



## Supplement

# Inuit Perception of Marine Organisms: From Folk Classification to Food Harvest

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### Ethnographic Information

Nunavik borders Eeyou Istchee (Cree) territory in the south at the 55<sup>th</sup> parallel and the self-governing region of Nunatsiavut in Labrador to the east. Major bodies of seawater constitute Hudson Bay, on the region's western coast, joined to Ungava Bay by the Hudson Strait in the north, which separates Nunavik from the southern shore of Baffin Island, Nunavut. Although Nunavik lies in Canada's Arctic and Subarctic ecoclimatic regions (Strong et al. 1989), both Kangiqsujaq and Ivujivik are situated on the Ungava peninsula above the tree line. Species diversity and vegetation cover is reflective of the tundra forest region (Blondeau 1989; Blondeau and Cayouette 2002; Gray 1995), most notably treeless with continuous permafrost and a short growing season that supports small and hardy vegetation (Blondeau 1989; Blondeau and Cayouette 2002).

Nunavik has 14 coastal communities inhabited by an Inuit majority that speak two subdialects recognized in the Nunavik dialect of Inuktitut. Tarramiut is spoken in communities along the Hudson Strait and Ungava Bay, including Ivujivik and Kangiqsujaq, whereas Itivimiut is spoken along Hudson Bay (Dorais 2010). In accordance to the James Bay and Northern Quebec Agreement, Nunavik is administered by the Kativik Regional Government, elected by both Inuit and non-Inuit inhabitants, hence providing greater political autonomy to the region (Rostaing 1984).

Kangiqsujaq is well known for its residents' unique approach to harvesting

shellfish under the shifting sea ice at low tide. Ivujivik is the region's northernmost community and recognized as an important area for *qilalugaq* (beluga; *Delphinapterus leucas*) hunting; residents are well known for climbing the imposing cliffs off Digges Islands to harvest eggs of the *appaq* (Common Murre; *Uria aalge*).

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**Supplementary Table 1.** Full list of marine organisms mentioned by participants from Ivujivik and Kangiqsujuaq as part of the local traditional and current food system. Latin, English and Inuktitut names are provided along with their frequency of citation (FC). Within each group, organisms are listed in chronological order based on their total FC. Harvesting periods are roughly characterized by ice conditions delimited in part by the ice melt (spring) and freeze-up (fall), as well as the cold icy months (winter) as opposed to warm ice-free months (summer).

Species name	English	Inuktitut	FC (%)			Harvest
			Kangiqsujuaq	Ivujivik	Total	
<b>Mammals</b>						
<i>Delphinapterus leucas</i>	Beluga	<i>Qilalugaq</i>	100	100	100	Spring - Fall
<i>Odobenus rosmarus</i>	Walrus	<i>Aiviq</i>	83.3	100	91.7	Spring - Fall
<i>Pusa hispida</i>	Ringed seal	<i>Natsiq</i>	66.7	100	83.3	All year
<i>Ursus maritimus</i>	Polar bear	<i>Nanuq</i>	66.7	66.7	66.7	Winter
<i>Erignathus barbatus</i>	Bearded seal	<i>Ukjuq</i>	50.0	83.3	66.7	Summer - Fall
<i>Balaena mysticetus</i>	Bowhead whale	<i>Arvik</i>	100	16.7	58.3	Summer
<i>Pagophilus groenlandicus</i>	Harp seal	<i>Qairulik</i>	33.3	50.0	41.7	Not specified
<i>Monodon monoceros</i>	Narwhal	<i>Allanguaq</i>	33.3	33.3	33.3	Not specified
<i>Balaenoptera acutorostrata</i>	Minke whale	<i>Tikaagullik</i>	50.0	-	25.0	Not specified
<i>Orcinus orca</i>	Killer whale	<i>Aarluk</i>	16.7	-	8.33	Not specified

10 species

Supplementary Table 1. (Continued).

