INUVIALUIT
REGIONAL CORPORATION

Inuvialuit Research Newsletter

December 2022

Volume 1 | Issue 4

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The Inuvialuit Regional Corporation

Table of Contents

Acknowledgements

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The IRC would like to acknowledge its Innovation, Inuvialuit Science and Climate Change (ISCC) Division for its hard work and dedication to the fourth edition of the Inuvialuit Research Newsletter. We extend our sincere thanks to our editorial team, who worked tirelessly to review, edit, and format the articles and photographs for this edition. The IRC is especially grateful to the Inuvialuit Communications Division for providing editorial support.

We would like to thank our funding partners and all contributors for investing their time and knowledge in creating the Inuvialuit Research Newsletter. The IRC apologizes in advance for any misspellings of names of people and/or organizations featured in this edition. If any discrepancies are found, please contact the IRC's ISCC Division with your concerns. The IRC's ISCC Division's contact information is on page 105.

Taigugakhaq Ikhivautaqaqtumin Hivulliuqtumillu Havaktiannin

Quana tikinmigaptigu hitamaat tittiraliurutaa haffuma Inuvialuit qinihiadjutikkut taigugakhat titiraqpaktait. Tadja hamna titiraqhimayuq ilihimayuq nutaanik nauhiuqtainnik tahapkuallu hivumuudjutikhait Tadja hamna titiraq tunnagiyaa takupkarumaplugu nakuuyukkut qiniqhianikkut havaktaat hamani Inuvialuit Nunaanni (ISR)mi. Talvanilu ilauhimayuq nutaanik uuktuqtamingnik taimaalu hivumuudjutait ilaninni havaktamingni hilap aallangudjutaanni, halumayunikkullu aulladjutini, hilakpullu qanuridjutaani, Inuit inuuhitigutlu pitquhiitigutlu aullapkainikkut.

Ilittariyumayavut akhut quyagivlugit ilihimayut akhuukhutik nanihinahuaqpangmata havaqatigiitlu tahapkua havakpiaqpangmata amigaitkaluaqhutik nauhiuqtatik hamani ISRmi. Hamna ISR nunaptingni piyuq qinihiayuni nauhiuqtuni Canadami, taimaalu havagumayugut hivumuuqluta qinihimanikkut nunaptingni ikayurumaplugit nunataaqhimayut, nunallaamingni katimaqatigiiktullu, kapamatkunnillu havaktunun.Amigaikpalliayut qinnihiadjutigut havaktut taimaa kayumikhingmat hilakput aallangudjuhia, tahamnalu naungman Inuuvingmin Tuktuuyaqtuumun apqut (ITH), Nutaallu Inuvialuit qinihianikkut atturumayait, tahamnalu kiinauyat atuqtakhat mikhaanut hilap aallangudjutaatigut aulapkaidjutinullu atugakhanik. Taimaa piyumayugut nalaullugit titiraqhimayavut, ilihimapkaktaulugit taimaalu quviagilugit hapkaut piuyut qinihianikkut havaktavut!

Hamna kinguliq titiraq taututtiaquyaa qanuq piuvialuktuq taimaalu ilihimaquplugit qinihiadjutigut havaktaat Inuvialuit Katimaqatigiit havaqatigiitlu havakpagait, hapkuat tadja hivulliurutigiliqtait qinihianikkut ISRmi. Inuvialuit naminiriplugit havaqatiqaqhutik havautikhaitigut takunnaqtuq hivumuuyugut angiyumut Inuvialuit piyumayaitigut qinihiayunillu ilitariplugitlu Inuvialuit Qauyimayainni.

Quviahuktunga hamna titiraq iliffingnut takupkarumaplugu. Quyagiyatkalu tunnivaktunut ilihimayamingnik, havaqatigiyavullu tahapkualu havaangmingni havaktut unaguittumik pinahuaqpaktut hamna titiraq inirumaplugu. Pitquyaffi hamna titiraq iliffingnut tautuktittumapluhi mikhaanut qiniqhiadjutaitigut havaktainni nunaptingni.

Hivunnaptingni tautuffaarumayugut ikayuqtigiikluta taimaalu uqaqatigiikluta ilihimapkarumagaptigit ilihimayakhanik taimaalu havaknikkut tuhaayakhanik hivunipta titiraqtakhaanik.

Quana! Quyanaqpak! Quyanainni!

