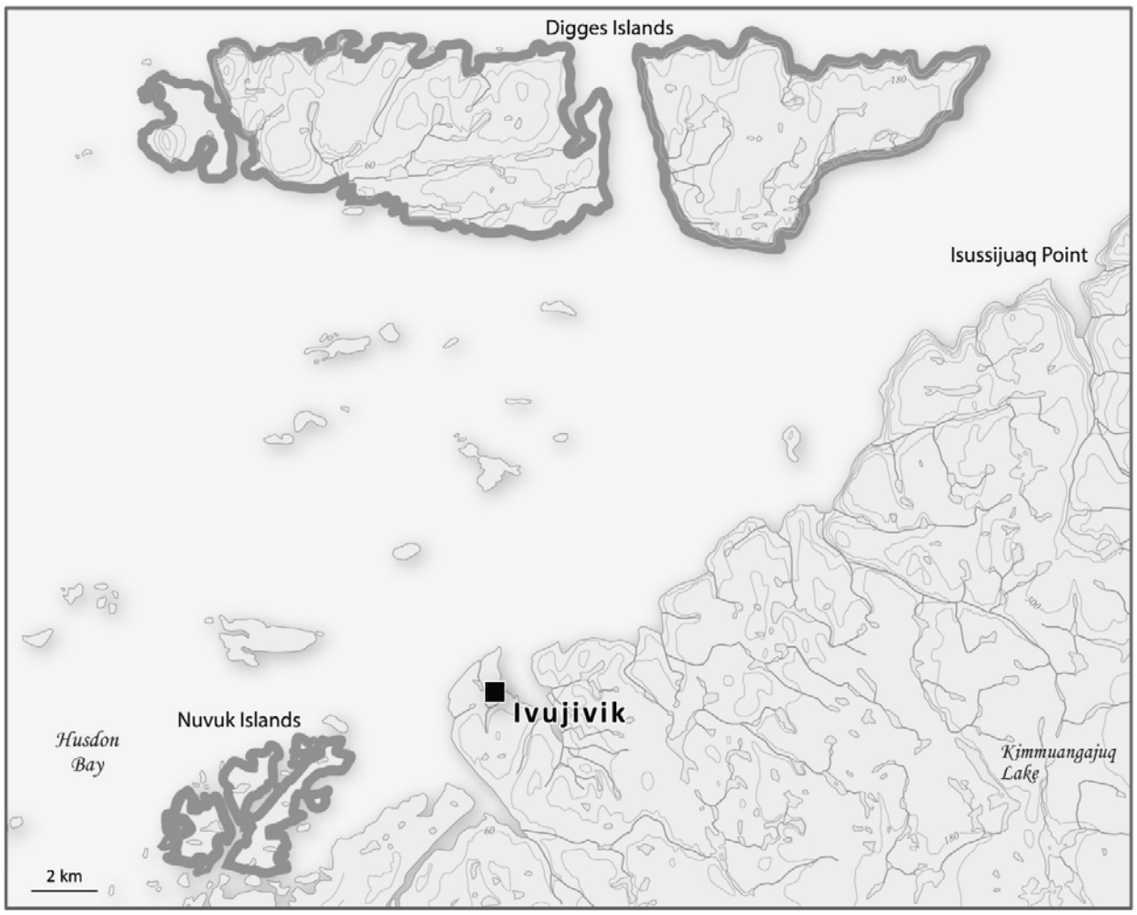

Figure 3. Map of Ivujivik and surrounding area. Shaded areas: best places for driftwood gathering.

In Akulivik, Maggie Aliqu indicated that Kuuvik (likewise mentioned by Iyaituk above) also had many dwarf willow. She and two other elders noted an area about 6 km northeast of the village, between lakes Akullipaaq and Kanajulik, where they used to go for dwarf birches (*avaalaqiat*) by dogsled (Figure 4). These elders sometimes travelled around the village to pick up willows (*urpijat* and *urpiit*) that they would carry by hand, in bags, or by sled. According to Lydia Qumak, their parents and ancestors went further into Smith Island to cut shrubs during the summer around their camp. Another elder stated that their parents and ancestors would sometimes travel by *qajaq* around Akulivik in order to harvest shrubs.

In Inukjuak, three elders indicated that they would cut shrubs on the mainland across from Drayton Island, north of the Tikirakutaaq headland where they camped (Figure 5). To bring the wood back home, people from this village used a special technique that elders from the other villages did not mention. Wood from the shrubs would be tied together with a sealskin rope, and the bundle carried on one's back: "They picked them up everywhere because they were nomads. But when school started, everyone gathered in one place […]. After cutting *avaalaqiat*, we tied the branches with a rope made of sealskin and we put them on our back" (Nellie Nastapoka).

In this same village, Adamie Nivaxie noted that he had travelled through Kuujjuarapik (about 150 km south of Umiujaq) by dogsled during the winter in order to cut wood from large trees. Some of the elders in each village also told us that their parents and ancestors would sometimes cut wood from some trees in the forest tundra when travelling there for weddings, church, trade, or meetings: “I heard that my ancestors used to cut wood when they went to church in Kuujjuarapik but that did not happen often because it was very far away” (Lucy Weetaluktuk, Inukjuak).