Species name	English	Inuktitut	FC (%)			Parts - preparation	Harvest
			Kangiqsujuaq	Ivujvik	Total		
<b>Birds<sup>a</sup></b>							
<i>Uria aalge</i>	Common Murre	Appaq	66.7	100	83.3	All bird, eggs – raw (fresh), cooked	Spring - Fall
<i>Brantha canadensis</i>	Canada Goose	Nirilik	50.0	83.3	66.7	All bird, eggs – raw (fresh), cooked	Spring - Fall
<i>Anser caerulescens</i>	Snow Goose	Kanguq	50.0	83.3	66.7	All bird – raw (fresh), cooked	Spring - Fall
<i>Somateria mollissima</i>	Common Eider	Mitiq	66.7	66.7	66.7	All bird, eggs – raw (fresh), cooked	Spring - Fall
<i>Cephus grylle</i>	Black Guillemot	Pitsiulaaq	50.0	66.7	58.3	All bird, eggs – cooked	All year
<i>Gavia stellata</i>	Red-throated Loon	Qarsauq	50.0	50.0	50.0	All bird, eggs – cooked	Not specified
<i>Clangula hyemalis</i>	Long-tailed Duck	Aggiq	33.3	-	16.7	All bird, eggs – cooked	Spring - Fall
<i>Somateria spectabilis</i>	King Eider	Mitirluq; qingalik <sup>b</sup>	16.7	16.7	16.7	All bird, eggs – cooked	Spring - Fall
<i>Larus sp.</i>	Gulls	Naujaq	16.7	16.7	16.7	Eggs - cooked	Not specified
<i>Larus hyperboreus</i>	Glaucous Gull	Naujaq	16.7	16.7	16.7	Eggs - cooked	Not specified
<i>Larus glaucooides</i>	Iceland Gull	Naujaq	16.7	16.7	16.7	Eggs - cooked	Not specified
<i>Larus smithsonianus</i>	American Herring Gull	Naujaq	16.7	16.7	16.7	Eggs - cooked	Not specified
<i>Calidris sp.</i>	Sandpipers	Sitjariaq	33.3	-	16.7	All bird – cooked	Fall
<i>Calidris fuscicollis</i>	White-rumped Sandpiper	Sitjariaq	33.3	-	16.7	All bird – cooked	Fall

Supplementary Table 1. (Continued).

Species name	English	Inuktitut	FC (%)			Parts - preparation	Harvest
			Kangiqsujuaq	Ivujivik	Total		
<b>Birds<sup>a</sup></b>							
<i>Calidris maritima</i>	Purple Sandpiper	Sitjariaq	33.3	-	16.7	All bird – cooked	Fall
<i>Calidris pusilla</i>	Semipalmated Sandpiper	Sitjariaq	33.3	-	16.7	All bird – cooked	Fall
<i>Calidris melanotos</i>	Pectoral Sandpiper	Sitjariaq	33.3	-	16.7	All bird – cooked	Fall
<i>Sterna paradisaea</i>	Arctic Tern	Imirqutailaq; takatakiaq	-	33.3	16.7	Eggs – cooked	Summer
<i>Mergus serrator</i>	Red-breasted Merganser	Nujalik; kuutsiuti <sup>k</sup>	33.3	-	16.7	All bird – cooked	Not specified
<i>Fratercula arctica</i>	Atlantic Puffin	Appakallak	-	16.7	8.33	All bird, eggs – cooked	Not specified
<i>Gavia immer</i>	Common Loon	Tuulliq	16.7	-	8.33	All bird, eggs – cooked	Spring - Fall
<i>Phalaropus fulicarius</i>	Red Phalarope	Saarvak	16.7	-	8.33	All bird – cooked	Not specified
<i>Histrionicus histrionicus</i>	Harlequin Duck	Tullirunnaq	16.7	-	8.33	All bird – cooked	Not specified
21 species							
<b>Fish<sup>b</sup></b>							
<i>Salvelinus alpinus</i>	Arctic char	Iqaluppik; ivitaruk	83.3	83.3	83.3	All fish, roe – raw (fresh, frozen, dried), cooked, smoked	All year
<i>Myoxocephalus</i> sp.	Sculpin	Kanajuq	83.3	83.3	83.3	All fish, roe, laid eggs (qaar/raq) – cooked (e.g. soup, broth)	All year

Supplementary Table 1. (Continued).