Duane Ningaqsiq Smith
Ikhivautiqaqtuqlu Havaktia Hivulliuyuq IRCmi

Message from the Chair and CEO

Welcome back to the fourth edition of the Inuvialuit Research Newsletter. This publication serves as a platform for showcasing the remarkable research conducted in the Inuvialuit Settlement Region (ISR). This edition includes new studies and advancements in various areas such as climate change, cleaner energy, environmental monitoring, health, and cultural preservation.

We acknowledge and appreciate the experienced and dedicated researchers and partners who have contributed to the wide range of studies conducted in the ISR. The ISR is a crucial area for research in Canada, and we are dedicated to advancing research in the region to support our beneficiaries, community organizations, and governments. The increase in research activity is a result of the rapidly changing environment, the creation of the Inuvik-Tuktoyaktuk Highway (ITH), new Inuvialuit research programming, and funding related to climate change action and the energy transition. We remain committed to accurately recording, acknowledging, and celebrating these important research projects!

This latest edition highlights the valuable and innovative research projects carried out by Inuvialuit organizations and their partners, which are now leading the way in ISR research. Inuvialuit-owned and partnered initiatives demonstrate our significant progress towards greater Inuvialuit self-determination in research and the proper recognition of Inuvialuit Knowledge.

It is with great pleasure that I share this newsletter with you. I am grateful to our contributors, partners, and staff for their tireless efforts in making this edition possible. I hope that the articles will provide you with insight into the latest research taking place in the region.

We look forward to your continued support and feedback as we strive to provide you with informative and engaging content in future editions.

Quyanainni! Koana! Quyanaqpak!

Duane Ningaqsiq Smith
Chair and CEO, Inuvialuit Regional Corporation

Inuvialuit Regional Corporation Board of Directors

Inuvialuit Regional Corporation's Board of Directors, back row, from left to right: Rory Voudrach – Director, John Lucas Jr. – Director, Ryan Yakeleya – Director, Lawrence Ruben – Director, Jordan McLeod – Director; front row (seated) from left to right: Duane Smith – Chair and CEO, and Pat Klengenberg –Director. Photo courtesy of Elizabeth Kolb, Inuvialuit Regional Corporation's Photographer & Communications Advisor, IRC Communications Division.

2022 Research Priorities

2022 Beaufort Strategic Environmental Assessment Research Priorities

Determined through information gathered from beneficiaries during ISCC community tours (2016-2020)

- Meaningful inclusion of Traditional Knowledge and consultation of knowledge holders
- Invasive species
- Effect of marine traffic on water quality, key fish species, and marine mammals
- Relationship between environmental change and preservation of tradition and culture
- Cumulative effects research in the following areas:
    - employment rate
    - social wellness (tradition and culture)
    - education
    - harvesting
    - food security
    - lack of oil and gas disaster response infrastructure
    - climate change
    - water quality

2022 Strategic Research Priorities

Determined through the IRC 42 Directors' Meeting (January 2019)

- Environmental Change
    - ice, landslides, safety, permafrost, erosion)
- Human – Environment Interactions
    - tourism and economics, cumulative effects, grey and ballast water, place names)

2022 Community-Identified Research Priorities

Determined ISCC Community Tours (2019-2020)

- Geohazards
- Climate Change
- Marine Safety
- Coastal erosion
- Wellness and Language
- COVID-19
- Inuvialuit Place names
- Energy

About IRC's Innovation, Science and Climate Change Division

The Innovation, Inuvialuit Science and Climate Change (ISCC) Division is a dynamic division established by the Inuvialuit Regional Corporation (IRC) to lead and coordinate research activities and develop policies while promoting innovation, mentorship, training, and engagement in the Inuvialuit Settlement Region. With a focus on Inuvialuit science, our divisional goals are to 1) communicate research initiatives more effectively, 2) ensure Inuvialuit are meaningfully included in all research policies and processes, 3) strengthen capacity to lead research activities, 4) ensure Inuvialuit Knowledge and Western science are equally respected, and 5) mentor the next generation of Inuvialuit researchers.

The Innovation, Inuvialuit Science, and Climate Change (ISCC) division was created in 2019 and has grown in staff and size each year since its inception. This unit began with eight employees and twelve projects. Since then, the division has been expanded to fourteen staff, twenty-seven projects, four policies, a K-12 educational program, a mentorship program and mobile laboratory infrastructure. The division is organized into three main areas: Data Science & Methodology; Research Programs, Policy & Administration; and Health & Engagement.