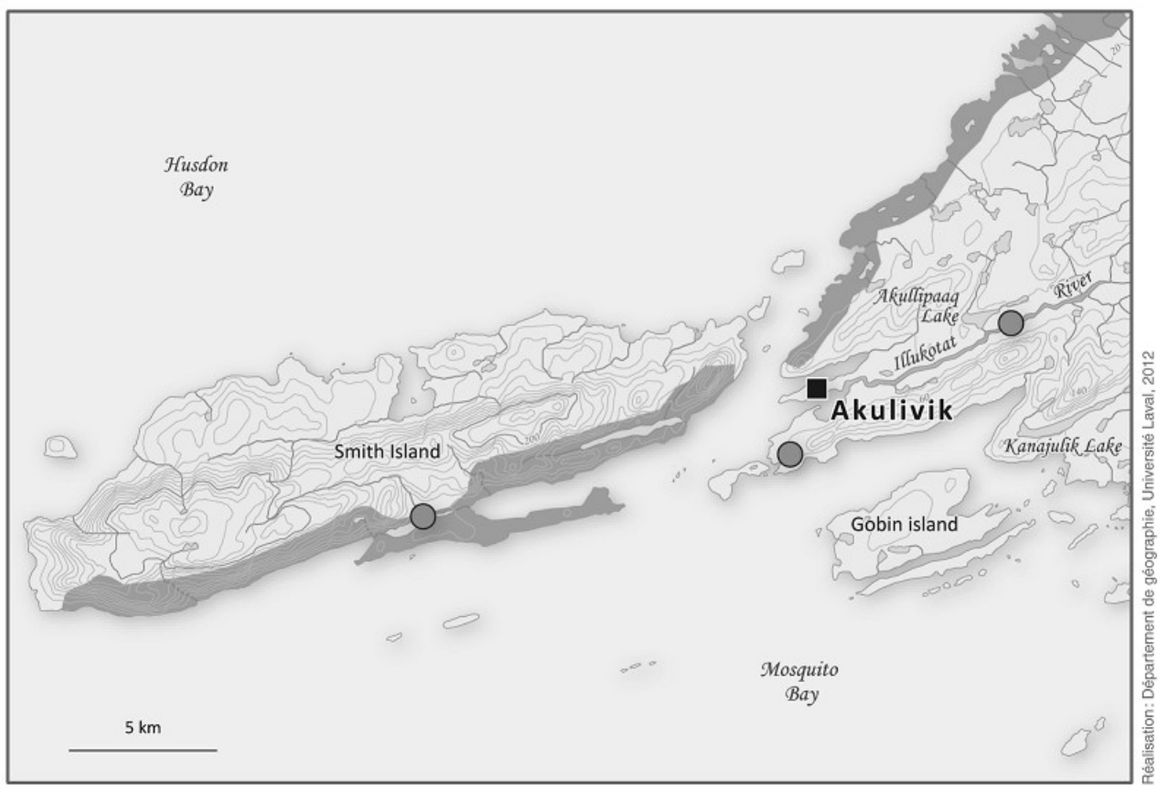

Figure 4. Map of Akulivik and surrounding area. Grey dots: best places for gathering shrubs; shaded areas: best places for gathering driftwood.

Finally, in the vicinity of Umiujaq, the Inuit and their ancestors would cut wood not only from shrubs but also from trees. They cut wood from spruce or larch during the winter and bring the pieces back by dogsled. Four of six participants from this village said that one of the best places to cut tree wood is northeast of Tasiujaq (Richmond Gulf) near Katattulialuup Kuunga (Clearwater River) (Figure 6):

> Before, we went to cut the trees but not many shrubs. We cut the big trees into small pieces with an axe so we could carry them. Before, if we were not far from the trees, we brought them back just by walking. It could be very close, anywhere in Taiujaq (Richmond Gulf). We brought them back on foot with snowshoes on our backs (without a cord) by changing shoulders until we used the dogsled. […] No, we never took the *qajaq* to bring wood […]. Today, it’s further north of Richmond Gulf. I don’t know where they went for small shrubs like *urpiq* and *avalaqiaq*. We didn’t use them much (Jobie Crow).

Shrub wood was harvested from the vicinity of the camps, according to Annie Cookie, and from north of the Nastapoka River, according to Joshua Sala.

Because people can now purchase commercially processed wood brought in from southern Quebec by plane or boat, all the participants said that they now gather wood from shrubs when camping only in order to make a fire or to teach younger Inuit how to make fires. In Umiujaq, trees are still felled near camps northeast of Richmond Gulf, for example, near the Clearwater River, and on islands further north in the region (Figure 6). The Inuit would transport trees and shrubs during the winter by snowmobile, and never during the summer by boat.

