



## Arviat, ᐱᕐᐱᐱᕐ, "Place of the bowhead whale"

### Introduction

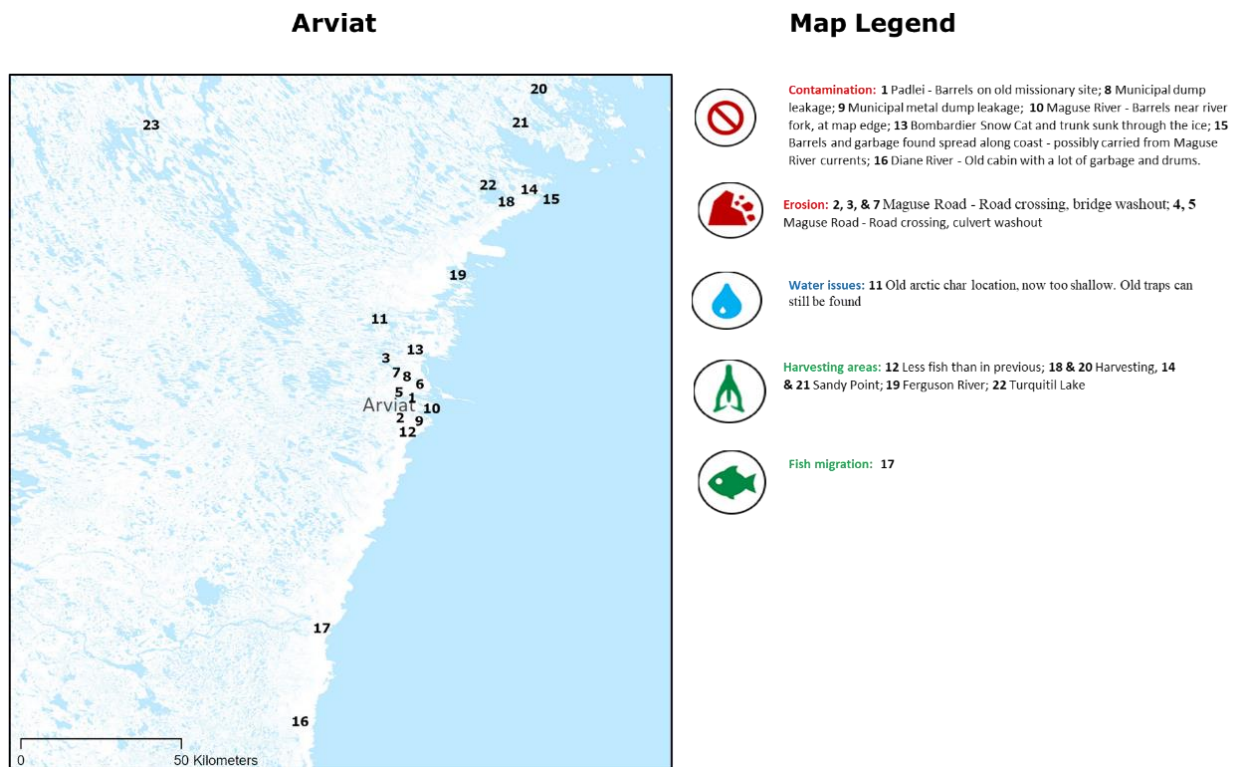
Arviat is located on the western shores of Hudson Bay, 200km north of Churchill, Manitoba. It is the second-largest community in Nunavut and the southernmost Hamlet. In 2016, Arviat's population was 2657. With a strong arts and crafts industry, the community is also becoming a center of mine training and employment for the Kivalliq Region. The community's hunting and fishing range includes Arviat, Whale Cove, northern Manitoba, and the boarder with Northwest Territories<sup>1</sup>. Much of the harvest is focused on land and freshwater species, including caribou and Arctic char. Arvia'juaq and Qikiqtaarjuk national historical sites were declared in 1995 as they represent the cultural, spiritual, and economic life of the Inuit<sup>2</sup>. The McConnell River Migratory Bird Sanctuary is 27 kilometers south of Arviat is a Ramsar designated Wetlands of International Importance<sup>2</sup>.

### Community Restoration Priorities

1. Replacement of community bridges; 2. Removal of a sunken bombardier; and 3. Rehabilitation of shallow rivers.

### Community Map and Workshop Highlights

The research team visited the community in March 2018. Key issues identified by the community were: Impacts from contaminated areas - the current carries debris from Maguse River back to the coast further south near the bird sanctuary. Changes in species numbers and distribution patterns - Killer whales are appearing in higher numbers, or closer to shore, forcing belugas into deeper water. Arctic char numbers are lower because of warmer, shallower waters, and are suspected to be moving north. Other fish species are also moving north to cooler, deeper waters. Impacts from researchers - In 2016 a boat dropped a device (monitoring equipment?) that is disturbing belugas and other mammals. Changing water/sea levels - all water is shallower, especially past fishing sites. An island 60 miles east off the coast has also disappeared, and walrus no longer beach there.



## Literature Review

Important changes are noted for sea ice, decreasing freshwater and sea levels. Implications of these changes include it being harder and more dangerous for residents to travel by sea ice. Lower waters levels due to the increased sedimentation at the mouth of rivers have impacted the Arctic char that migrate upriver.