Inuvialuit Regional Corporation

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Darby Desrosiers, Clean Energy Program Coordinator
Nipa Dutta, Clean Energy Program Coordinator
Roxanne Springer, Climate Change Program Coordinator
Tess Forbes, Marine Program Coordinator
Tyra Cockney-Goose, Environmental Policy and Climate Change Assistant

2022 Innovation, Inuvialuit Science and Climate Change Division Goals

1

Better Communicate Research

- Facilitate local participation through opportunities and knowledge mobilization
  - Increased local participation (environmental and wildlife mentors)
  - Increased local engagement (newsletters, flyers, community tours)
- Make products of research and data available

2

Ensure Inuvialuit are meaningfully involved in all research policy and processes in the ISR

- Re-evaluate internal research licensing process
- Develop Inuvialuit focused research policy and associated materials
  - Research agreements
  - Data agreements
  - Standards for engagement and involvement in research conducted by external groups

3

Begin developing a research agenda for the ISR

- Identify research gaps

4

Ensure that both traditional knowledge and western science\ are equally considered in policy/decisions related to the ISR

- Foster a culture of innovation and self-determination
- Develop a robust internal research program which addresses local priorities

5

Mentor the next generation of Inuvialuit researchers

- Provide youth with employment and opportunities to be directly involved in research
- Provide youth with training and mentorship activities to build skills while transferring knowledge

Inuvialuit Settlement Region Research Projects

Inuvialuit Regional Corporation's Internal Research Projects

Evaluating Microplastic and Additive Concentrations in the ISR Waterways

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Shanay Williams, IRC's Research Administration and Programs Manager

Communities Involved
Inuvialuit Settlement Region (Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Ulukhaktok, Sachs Harbour)

Completion Status
Ongoing

Project Objective/Purpose
The overarching objectives for the Evaluating Microplastic and Additive Concentrations in the ISR Waterways are to evaluate the distribution and abundance of primary and secondary microplastics in drinking water across the six communities in the ISR and to foster engagement and inclusivity through sessions focused on Inuvialuit Knowledge exchange on water security and sovereignty.

Project Description

Reliable access to clean drinking water is a focus in many Inuit communities where the impacts of water contaminants are more than an inconvenience because of limited access to healthcare and education. The ISR tends to be politically and economically marginalized, even though access to clean drinking water is a human right. Effective water quality monitoring and water quality database development are therefore critical to identifying and conveying the need for activities/regulations that can better protect water resources.

The distribution and abundance of microplastics (synthetic solid particles less than 5 mm in size) have become a global concern, though the implications of microplastics on human health are not thoroughly understood, especially in the North, where their impacts can have confounding effects on already marginalized groups. These plastics are a key concern to the ecosystem and human health as they accumulate in water, soil, and the food chain, and more data is needed to evaluate risks.

This project evaluates the distribution and abundance of microplastics in drinking water by testing water on the land (lakes and rivers) and at the local water treatment plants. We also interviewed community members and Elders who are knowledge experts on water in the communities and the land. These interviews and water sample testing will serve as a baseline for water quality and a foundation for Youth to continue maintaining the waterways. Ultimately, this project will allow Inuvialuit to document water conditions, mitigate accumulation, and create effective policies as needed.

↑ Photos courtesy of Elizabeth Kolb, IRC Communications Division

Investigating Wate Quality in Fish-Bearing Lakes Between Inuvik and Tuktoyaktuk

↑ Photos courtesy of Elizabeth Kolb, IRC Communications Division

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Shanay Williams, IRC's Research Administration and Programs Manager

Communities Involved
IInuvik and Tuktoyaktuk

Completion Status
Ongoing

Project Objective/Purpose
The lakes between Inuvik and Tuktoyaktuk hold cultural and spiritual importance to Inuvialuit and economic value through harvesting, fishing, and trapping. With the new all-season Inuvik- Tuktoyaktuk Highway built in 2017 and increased tourism, there is a potential for contaminants from vehicles and human debris. Our research project sought to develop a long-term water quality database for Inuvialuit to document and monitor water conditions. We sought to evaluate metal, nutrient, and hydrocarbon concentration in Jimmy, Parsons, Noell, and Sitidgi Lakes while investigating how perceptions of lake water quality aligned with Inuvialuit Knowledge and use of these lakes.

