Sanirajak, Hall Beach, ᓴᓂᕋᔭᒃ, "The shoreline place"

Introduction

Sanirajak is next to Foxe Basin on the eastern side of Melville Peninsula in the Qikiqtaaluk region. It is the oldest known permanently inhabited community north of the Arctic circle. The name was officially changed to its local name in 2020. The waters surrounding the Hamlet are rich in nutrients that support abundant walruses, seals, narwhals, belugas, and bowhead whale populations[1]. In 2016, the population was 848. Residents are employed in various occupations, including tourism, and participate in the traditional economy and harvesting of country food[2]. The community's hunting and fishing area spans approximately 600km north to south, 400km east to west, and encompasses the Foxe Basin and northern portions of the Foxe Channel, Fury and Hecla Strait, and southwestern portions of the Gulf of Boothia including Committee Bay[1].

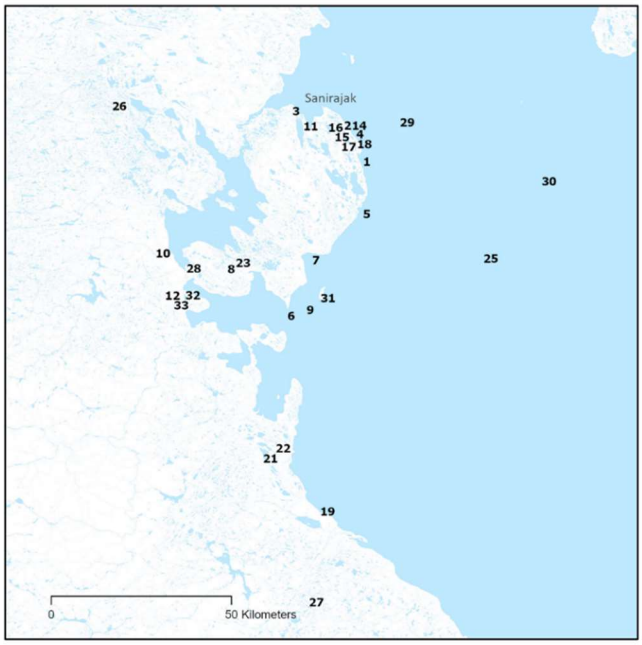
Community Restoration Priorities

Although the community has identified several coastal concerns, no restoration priorities were identified at the time we visited the Hamlet.

Community Map and Workshop Highlights

The CRN research team visited the community in March 2018. The three biggest concerns were: (1) rivers becoming shallower, (2) animals moving to deeper water, and (3) shifts in wind directions. All rivers were becoming shallower, with new rocks being observed every year. This is dangerous for boaters, for example there are many kinds of fish and old fish weirs (100 years+) found at the lake outflow. Fishing is still good, and in the past boats used to be able to travel to the area, but now even canoes run aground going upriver. Belugas are moving further out but are still around the same numbers. Causes for these changes included the waters becoming too shallow and increasing boat traffic. There has also been a shift in wind direction from NW to N, resulting in ice crashing into the shore.

Sanirajak



Map Legend

Water issues: **1** Shallow waters, **2** Newly exposed boulders at low tide, **13** New strip of land starting to appear, exposed at low tide. Could be turned into a breakwater, **18** New boulders appearing, **19** Fish losing access to lakes, streams becoming too shallow, and **29** Shallowing of stream.

Fish migration routes: **3** Almost no change in lake level but creek is narrower and shallower, could be solved by digging narrow channel, and **9** Fish

Debris and garbage: **4** Old A-frame structure debris, shifting with rough water.

Harvesting areas: **5 – 8, 21** 10 Hall Lake, **11** Fisherman's lake, **20** Used for commercial and sustenance fishing, **22** Offshore benthic commercial fishery, and 30 Smaller fish than back in the day.

Contamination: **12** Old mining exploration site, **14** Dump and sewage lagoon, **15** Scrap metal yard, **23** Matrix Advanced Exploration site, drilling equipment, and **24** North Arrow exploration camp "Northern Train", Amber Diamonds.