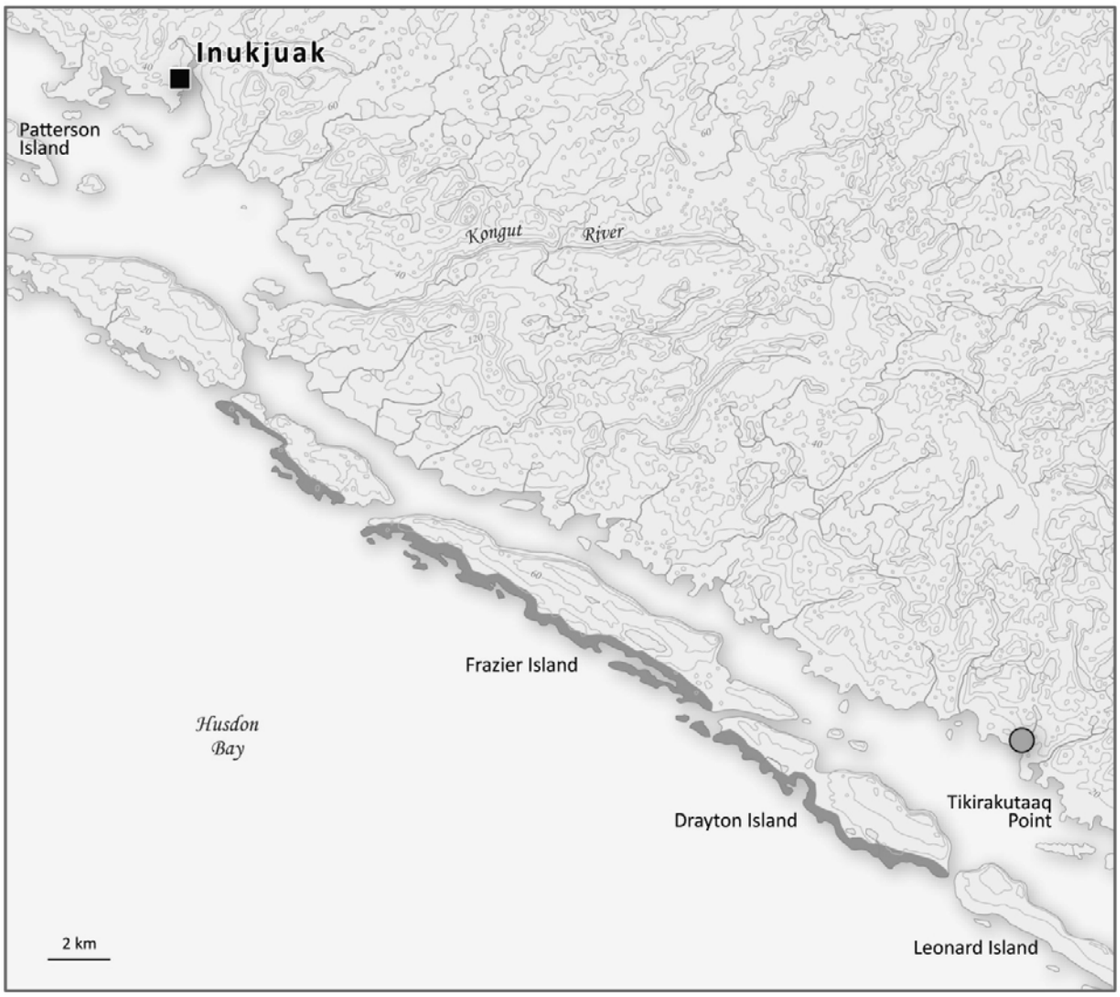

Figure 5. Map of Inukjuak and surrounding area. Grey dots: best places for gathering shrubs; shaded areas: best driftwood accumulation sites and gathering points.