Project Description
The first of its kind, IRC designed this project to generate a water quality database for long-term water health monitoring on lakes between Inuvik and Tuktoyaktuk, working closely with the Inuvialuit community members living in the area. Jimmy, Parsons, Noell, and Sitidgi Lakes are important to Inuvialuit because of traditional activities like fishing, harvesting, travelling, and recreation. This project will have three components that integrate traditional and academic knowledge to drive environmental and sustainability action plans. Firstly, IRC researchers and local Inuvialuit will conduct structured surveys of community members living in or between Inuvik and Tuktoyaktuk to gather first-hand knowledge detailing the cultural value and potential concerns around water quality in the lakes. Secondly, IRC researchers and local Youth will collect and analyze lake water to determine water quality, building on previous research from the Tuktoyaktuk Community Committee, Aurora College, and the Department of Fisheries and Oceans to include a wider suite of organic and inorganic parameters. Lastly, this research will incorporate an educational component that features on-the-job training for high school students and young adults.

Inuvialuit Settlement Region (ISR) Energy Action Plan

↑ Photos courtesy of Elizabeth Kolb, IRC Communications Division

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Nipa Dutta, IRC's Clean Energy Program Coordinator
Darby Desrosiers, IRC's Former Clean Energy Program Coordinator

Communities Involved
Inuvialuit Settlement Region (Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Ulukhaktok, Sachs Harbour)

Completion Status
Complete

Project Objective/Purpose
The ISR Energy Action Plan provides an environment for a collaborative analysis of the ISR's current energy status. With the aim of identifying solutions that benefit the ISR, specific objectives and corresponding actions were established. The Plan seeks to leverage the collective expertise of community members to drive meaningful change and create a more sustainable energy landscape. The five thematic areas for the action described in the strategy are (1) Capacity and Engagement, (2) Technology, (3) Environmental Impact, (4) Energy Cost, and (5) Education and Energy Literacy.

➔ **Project description on 16**

Project Description

The Inuvialuit Regional Corporation (IRC) released the Inuvialuit Settlement Region (ISR) Energy Action Plan in October 2022. The strategy supports and emphasizes reflection of community priorities, implementation of Inuvialuit Traditional Knowledge, and long-term benefits to the ISR communities.

This strategy aims to tackle the challenges of energy availability and cost by providing practical solutions that foster a sustainable, inclusive, and healthy future for members of the ISR communities. It achieves this by focusing on five thematic areas:

1. **Capacity and Engagement:** To build employment and training opportunities for Inuvialuit and increase community awareness regarding energy planning and development.
2. **Technology:** To increase local energy infrastructure and programs to establish cleaner, cost-effective, and more reliable energy for homeowners and businesses.
3. **Environmental Impact:** To protect and conserve our natural heritage for present and future generations.
4. **Energy Cost:** To develop mechanisms to reduce the cost of energy for residents and businesses across the ISR.
5. **Education & Energy Literacy:** Advance accessibility to educational materials about clean energy and promote Inuvialuktun as the working language across the ISR.

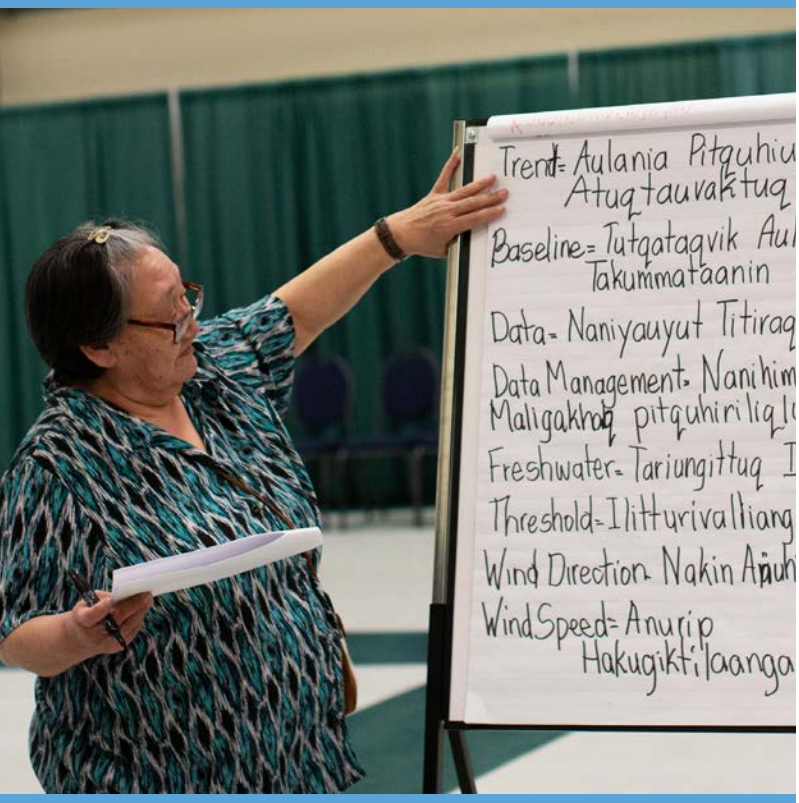
To ensure the Plan reflects the priorities and goals that will drive meaningful change and uphold Inuvialuit culture, Inuvialuit Traditional Knowledge, Inuvialuit rights, and benefits, we developed its guiding principles, goals, and actions through community engagement sessions held in ISR communities in both 2020 and 2021.