Building or structure: **16** Potential blowout of berm at water supply, no longer getting maintained, **17** Narrowing of access road berm across water, could collapse, no longer getting maintained, and **25** Potential future road to increase harvesting access.

Species change: **26** Capelin replacing Arctic Cod.

Mammal migration: **27** Manning Islands - Walrus in fall time, and **28** Walrus in fall time.

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Literature Review

Increased temperatures are likely to both reduce the extent of superimposed-ice accumulation, and the thickness of superimposed ice. This may have a negative effect on glacier mass balance as near-surface ice temperatures will continue to rise[3]. The community will need to take necessary steps to protect its shoreline and implement measures to mitigate the impacts to the people. The ocean in places is less than 15 meters away from the community, and with the mountains about 400 meters bordering the other side, this creates a narrow expansion for future development[2].

Attributes	Examples of Environmental Changes and Observations
Sea ice	• The ice-free season is longer now, with sea ice melting sooner and breaking up faster. As such, sea ice is less stable with reduced summer ice, which makes travelling more dangerous[1].
Weather	• There is more wind and less snow in the area[1].
Glacier melt	• Large pieces of ice caps and glaciers are breaking off and less water is running off glaciers in the summer affecting the conditions of trails[4]. In the case of the John Evans Glacier (Ellesmere Island), a 1°C rise in mean annual air temperature from winter warming is predicted to reduce the specific mass balance of the glacier by 0.008 m because of a decrease in superimposed ice formation[3].
Localised erosion	• There appears to be an increase in coastline erosion due to larger waves[2,3].

Attributes	Examples of Ecosystem Changes and Observations
Polar bears	• There is a general agreement amongst community members that polar bear numbers were increasing, and that the animals are less afraid of humans, as before[4]. Some members thought they were not as big, but are still healthy, whereas others considered them larger, especially in the fall[4].
Walrus	• Community members noted fewer walruses on the north side of Jones Sound, on Ellesmere Island, but they were seeing an increase in numbers on the south side of Jones Sound, on Devon Island[1]. • The number of walruses being tagged, although low in the past, now seemed to be increasing[1].
Seals	• There seemed to be fewer harp seals and ringed seals in 2012, however, bearded seals have increased. Overall, seals appeared to be more variable in size and generally smaller[1].
Whales	• There has been a decrease in beluga over the past 2-3 years, but many more narwhals in the area now[1].
Fisheries	• Some community members reported seeing more Arctic char now, but others thought numbers had decreased near town[1].
Birds	• More new species of birds (and insects) are being seen in the area. For example, cackling geese have been noted in the area since the late 1980s[5].
Invertebrates	• There seemed to be fewer naked sea butterflies at the floe edge than before. These shell-less snails are an important food source for bowhead whales[1].

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

- **Economic development studies:** Potential community-based businesses include. narwhal tusks carvings, seal skin and meat products, and bottled glacier water. Other studies could focus on developing the halibut and char fisheries, hunting for walrus, polar bears, or other mammals, and building a commercial fishing facility to support winter fishing[1,2].
- **Coastal erosion prevention/mitigation studies:** Given the few opportunities for land development, studies are needed on reducing erosion from wave action and flooding[3].

Selected references

1. Government of Nunavut (2018). *Nunavut Coastal Resource Inventory – Hall Beach*
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3. Callihoo, C. & Ohlson, D. (2008). *Hall Beach, Nunavut, Climate Change Adaptation Action Plan*. Retrieved from https://bit.ly/34EFw6L Accessed May 8, 2020.
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5. Canadian Circumpolar Institute, Riewe, R. R., Tungavik Federation of Nunavut, & du Nunavut, F. T. (1992). *Nunavut Atlas [cartographic Material]. Canadian Circumpolar Institute and the Tungavik Federation of Nunavut*. Retrieved from https://bit.ly/2wGQXOS

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