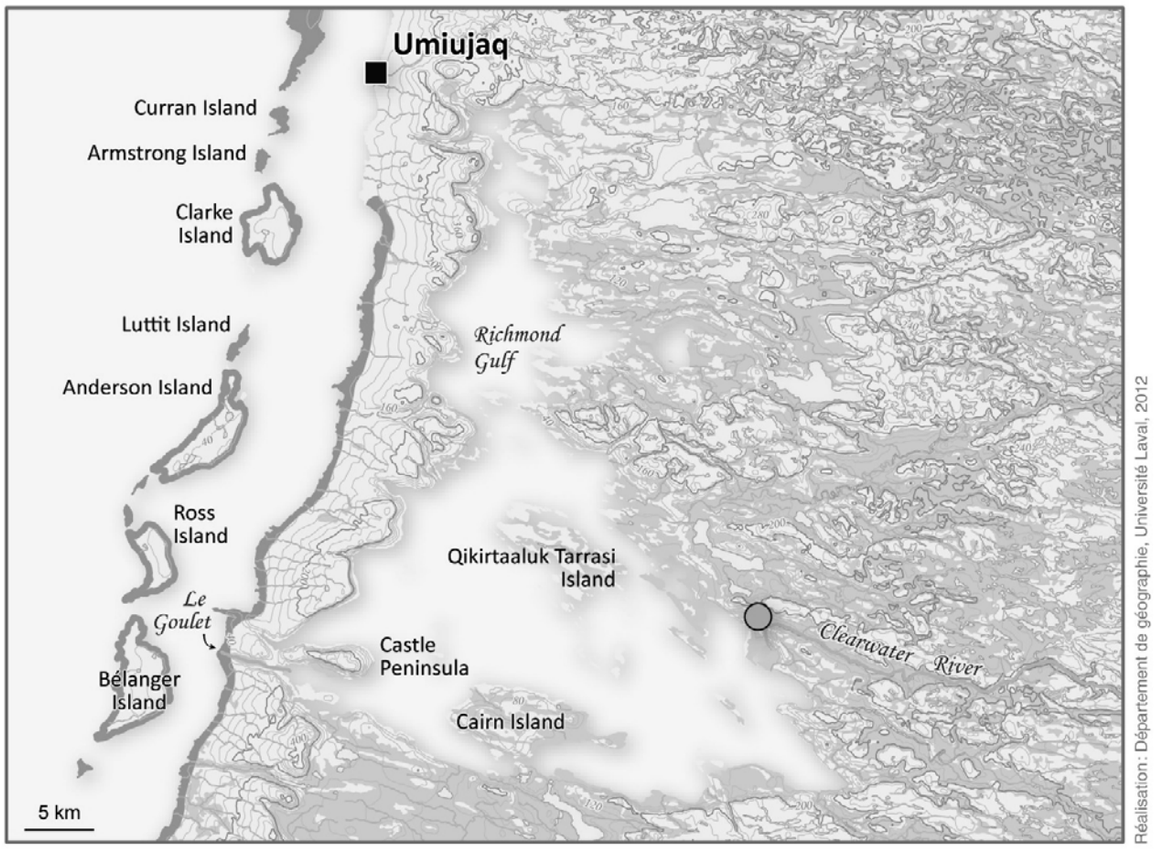

Figure 6. Map of Umiujaq and surrounding area. Grey dots: best places for gathering shrubs; shaded areas: best places for gathering driftwood.

Use of shrubs

According to 20 of the 27 participants, firewood was obtained not only from driftwood but also from dry shrubs such as willow (*Salix sp*. or *urpiq*), birch (*Betula sp.* or *avaalaqiaq*), or alder (*Alnus sp*. or *urpigaq*). Plants such as lichens and moss could also be used. Willow, birch, and alder were used for making fires during the fall because they were dry and would burn easily. Two participants (Nellie Nastapoka and Daniellie Inukpuk) from Inukjuak specified that willow was used more often during the fall because it burns longer. Conversely, during the summer, alder and birch were preferred for making fires because willow was too wet. Alder and birch were also desirable in the Kodiak Archipelago because they could burn hot and slowly (Shaw 2012: 73).

Twenty-five of the 27 elders informed us that dwarf birch was also used for making a sleeping mat called *alliaq* (which is bound with a rope) or *allipaluk* (which is unbound and placed under the *alliaq*): “On the mattress side in the winter time, we put all of the branches on the snow first. The second layer was branches that were fixed together very well, the third one was the grass, the fourth layer was the cloth, and the fifth layer was the caribou skin” (Nellie Nastapoka, Inukjuak). These mats were laid on the ground in tents, houses, or igloos (Figure 7).

Figure 7. Daniellie Inukpuk showing a mattress (*alliaq*) made with branches from *avaalaqiaq*, i.e. Arctic dwarf birch (*Betula glandulosa*), and caribou skin, Inukjuak, 2011. Photo: Stéphanie Steelandt.

In addition, 11 elders (one from Ivujivik, five from Akulivik, and five from Inukjuak) spoke of famines during which their ancestors had to eat shrubs such as dwarf willow or dwarf birch. They would usually eat the roots, sometimes also the leaves and branches, or even chew the leaves (*uqaujait*) of dwarf willows (*urpiit*) as a gum. This was not a standard part of their diet: "Before, for this kind (*urpiit*), we used to collect it because the outside layer is a bit soft and we could eat it when we were very hungry and the part under the ground was even better because it's softer […]. There was a different species of plant that was good to eat here in the summer, but now for this one, we don't eat it anymore" (Simon Makimak, Akulivik).

The long dwarf willow branches could also be used to make the roof of a *qarmaq* (sod house) or to construct a *pirujaq* (a seasonal food cache). Simon Makimak said that it was easier and more effective to use ropes rather than branches. According to

Uniurtitak Ainalik from Ivujivik, dwarf birch was used to make drills and *qajaq* parts if there was no driftwood: “We took small branches to make a part of the *qajaq* or for the bed (*alliat*). Otherwise, we used them to make fire and to boil water. We also took the branches of *avaalaqiat* to make drills when we didn’t have driftwood, but they were not as good” (Uniurtitak Ainalik, Ivujivik). Some Ivujivik or Akulivik elders described using shrubs to dry sealskins, to stir the fire in a lamp (*qulliq*), or to make brooms. Shrubs could also be used to make a kind of fly swatter to kill mosquitoes (using smoke) or to make toys, like dolls or miniature boats. Other studies from Nunavik reveal that some trees and shrubs could be used as medicinal cures. For instance, the inner bark of willow (*Salix planifolia*) may serve as an analgesic and larch (*Larix laricina*) could heal mouth infections (Blondeau et al. 2004: 500, 524).