To ensure the evolving priorities of the Inuvialuit communities are reflected, IRC's Innovation, Inuvialuit Science, and Climate Change Division (ISCC) is maintaining and updating this strategy. The division is working closely with the Inuvialuit beneficiaries, including Elders and Youth to create implementation strategies that align with their priorities and the goals set by the Action Plan. It is imperative that the implementation of the actions outlined in the Action Plan receive significant contributions from Inuvialuit beneficiaries, academia, and industry. The Inuvialuit Regional Corporation strongly encourages their participation to ensure the successful implementation of these actions.

Special acknowledgement and sincere gratitude to the members of the Community Corporations, Elders Committees, Hunters and Trappers Committees, Regional Youth Advisory Group, Inuvialuit Petroleum Corporation, IRC Communication Division, and the Innovation, Inuvialuit Science, and Climate Change Division for their invaluable contributions.

← The ISR Energy Action plan is available for download on the IRC website:
irc.inuvialuit.com/wp-content/uploads/2023/10/Inuvialuit-Settlement-Region-Energy-Action-Plan.pdf

Improving Communication on Climate Change & Cleaner Energy Terminology for Inuvialuit and Researchers in the Inuvialuit Settlement Region (ISR).



Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Roxanne Springer, IRC's Climate Change Program Coordinator Nipa Dutta, IRC's Clean Energy Program Coordinator Shanay Williams, IRC's Research Administration Programs Manager

Communities Involved
Inuvialuit Settlement Region (Inuvik, Tuktoyaktuk, Aklavik, Paulatuk, Uluhaktok, Sachs Harbour)

Completion Status
Ongoing

Project Objective/Purpose
Our goal is to improve communication and comprehension of scientific terminology used to describe and discuss climate change, energy and environmental research and initiatives. We aim to achieve this by creating and promoting a glossary of precise and consistent climate change, energy, and environmental terminology in all three dialects spoken across the ISR: Kangiryuarmiutun/Inuinnaqtun, Sallirmiutun, and Uummarmiutun. To accomplish this, IRC is hosting annual translation workshops to continue the development of standard climate change, energy, and environmental terminology in all three dialects spoken across the ISR that is accessible to community members and researchers alike.

➔ **Project description on 18**

Project Description

The impact of climate change on the Arctic environment has intensified research efforts in Arctic communities. Moreover, continued advancements made in climate change, energy, and environmental related research have resulted in an increase in the use of more sophisticated and specialized terminology. However, the scientific jargon in these studies can pose a communication barrier for Inuvialuit language speakers in the ISR, resulting in a disconnect between researchers and community members.

The objective of this project is to create a Terminology Glossary booklet that contains standardized terminology in all three Inuvialuit dialects, thereby bridging the existing communication gap. This approach aims to facilitate communication and enhance understanding between researchers and the Inuvialuit community, ultimately promoting a more collaborative approach to addressing the effects of climate change in the ISR.

In a significant achievement, ISR Inuvialuit language experts have translated forty terms pertaining to climate change and cleaner energy in each ISR Inuvialuktun dialect. These translations are publicly available on the IRC Research website and in a glossary booklet that will be updated as new terms are translated. An additional twenty terms are under review and will soon be available.

To accurately translate the climate change and cleaner energy terminology into each ISR Inuvialuit dialect, a series of three-day terminology workshops were held in March and November 2022 with representatives from each ISR community. These workshops will continue into 2023 through consultation and engagement with Inuvialuit language experts to expand the vocabulary list. Youth representatives were invited to participate in the November 2022 workshop and will continue to be involved in subsequent workshops to allow for a transfer of knowledge and increase exposure to these translated terms.

