Clyde River, ᑲᖏᖅᑐᒑᐱᒃ, Kanngiqtugaapik “Nice little inlet”

Introduction

Clyde River is located on the northeast coast of Baffin Island, and is approximately four degrees north of the Arctic Circle, east of Pond Inlet, and north of Qikiqtarjuaq and Iqaluit[1]. The Hamlet is situated on a flood plain on the shores of Patricia Bay at the entrance to Clyde Inlet (a fiord which extends over 100km inland). In 2016 the population was 1,053. The economy in Clyde River comprises of traditional subsistence harvesting and hunting, and wage-based activities. The community’s hunting and fishing area includes approximately 75 km out to sea, 200 km along the coast to the south, and 270 km along the coast to the north from Clyde River[2]. In 2018, the Government of Nunavut was investigating the potential for establishing a territorial park in the Clyde River area[3].

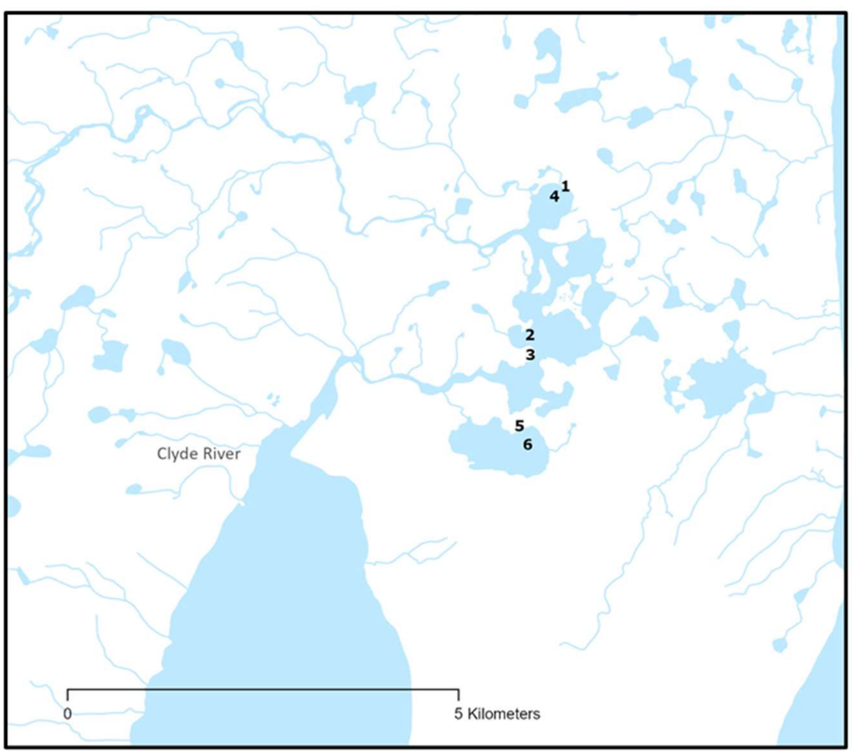
Community Restoration Priorities

1. The removal of the old access road from Clyde River’s River, a key migratory corridor for Arctic char; **2.** Removal of abandoned oil drums in Barrel Lake (garbage from the abandoned Cape Christian military site); and **3.** Water quality testing at Barrel Lake.

Community Map and Workshop Highlights

The CRN research team visited the community in March 2018. According to residents, many researchers conduct field studies in the community but do not return results. Residents also commented on seeing more polar bears near or in the community in recent years. Ice melt has been occurring much earlier, resulting in a shift in their harvesting and cultural activities due to travelling safety concerns.

Clyde River



Map Legend

Contamination: 1 - 3, 6 Garbage; abandoned oil barrels from Cape Christian - military; barrel leak?.

Fish migration routes: 4 Land-locked char.

Water issues: 5 Shallow river.

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Literature Review

Changes in the formation and timing of sea ice may result in a decrease in its duration, which could lead to increase shoreline erosion[4]. The occurrence of climate-related events that initiate slope movements will also become more frequent in the future[5].Communities are concerned about melting permafrost, which is threatening the integrity of the town's roads, buildings, and other critical infrastructure[6].

Attributes	Examples of Environmental Changes and Observations
Sea ice	• The floe edge is safe for less time in recent years and residents were worried as unpredictable sea ice, makes traditional hunting and travelling routes more dangerous[7].
Seasonal events	• Weather fluctuations are more rapid and decreasing people's ability to effectively hunt. Winters are shorter and summers longer[8]. Reduced snow has made overland travel more difficult. Changes in snow distribution also increase permafrost thaw and ground subsidence[4].
Permafrost	• Future warmer ground temperatures could increase the probability of permafrost thaw and subsidence in areas of moderate to high ground ice content[5]. As ground ice content is higher in areas of current development, the impact of high ground temperatures is likely to have a greater significance here than in areas zoned for future development[5].
Weather	• There are projected to be more coastal storms, higher winds, and a longer period of ice-free conditions, which will impact the south-east section of the community due to coastal inundation from culverts that drain this part of the community[7]. • Changes in wind speed and direction impact snow distribution and active layer depth, leading to increased permafrost thaw and ground subsidence[8].
Glacier melt	• Clyde River drains part of the remaining land ice of Barnes Ice Cap, making it a rare case of a basin in the most advanced stages of deglaciation[9]. Receding glaciers may increase river flow and erosion[9].
Localised erosion	• The primary landscape hazards in Clyde River include differential subsidence causing damage to infrastructure, especially in the low-lying eastern areas of the town[9]. Thermal erosion is leading to bank erosion, threating houses along the creek. Surface run-off is also causing flooding, gulling, and erosion[9].

Attributes	Examples of Ecosystem Changes and Observations
Polar bears	• The number of polar bears is increasing, perhaps due to the restrictions placed on hunting. Impacts by polar bears included the destruction of meat caches and damage to cabins and tents[10].
Walrus	• The local walrus population has changed, in that there are fewer now than in the 1940s[2].
Seals	• Harp seals and narwhals returning from summering areas in the Lancaster Sound-Jones Sound area migrate south through this area in the fall. The area is home to ringed seal year-round[2].
Whales	• Narwhals, and to a lesser extent beluga, are hunted near the head of Clyde Inlet during summer[2].
Fisheries	• Community members noted changes in regional fish, with disease seen in some populations of char, leading to a poorer taste. Fish had different skin thickness depending on where they were caught[11].
Birds	• About 25,000 pairs of fulmar's nests of Baffin Island just south of Scott Island. Glaucous gulls are scattered in this area with a colony of about 100 pairs located on the southern side of Scott Island[2].

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

- **Climate change studies:** The Clyde River Adaptation Action Plan provides a useful starting point[12].
- **Economic development:** Some community members thought that more tourism would help the local economy while others believed that there would not be enough to make a difference, and as such it is not worth pursuing[2].
- **Fisheries development:** A fish processing plant specifically for turbot and char would boost commercial fisheries s[2].

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CONTACT

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

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