In Umiujaq, on the forest tundra, people primarily used trees or driftwood. Peter Audlaluk and Uniurtitak Ainalik from Ivujivik said that today, shrubs are sometimes used in the camps to help hold the tents down (i.e. by lengthening the ropes) or to teach young people.

Inuit knowledge about driftwood

Quality and quantity of driftwood

Seventeen of the 27 participants (five in Ivujivik, two in Akulivik, seven in Inukjuak, and three in Umiujaq) said that more driftwood from trees and commercially processed wood (especially boards, old boxes, or boat parts) washes up on the beaches today than in the past. This is because people have largely stopped gathering driftwood. By contrast, three elders from northern villages (Mattiusi Iyaituk from Ivujivik, and Simon Makimak and Alasuak Alayco from Akulivik) observed that driftwood (from trees) was less common now because the current has changed. Finally, five of the participants admitted that they did not really pay attention to how the amount of driftwood on the beaches has fluctuated over time. Nevertheless, according to Willie Kumarluk and Joshua Sala from Umiujaq, driftwood availability and quantity has not changed noticeably.

With regard to driftwood quality on the beaches and the different species of origin, all of the participants from Ivujivik (six), two of the six elders from Akulivik, and one elder from Inukjuak noted that commercially processed wood is much more common on the beaches now. The cause is the increase in shipping in Hudson Bay (Stewart and Lockhard 2004: 36). Moreover, Sarah Iyaituk from Ivujivik states that she now sees larger pieces of natural wood than she did when young, while Alasuak Alayco and Minnie Amamatuak (from Akulivik) observed two different kinds of driftwood on the beaches: softwoods and hardwoods. With the exception of comments on commercially processed wood, almost all of the participants from Inukjuak and Umiujaq had seen no change in the quality or species of origin of driftwood that has washed up on the beaches in recent decades. This supports our own in situ observations about the recent

composition and characteristics of driftwood accumulations on the west coast of Nunavik. We identified four coniferous taxa (*Picea sp., Larix sp., Abies sp.,* and *Thuja sp.*) and four deciduous taxa (*Salix sp., Populus sp., Alnus sp.,* and *Betula sp.*).

Best accumulation sites for driftwood

The elders provided many different answers when asked where the best accumulation sites for driftwood could be found around Ivujivik (Figure 3). According to three of them, driftwood was usually found everywhere in the bays. Another indicated that natural and commercially processed wood could be found on the Nuvuk Islands and the Digges Islands off the north coast of the village of Ivujivik.

All of the interviewed elders from Akulivik (Figure 4) noted that the best accumulations of driftwood were north of Akulivik as well as north of Smith Island. Two of the six elders indicated that driftwood accumulated in the bays south of Smith Island. Two elders stated that very little driftwood washes up on beaches between Akulivik and Smith Island, perhaps because of the presence of strong currents with many vortices in this area. Furthermore, one participant (Alasuak Alayco) said that very little driftwood is present west of Smith Island because the current does not promote its arrival in this area.

In the region of Inukjuak (Figure 5), driftwood appears everywhere west of the islands in the open sea on Hudson Bay, especially on Drayton Island and on Frazer Island, which is off the south coast of the village. On the other hand, Simeonie Elijassiapik stated that large pieces of driftwood are rarely seen south of the village around the Kongut River, despite an abundance of small pieces from local plants (i.e. willow and birch stems and branches). According to our field observations, these small local pieces are released following permafrost degradation.

In the region of Umiujaq (Figure 6), elders indicated that a lot of driftwood is available west of the islands in the open water of Hudson Bay, while driftwood is scarce in Richmond Gulf and around the village. Willie Kumarluk said that one of the best accumulation sites for driftwood is on the south coast of Belanger Island.

Origins of the driftwood

All the elders interviewed believed that driftwood found on the coasts originated south of Hudson Bay and James Bay. La Grande River and Kuujjuarapik were considered to be possible sources (Figure 1). Such a southern source of driftwood is highly probable given the northbound direction of the currents along the east coast of Hudson Bay (Stewart and Lockhard 2004: 9; Straneo and Saucier 2008). Wood would thus be carried from the south to the north along the east coast of James Bay and Hudson Bay. For example: “Before, they came from Mailasikkut (Chisasibi, in James Bay) near Kuujjuarapik but now I think they come from La Grande because we cut

some trees over there. In my opinion, they also could come from the south of Ungava Bay" (Lucassie Alayco, Akulivik). Other potential sources were proposed, such as the southwest region of Hudson Bay or the north end of Ungava Bay near Kuujjuaq.