To effectively raise awareness among the younger generation about climate change, two children's books and multiple Inuvialuktun word searches incorporating the translated words from workshops were created and promoted at community events. This will help engage children and youth in understanding the issue of climate change.

We would like to express our utmost gratitude to the Inuvialuit knowledge experts and beneficiaries for their invaluable contributions in translating terminology. We also extend our appreciation to the authors of the children's book, as well as the Community Corporations, Inuvialuit Cultural Resource Center, Elders Committee, IRC Communication Division and youth representatives, whose efforts have been instrumental in achieving these resources.

← The first climate change and cleaner energy terminology glossary booklet is available for download on the IRC website: *Improving-Communication- on-Climate-Change-and-Long-Range-Contaminants-for-Communities-and-Researchers-in-the-ISR_0.pdf (inuvialuit.com)*

← The first children's book, Energy from our Environment, is also available for download on the IRC website: *https://irc.inuvialuit.com/research/energy-from-our-environment-a-childrens-book/*

↑ Photos courtesy of Elizabeth Kolb, IRC Communications Division

ISR Climate Change Action Map

↑ Photos courtesy of Elizabeth Kolb, IRC Communications Division

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Roxanne Springer, IRC's Climate Change Program Coordinator

Communities Involved
AI Inuvialuit Settlement Region Communities (Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Ulukhaktok, Sachs Harbour)

Completion Status
Completed with ongoing status

Project Objective/Purpose
The Climate Action Map aims to inform and engage Inuvialuit community members and research partners by showcasing climate change, energy, and environmental research activities in the ISR in a user-friendly and accessible format.

Project Description
Although the Inuvialuit Settlement Region (ISR) is a centre for climate change, energy, and environmental research and action, there is still a notable information sharing gap between project leaders and Inuvialuit beneficiaries. This gap poses a significant barrier to distributing information about the many initiatives undertaken in the region in recent years.

To address this issue, the ISR Climate Action Map has been created to increase community awareness of ongoing research projects, encourage discussions on initiatives in the region, and promote the 2022 ISR Climate Change Strategy. With the help of the Climate Action Map IRC can inform the public about climate change research, including Inuvialuit and researchers, by highlighting both new and ongoing projects, as well as opportunities for involvement in the area.

The ISR Climate Change Story Map on the ISR Climate Change Website, updated annually, briefly summarizes the climate change action map. This story map contains correlating slides that describe ongoing research and provide context for these activities being done in the ISR. The Climate Change Action Map and the Climate Change Story Map work together to provide information on the research being conducted in the ISR and promote research opportunities to community members.

The map and its supporting assets can be accessed online at the following link: ***https://climateactionmap.inuvialuit.com/***

Boating Safety in the Inuvialuit Settlement Region

↑ Photos courtesy of Elizabeth Kolb, IRC Communications Division

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Tess Forbes, Former IRC Marine Program Coordinator
Shanay Williams, IRC's Research Administration Programs Manager

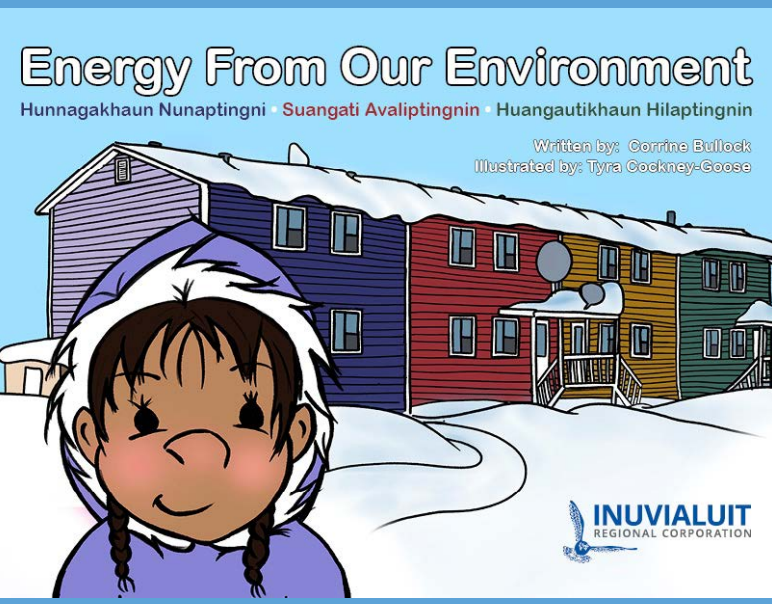
Communities Involved
Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Ulukhaktok, Sachs Harbour

Completion Status
Ongoing

Project Objective/Purpose
The goal of this project is to proactively create safer waterways by increasing awareness and education, encouraging safe boating compliance, and equipping Inuvialuit with the means and tools to respond to waterway emergencies while undertaking their cultural and traditional activities.