Attributes	Examples of Environmental Changes and Observations
Sea and Lake ice	<ul style="list-style-type: none"> <li>Floe edge is closer to the shoreline and sea ice is breaking off a lot more than it did in the past<sup>1</sup>.</li> <li>Ice freeze is much later in the year and it not freezing well<sup>1</sup>. Decrease in ice thickness and more polynyas<sup>1</sup>. Earlier break-up of sea ice and later freeze up of sea ice<sup>1</sup>. Lake ice is much thinner now<sup>1</sup>.</li> </ul>
Seasonal and weather events	<ul style="list-style-type: none"> <li>Spring comes earlier because there is less snow, and it melts very quickly<sup>1</sup>. Unpredictable weather patterns<sup>3</sup>. Fewer blizzards and warmer spring-like weather in the middle of winter<sup>1</sup>. Stronger winds and prevailing winds are changing (used to be from the north-west, now north-east or direction of the ocean)<sup>3</sup>.</li> </ul>
Localised erosion	<ul style="list-style-type: none"> <li>Localized erosion has affected road access at the outer point in Arviat<sup>4</sup>.</li> </ul>
Permafrost & ground ice	<ul style="list-style-type: none"> <li>Highly variable as new land emerges from the sea to be freshly exposed to the cold atmospheric climate<sup>4</sup>.</li> </ul>
Sea levels	<ul style="list-style-type: none"> <li>Falling sea level has converted shallow passages behind islands to dry land (within the residents living memory)<sup>6</sup>. Coastal shoals are getting progressively shallower over time<sup>1</sup>. Nearshore islands are now just points' or peninsulas, and/or there are new islands appearing<sup>1</sup>.</li> </ul>

Attributes	Examples of Ecosystem and Species Changes and Observations
Polar bears	<ul style="list-style-type: none"> <li>Polar bear numbers are increasing in the area<sup>1</sup>.</li> </ul>
Walrus	<ul style="list-style-type: none"> <li>Walruses are coming back after the kill-off about 45 years ago. In the spring of 2017, 3 or 4 were caught<sup>1</sup>.</li> </ul>
Seals	<ul style="list-style-type: none"> <li>More harp seals present, which is pushing ring and harbour seals out of the area. Seals are also being seen further south (Nunala)<sup>7</sup>. Quite a few seals using all the points of land, mainly ring seals<sup>7</sup>.</li> <li>Used to be more seals in the summer but now there are fewer, which could be because they are moving further north due to the coast getting shallower<sup>1</sup>.</li> </ul>
Whales	<ul style="list-style-type: none"> <li>Fewer beluga in the area over the last 3-4 years, concerned it might be due to shipping traffic<sup>1</sup>.</li> <li>Seen six narwhals in the bay in the spring of 2017 but normally they are further north and in deeper water<sup>1</sup>. Killer whales are new species being seen in the area<sup>3</sup>.</li> </ul>
Fisheries	<ul style="list-style-type: none"> <li>Increased numbers of burbot in the lakes, which is making it harder to catch lake trout<sup>1</sup>. Fewer Arctic char (2010)<sup>3</sup>, whereas a later report (2013)<sup>7</sup> indicates that there are more.</li> </ul>
Birds	<ul style="list-style-type: none"> <li>More geese and ducks, which are good for hunting<sup>3</sup>. Bald eagles are becoming more common and can be seen along the coast in groups<sup>1</sup>.</li> </ul>

### Based on the Current Gaps in the Literature, Research Needs Include:

- Monitoring and testing:** An assessment of Arctic char on population numbers and changes in char meat color. Also, on the consumption/quality of meat from beluga and walrus.
- Migration studies:** A study on snow geese and other similar species to better understand their migratory patterns. Seals and walrus population distribution/migration trends.
- Fisheries development:** A feasibility study for a whitefish commercial fishery.

### Selected References

- Government of Nunavut (2018). *Nunavut Coastal Resource Inventory – Arviat*.
- Parks Canada (n.d.). *Arvia'juaq and Qikiqtaaluk National Historic Site of Canada*. <https://bit.ly/2yCVQcD>. Accessed May 7, 2020
- Sullivan, M. & Nasmith, K. (2010). *Hamlet of Arviat - Climate change adaptation action plan, final plan. Building capacity in community planning*. Canadian Institute of Planners. <https://bit.ly/3cflmbh>. Accessed May 7, 2020.
- Forbes, D. L., Bell, T., Manson, G. K., Couture, N. J., Cowan, B., Deering, R. L., ... & St-Hilaire-Gravel, D. (2018). *Coastal environments and drivers. From Science to Policy in the Eastern Canadian Arctic: An Integrated Regional Impact Study (IRIS) of Climate Change and Modernization*. ArcticNet, Quebec City, 560 pp., 211.
- James, T.S., Simon, K.M., Forbes, D.L., Dyke, A.S. and Mate, D.J. (2011). *Sea-level Projections for Five Pilot Communities of the Nunavut Climate Change Partnership*. Geological Survey of Canada, Open File 6715, doi:10.4095/288019.
- Labbé, J., Ford, J. D., Araos, M., & Flynn, M. (2017). The government-led climate change adaptation landscape in Nunavut, Canada. *Environmental Reviews*, 25(1), 12-25. <https://doi.org/10.1139/er-2016-0032>.
- Nunavut Planning Commission (2013). *Summary of Community Meetings on the Draft Nunavut Land Use Plan, Arviat*. <https://www.nunavut.ca/nunavut-communities> Accessed May 7, 2020.

#### CONTACT

Dr. Lucia Fanning, Principle Investigator -  
Lucia.Fanning@Dal.Ca

Ms. Jade Owen, Project Advisor -  
jade.britton.owen@gmail.com