The first location is possible because currents in the bay flow south along the west coast of Hudson Bay before heading back north along the east coast. The second hypothesis that driftwood comes from the Ungava Bay coast is more difficult to endorse because the current does not flow from there to the east coast of Hudson Bay (Figure 1). According to some elders, driftwood may also travel by river (especially in Richmond Gulf) or come from boats (especially the commercially processed driftwood found in Ivujivik).

Arrival time and gathering of driftwood

In Alaska, driftwood begins to move along the Yukon and Kuskokwim rivers in the spring. Even though its arrival on the coasts depends on environmental conditions (e.g., floods, river banks, storms, prevailing currents and winds, sea-ice circulation, etc.) and is not predictable, it can still be regularly anticipated by inhabitants who continue to use it today, e.g., to heat steam baths (Alix 2005: 83; 2006: 11; Alix and Brewster 2004: 5). In Nunavik, by contrast, the timing of driftwood arrivals on the beaches is not generally anticipated by the Inuit inhabitants. Indeed, 14 of the 27 elders indicated that they never really paid much attention to the timing because driftwood always seemed to be on the beaches. This lack of interest may also reflect the fact that driftwood is not really used anymore. Fifteen of the elders think that the driftwood washes up on the beaches in late summer and especially in the fall because the wind, currents, and waves are strongest during that season. Moreover, Alasuak Alayco (Akulivik) and Willie Kumarluk (Umiujaq) also indicated that the arrival of wood is highly dependent on weather conditions, such as the wind. Finally, some of the elders specified that commercially processed wood from boats arrives on the beaches during the summer between June and September (and even as late as November), this period being when the ice begins to thaw and shipping returns.

Driftwood tended to be gathered from the beaches at any time of year. The inhabitants of Ivujivik, the northernmost village, seemed to favour the summer, since there is no ice, less wind, and fewer waves. In that season, they could go anywhere on the coasts and islands by boat and *qajait* to gather the relatively small amount of driftwood available: "We picked them up mainly in the summer using all that we could find, but we picked them up during any season" (Sarah Iyaituk). In the southern villages, where pieces of driftwood are larger, the best times were in the fall and the winter when dogsleds could be used. In general, seasonal harvesting of driftwood mainly depended on need, size of the wood pieces, and availability of specific forms of transportation (as determined by prevailing weather conditions). Typically, boats were used for small pieces of wood during the summer and dogsleds for larger pieces during the winter.

In the past, the nomadic Inuit gathered driftwood from the beaches wherever they travelled. In the vicinity of Ivujivik, Mansell Island (about 100 km west of the village), the Digges Islands and Nuvuk Island were all mentioned as good places where their ancestors would find large pieces of driftwood (Figure 1). It seems, however, that they never cut trees in the area to the south because it was too far away. Conversely, according to some elders, their ancestors would not have gone out to the islands for driftwood, instead preferring locations on mainland routes. In Akulivik, driftwood was gathered north of the village and south of Smith Island (Figure 4). In Inukjuak, driftwood was gathered all over the open water west of the islands in Hudson Bay, with some preference for the islands to the south, such as Drayton Island (Figure 5). Finally, in Umiujaq, three of the six participants indicated that their ancestors retrieved driftwood from the islands around the village, as well as from Richmond Gulf. They could pick these pieces up wherever they travelled (e.g., around camps west of the mainland or near the Nastapoka River), but large pieces were scarce in Richmond Gulf (Figure 6).

Similar to what has been recorded along the coasts of Alaska (e.g., Alix 2004: 110) and Greenland (e.g., Grønnow 1996: 83), large pieces of driftwood were highly sought by Nunavimmiut. Consequently, if someone found large pieces that could not be carried away by boat, or if there was not enough room on the dogsled, the finder had to show his ownership and return to retrieve it later. He could set a rock beside or above the wood, make a mark, engrave his name, or use a smaller piece of wood as a sign: “When there was bigger driftwood that I could take by myself, I put my name on it so that nobody would take it and to show that I would come back later. When there was a mark (upright stick or other mark), it meant it was taken, we didn’t take it” (Adamie Niviaxie, Inukjuak). Other people did not make marks but instead grouped pieces of driftwood together, moved them a little further out into the tundra, or just left them in the same place to pick up later by dogsled. Some elders also noted that two men could together transport large pieces of wood by themselves before the use of dogsleds. In Umiujaq, almost all of the respondents said that their parents cut large pieces of driftwood into smaller ones in order to bring them back to the camp by boat or dogsled or by walking short distances. They were carried on one’s back or on one’s head with a rope or in a sealskin bag: “We cut them into small pieces with an axe and put them on our backs in a sealskin bag” (Annie Cookie).

Driftwood gathering and cutting of wood from trees occurred more often when people went on fishing and hunting expeditions by boat or dogsled. It was usually done by men who used the wood to build dwellings or to create objects. Some participants said that their families did not pick up any driftwood at all: “Yes, before, people went more to the west of the islands in the open area of Hudson Bay but my parents never picked up driftwood, only shrubs. Only those who worked with wood went there” (Daniellie Inukpuk, Inukjuak).