Project Description
Inuvialuit rely on waterways in the Inuvialuit Settlement Region (ISR) for social, cultural, and subsistence purposes. In recent years, however, there has been an increased number of national and international shipping voyages. This increase in shipping also increases the risk of encounters between large vessels and small vessels. This project therefore aims to increase the safety of ISR waterways and, by extension, the safety of Inuvialuit residents by creating easy-to-read educational materials that outline best practices for large vessel-small vessel encounters. This program also aims to increase safety by providing boating safety gear and equipment to Inuvialuit in each of the six ISR communities. Equipment will include safety items, such as bailers, flashlights, whistles, electronic flares, and a manual propelling device.

Siqinirmin Aullan — Energy from Our Environment



Organization Name
Inuvialuit Regional Corporation

Project Lead(s)

Darby Desrosiers, IRC Clean Energy Program Coordinator

Tyra Cockney-Goose, IRC Environmental Policy and Climate Change Program Assistant

Jenn Parrott, IRC's Director of Innovation, Science, and Climate Change

Communities Involved
Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, and Ulukhaktok

Completion Status
Complete (2020-2022)

Project Objective/Purpose
This book was written and illustrated by Inuvialuit beneficiaries to promote energy literacy in the Inuvialuit Settlement Region (ISR). It facilitates cross-generational knowledge transfer between Elders and Youth about local culture, practices, language, and sustainability.

← View the book
or visit *https://irc.inuvialuit.com/research/energy-from-our-environment-a- childrens-book/*

Project Description

Climate change and energy development have significant impacts on both the social and physical landscapes of the North. This project aims to develop an energy-themed children's book that will be available in all three Inuvialuktun dialects. This storybook teaches children about Inuvialuit tradition, language, and culture while increasing energy literacy. IRC selected the story through an exciting story-writing contest in March 2020. The process of creating the book is an excellent example of the importance of Elder-Youth relationships. The book contains an engaging story and beautiful illustrations written and illustrated by Inuvialuit artists, with terminology generated directly from the IRC's Climate Change and Energy Terminology Workshops. This makes this storybook entirely Inuvialuit-led from start to finish. The children's book presents the winning story in English, Uummarmiutun, Kangiryuarmiutun/Inuinnaqtun, and Sallirmiutun, with accompanying audiobooks.

Principal Activities: Story writing contest, translation and review of the story, the creation of illustrations by a local artist, audiobook recording, publication, and distribution.

The project was successfully completed with community support and great appreciation. IRC has distributed the book to schools, libraries, and community organizations. The book was promoted through community outreach and Elder-led book readings in Inuvialuktun and English at all local schools across the Inuvialuit Settlement Region (ISR). Every student in Junior Kindergarten-Grade 6 received a copy of the physical book with the accompanying audiobook.

↑ ***Siqinirmin Aullan*** author, Corrine Bullock, stands with her two daughters and IRC's Chair and CEO and ISCC Staff. Photo courtesy of Elizabeth Kolb, IRC Communications Division

A Special Day with Anaanaga – A Children's Book on Knowledge Transfer Between Elders and Youth

↑ Image courtesy of Tyra Cockney-Goose, IRC.

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Jenn Parrott, IRC's Director of Innovation, Inuvialuit Science, and Climate Change, Meghan Etter, IRC's Director of Health and Wellness, Darby Desrosiers, Former IRC Clean Energy Program Coordinator
Tyra Cockney-Goose, Former IRC Environmental Policy and Climate Change Program Assistant

Communities Involved
Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, and Ulukhaktok

Completion Status
Ongoing

Project Objective/Purpose
The goal of this project is to create a knowledge transfer-themed Inuvialuit children's book and accompanying audiobook in English and the three Inuvialuktun dialects and, in turn, promote Inuvialuit language and environmental literacy in the ISR.