Species name Latin	English	Inuktitut	FC (%)			Parts - preparation	Harvest
			Kangiqsujuaq	Ivujivik	Total		
<i>Myoxocephalus quadricornis</i>	Fourhourn sculpin	Kanajuq; qaniqqutuuaq; Kanajuvik <sup>k</sup>	83.3	83.3	83.3	All fish, roe, laid eggs (qaarjaq) – cooked (e.g. soup, broth)	All year
<i>Myoxocephalus scorpius</i>	Shorthorn sculpin	Kanajuq; qaniqqutuuaq; kanajuvik <sup>k</sup>	83.3	83.3	83.3	All fish, roe, laid eggs (qaarjaq) – cooked (e.g. soup, broth)	All year
<i>Gadus</i> sp.	Cod	Uugaq	66.7	66.7	66.7	All fish, roe – cooked	All year
<i>Gadus morhua</i>	Atlantic cod	Uugaq	66.7	66.7	66.7	All fish, roe – cooked	All year
<i>Gadus ogac</i>	Greenland cod	Uugaq	66.7	66.7	66.7	All fish, roe – cooked	All year
Not identified	Unidentified sculpin	Kanajuq; malairaaq	50.0	83.3	66.7	All fish – raw (fresh)	All year
<i>Salmo salar</i>	Atlantic salmon	Saama	33.3	33.3	33.3	All fish, roe – cooked	Not specified
<i>Coregonus clupeaformis</i> <sup>c</sup>	Large whitefish	Kavisilik	16.7	33.3	25.0	All fish, roe – raw (dried)	All year
Not identified <sup>c</sup>	Unidentified river sculpin	Kanajuq; papijuk	16.7	16.7	16.7	All fish	All year
<i>Salvelinus namaycush</i> <sup>c</sup>	Lake trout	Isiuralittaag	-	33.3	16.7	All fish – raw (dried)	All year
<i>Coregonus artedj</i> <sup>c</sup>	Shallow water cisco	Kavisiliaruk	-	16.7	8.33	All fish	All year

11 species

Supplementary Table 1. (Continued).

Species name	Latin	English	Inuktitut	FC (%)			Harvest
				Kangiqsuaq	Ivujivik	Total	
Shellfish							
Crustaceans							
<i>Hyas coarctatus</i> <sup>d</sup>	Arctic lyre crab	<i>Puqjuuti</i>	100	83.3	91.7	All organism, legs – Raw (fresh), cooked (i.e. broth, soup)	All year
<i>Semibalanus balanoides</i>	Northern rock barnacle	<i>Kaugaliaq</i>	100	66.7	83.3	Raw (fresh), cooked (i.e. broth, soup)	Summer
<i>Pandalus borealis</i>	Pink shrimp	<i>Kingurlak</i>	66.7	33.3	50.0	Not specified	Not specified
Not identified	Type of decapod	<i>Naularnaq</i>	33.3	16.7	25.0	Raw (fresh), cooked	Not specified
4 species							
Mollusks							
<i>Mytilus trossulus</i> <sup>e</sup>	Blue mussel	<i>Uviliq</i>	100	100	100	Raw (fresh), cooked	All year
<i>Mya truncata</i>	Truncate softshell clam	<i>Ammuumajuq</i>	100	100	100	Raw (fresh), cooked	Spring - Fall
<i>Chlamys islandica</i>	Iceland scallop	<i>Tallurunnaq; tallujaq</i>	83.3	100	91.7	Raw (fresh), cooked	Summer
<i>Serripes groenlandicus</i>	Greenland cockle	<i>Kukiujak</i>	33.3	16.7	25.0	Raw (fresh), cooked	Not specified
Not identified	Saltwater snails	<i>Siupiruj</i>	16.7	-	8.33	Not specified	Not specified
5 species							

Supplementary Table 1. (Continued).

Species name	English	Inuktitut	FC (%)			Parts - preparation	Harvest
			Kangiqsujuaq	Ivujivik	Total		
Echinoderms							
<i>Leptasterias polaris</i>	Polar six-rayed starfish	Aggaujaq	100	83.3	91.7	Gonads, digestive glands – raw (fresh), cooked	All year
<i>Strongylocentrotus droebachiensis</i>	Green sea urchin	miqqulik; itirk <sup>l</sup>	83.3	83.3	83.3	Gonads – raw (fresh)	All year
Not identified	Sea cucumber <sup>d</sup>	Quursujuuq	16.7	16.7	16.7	All organism – raw (fresh), cooked	Not specified
3 species							
12 species							
<b>Algae</b>							
<i>Fucus evanescens</i>	Arctic wrack	Qirruaq	100	100	100	All – raw (fresh, dried), cooked	All year
<i>Alaria esculenta</i>	Winged kelp	Kuanniq; qijja <sup>l</sup>	100	100	100	All – raw (fresh, dried), cooked	All year
<i>Saccharina longicirris</i>	Hollow stemmed kelp	Itsuujaq	66.7	66.7	66.7	Connection between stipe and blade, as well as the latitudinal mid-section of the blade; some eat it all – raw (fresh), cooked	All year
3 species							
Total: 57 species							

<sup>a</sup> Bird eggs are generally cooked.