None of the participants go out specifically to gather driftwood anymore, but driftwood gathering is embedded in other activities, such as camping or hunting. People occasionally make fires with small pieces collected by hand, using a bag, by boat, or by

ATV (All-Terrain Vehicle) in the summer and by snowmobile in the winter. Very large pieces are no longer gathered because of the availability of commercially processed wood.

Use of driftwood

Driftwood had a special place in the everyday lives of Inuit elders and their ancestors. Different things could be made from it. Large trees and commercially processed wood were used for vehicles such as kayaks (qajaq), open skin boats (umiaq) (Figure 8) and dogsleds, or as structural components of habitations. Ivujivik and Akulivik elders had been accustomed to use the same piece of driftwood to fix their tents because big pieces were rarely found near the northern villages on the grass tundra. Medium-sized wood was used for various hunting tools, crafts, toys, and art objects. These included harpoons (Figure 9), paugusiq to dry clothes (Figure 10), the handle of a woman's knife (ulu) (Figure 11), paddles (*pautiit*) (Figure 12), and spinning tops (*kaittaq*) (Figure 13). Smaller pieces were used as kindling to make fire with moss and lichen. Table 3 lists the objects made from driftwood, according to Inuit elders in the four villages. This list is not exhaustive and more objects can be found in early ethnographies of eastern Arctic Inuit (e.g., Turner 1894).

Figure 8. Building of a boat by fathers of interviewed elders in Ivujivik, 1960. Photo: Sarah and Mattiusi Iyaituk.

Table 3. Examples of objects made from driftwood, as mentioned by Inuit elders and listed in early ethnographies of eastern Arctic Inuit.

Inuktitut	**English description**
qajaq	kayak
umiaq	skin boat
qamutiik	dogsled
qarmait	sod houses
qanait	posts
tupiit	tents
unaaq, igimak, nui	harpoons
paurtuutiit: *innitait* *inniviit tirigannianut* *paugusiq*	oval and rectangular drying frame: 1) for sealskin 2) for fox skin 3) to dry clothes
ipuk: *1) ulu* *2) illutuuliq* *3) puarritik* *4) imirtauti qattanut* *5) ipirautaq* *6) kautaq*	handle of: 1) woman's knife 2) double-edged man's knife 3) shovel 4) bucket to carry water 5) dog whip 6) hammer
nitsiq	rod with hooks to catch seals or beluga
ikuutaq	drill
kaugarsiviq	bowl
puttaquti nuluanut	net float
nulujjituuti or miqquti nuluanut	knitting needle for nets
mikigiaq	fox trap
pititsi	bow
kiluutaq	scraper to smooth caribou or seal skin
atiraq	wooden table to remove blubber from sealskin
sakivivvik	long wooden shaft to remove dried blubber from sealskin
tiluttuutik or anautaq	tool to remove snow or sand by tapping
qulliq	stone lamp
qulliviq	lamp table
pautiit	paddles
iggaak	sunglasses
pinnguat: *1) qamukkaujannguaq* *2) umiannguaq* *3) inuujaq*	toys: 1) small sled 2) small boat 3) doll
aarnguaq	talisman
kaittaq	a spinning top
kaminitsautik	wood to extract oil from blubber
taqqutik	wick trimmer
irsivitsaq tuqujumut	coffin (with boards and commercially processed wood)
tupiup ukkuanga	tent door (with boards and commercially processed wood)
nguunngungautik	tool to place the sealskin for *qajaq* building
qalurautik	spoon

As the following quotation illustrates, driftwood was selected for specific uses that required different criteria:

> When wood was good and large, it was used to make *qajait* and dogsleds. We could use the rest to make other objects. If the wood was too damaged, it was used for fire. My parents used driftwood, for example, to heat the bannock, make tea, and to remove the fat of seals. We already had spoons and bowls that came from stores. But for my grandparents, they also made them with driftwood (Nellie Nastapoka, Inukjuak).

Today, when Inuit work with wood, they rely on commercially processed wood brought from the south by plane or ship. Consequently, according to almost all the people interviewed, driftwood is not typically used anymore except during the hunting season: "Today, we only pick them up on the camps to make fire" (Qautsiaq Weetaluktuk, Inukjuak). In addition to camp fires, many of the participants noted that driftwood could be used as an emergency signal in the event of problems on the ground. Driftwood is also occasionally used to moor a boat or as tent posts (Figure 14). Nevertheless, some elders still use tools made from driftwood just as their ancestors did. For example, they may use an *atiraq* to remove blubber from a sealskin and to dry it (Figure 11) or they may use an *innivik* to dry the meat.

Figure 9. Mattiusi Iyaituk with his father's harpoon, Ivujivik, 2011. Photo: Stéphanie Steelandt.

Figure 10. Drying frame for fox skin, Akulivik, 2011. Photo: Stéphanie Steelandt.

Figure 11. A wooden table used to remove blubber from sealskin (*atiraq*) and, on its right, a woman's knife (*ulu*), Akulivik, 2011. Photo: Stéphanie Steelandt.