<sup>b</sup> Fish gall bladders are removed.

<sup>c</sup> Generally considered freshwater organisms, they can also be found brackish waters.

<sup>d</sup> Tentative identification.

<sup>e</sup> Includes the blue mussel hybrids *Myt. trossulus* x *Myt. edulis*.

<sup>k</sup> Kangiqsujuaq.

<sup>l</sup> Ivujivik.

**Supplementary Table 2.** Biological and pharmacological activity of various compounds found in marine organisms belonging to, or related to, the local food system of Ivujivik and Kangiqsujaq.

Species	Activity	References
<b>Eicosapentaenoic and docosahexaenoic acid – ω-3 PUFA</b>		
<u>Mammals:</u>	<ul style="list-style-type: none"> <li>• Protective against cardiovascular problems;</li> <li>• Reduce systolic blood pressure and diastolic blood pressure;</li> <li>• Improves cognitive development in infants;</li> <li>• Spurs synaptogenesis in brain and photoreceptor development in the fetus during the third trimester of pregnancy;</li> <li>• Long-term benefits on cognitive function in school-aged children from use during prenatal development.</li> </ul>	Blanchet et al. 2000; Boucher et al. 2011; Caughey et al. 2013; Fernández et al. 2015; Jacobson et al. 2008; Jiao et al. 2014; Kalogeropoulos et al. 2012; Khan et al. 2006; Kuhnlein et al. 1991; Lemire et al. 2015; Miller et al. 2014; Mori 2014.
<u>Pinnipedia</u>		
<u>Cetacea</u>		
<u>Urs. maritimus</u>		
<u>Fish:</u>		
<u>Sal. alpinus</u>		
<u>Mollusks:</u>		
<u>Myt. edulis</u>		
<u>Mya sp.</u>		
<u>Sea urchins:</u>		
<u>Paracentrotus lividus</u>		
<b>Laminaran – Beta-glucan</b>		
<u>Algae:</u>		
<u>F. evanescens</u>	<ul style="list-style-type: none"> <li>• Anti-apoptotic and anti-tumoral activities;</li> <li>• Increases dermal thickness and the deposition of collagen in tissue reconstruction assays using human skin cells <i>in vitro</i>.</li> </ul>	Ayoub et al. 2015; Rioux et al. 2010; Vishchuk et al. 2013.
<u>Sac. longicruris</u>		



**Supplementary Table 2.** (Continued).

Species	Activity	References
<b>Fucooidan – Fucose containing sulfated polysaccharides</b>		
<u>Algae:</u>		
<i>F. evanescens</i>	• Anticoagulant activity <i>in vitro</i> and <i>in vivo</i> ;	Bilan et al. 2002; Dürig et al. 1997; Jin et al. 2013; Kim et al. 2012, 2015; Kuznetsova et al. 2003; Lordan et al. 2013; Ribeiro et al. 1994; Rioux et al. 2010; Rupérez et al. 2002; Shan et al. 2016; Vázquez-Freire et al. 1996; Vilela-Silva et al. 1999, 2002; Wang et al. 2012; Yu et al. 2015.
<i>Sac. longicurris</i>	• Hypolipidaemic activity <i>in vivo</i> ;	
	• Antidiabetic activity <i>in vitro</i> and <i>in vivo</i> ;	
	• Antioxidant activity <i>in vitro</i> .	
<u>Sea urchins:</u>		
<i>Strongylocentrotus</i> sp.	See Ale et al. (2011); Fitton (2011); Li et al. (2008) and Wijesinghe and Jeon (2012) for an extensive review.	
<u>Sea cucumbers:</u>		
<i>Acaudina molpadoides</i>		
<i>Ludwigothurea grisea</i>		
<i>Apostichopus japonicas</i>		

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