Figure 12. Josepie Nalukturuk making a paddle, Inukjuak, 2011. Photo: Stéphanie Steelandt.

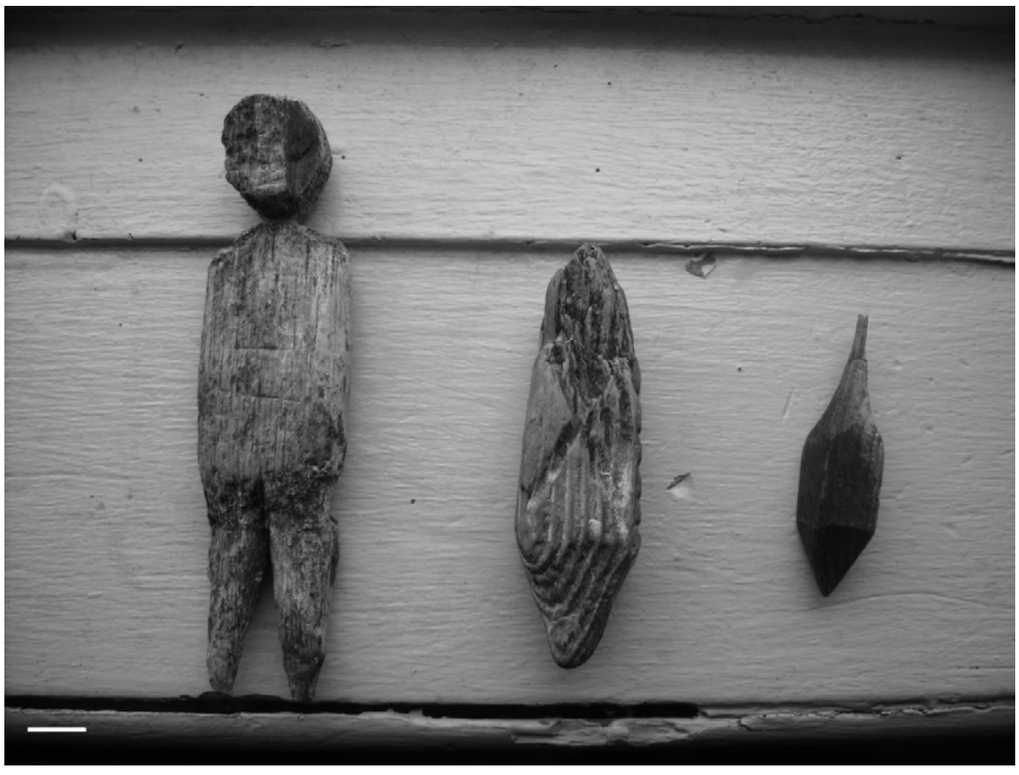

Figure 13. Left to right: a talisman (length: 10 cm) and two spinning tops presented by Aibillie Echalook, Inukjuak, 2011. Photo: Stéphanie Steelandt.

Figure 14: Driftwood and commercially processed wood used to support a tent, Ivujivik, 2011. Photo: Stéphanie Steelandt.

Conclusion

This article documents traditional knowledge and perceptions about availability and exploitation of wood resources on the west coast of Nunavik based on interviews with 27 Inuit over 60 years of age from the villages of Ivujivik, Akulivik, Inukjuak, and Umiujaq. Qualitative analyses provided a partial Inuktitut list of terms for the different wood resources. Names for driftwood vary according to several shaped-related criteria and by speaker's village of origin. Knowledge about wood resources is more accurate and diverse in the villages further south, largely because southern Nunavik is covered by forest tundra. Trees and shrubs are numerous and diverse, so people have much choice in terms of both quantity and quality of wood. Further north, the tundra has only sparsely occurring dwarf shrubs, so the range of choice is extremely limited.

The best time for shrub wood gathering was during the fall, but driftwood could be picked up at any time. For each of the four villages, the participants noted specific sites with significant accumulations of driftwood. This high driftwood accumulation was associated with strong currents that could transport wood. According to the elders, the driftwood definitely comes from the south and ultimately from the west coast of James Bay and Hudson Bay. Driftwood and commercially processed wood are abundant on the beaches today because they are no longer gathered, except at summer camps to make fire. In the southernmost village of the forest tundra (Umiujaq), tree cutting was preferred to driftwood gathering, and shrubs were not used. The elders and their

ancestors used large pieces of wood to build boats, *qajait*, and dogsleds, and the leftover portions to make hunting tools (e.g., harpoons and knives) and tools for women (e.g., *ulu* and lamps). Smaller or damaged driftwood and shrub wood served to make fires. Shrubs were also used to make mattresses and sleeping mats called *alliat*.

Our study illustrates the significant changes the Inuit have experienced over a very short span of time. Driftwood has almost entirely been replaced by commercially processed wood imported from the south. Consequently, knowledge about management of this resource is disappearing. We need to collect more knowledge from elders about driftwood in order to preserve what is still known, and similar interviews should be conducted with the people of Hudson Strait and Ungava Bay to produce a complete overview of wood use in Nunavik.

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