Project Description
The book *A Special Day with Anaanaga* is developed in partnership with the IRC's Health and Wellness Division and will highlight themes of knowledge transfer between Elders and Youth using climate and environment terminology translated from the "Improving Communication on Climate Change & Cleaner Energy Terminology for Inuvialuit and Researchers in the Inuvialuit Settlement Region (ISR)" workshops. The storybook will be available in English and all three Inuvialuktun dialects and will discuss Inuvialuit Knowledge and the importance of Elder-Youth relationships. This project has already achieved several milestones, including a storybook writing contest, the selection of an Inuvialuk contest winner, the selection of an Inuvialuk illustrator, the translation of the English version into the three Inuvialuktun dialects, and the March 2022 Translation Workshop for the climate and environmental terms.

This project will result in several deliverables: the one story will be developed into four books (English, Uummarmiutun, Kangiryuarmiutun, and Sallirmiutun) with accompanying audiobooks to promote science literacy in the ISR schools, renew Inuvialuit dialect and culture, and promote cross-generational learning between Elders and Youth on Inuvialuit traditional practices, language, and sustainability. The final product will be publicly available in digital, printed, and audiobook formats.

Inuvialuit Stewardship on the Land Program

↑ Map showing study sites for the Inuvialuit Stewardship on the Land Program conducted by the Inuvialuit Lands Administration.

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Charles Klengenberg, IRC's Director of Lands
Chris Gruben, IRC's Manager of Inuvialuit Lands

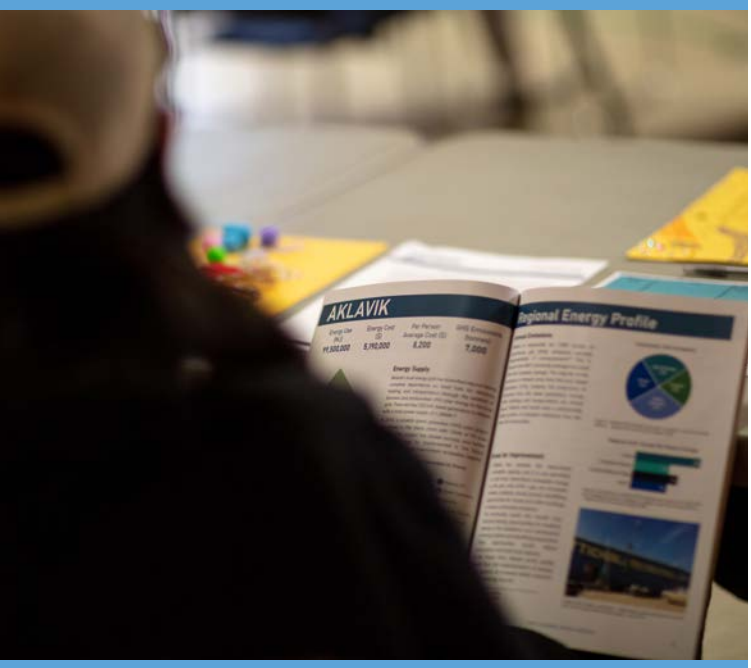
Communities Involved
Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, and Ulukhaktok

Completion Status
Ongoing

Project Objective/Purpose
The purpose of the program is to a) establish a regular long-term monitoring and testing regime; b) assist in developing adaptive solutions, ensuring the sustainability of Inuvialuit lands for future generations; c) increase community capacity and self- determination in research on soil and water conditions; d) develop a science data portal; and (e) develop a science monitoring framework that supports evidence-based decision making for effectively managing, monitoring, and protecting Inuvialuit lands.

Project Description
This 2-phase program is designed to identify areas with environmental or human-made disturbance sites in the ISR. The first phase included an iPad survey of Inuvialuit adults in the six ISR communities and was led by a Community Stewardship Monitor who facilitated the survey. The survey focused on collecting data regarding human-made and environmental disturbances in each community through Inuvialuit Knowledge. The data from the survey was then used to confirm the locations of identified disturbances as well as flag areas requiring further investigation for remediation services. The second phase of the program expands on Phase 1 to include the physical testing of soil and water in areas identified as environmental and human-made disturbances. In this phase, IRC also disseminated the survey data from Phase 1 throughout the ISR and facilitated knowledge sharing between Youth, Inuvialuit Traditional Knowledge Holders, and researchers. IRC utilized and built on community capacity to work towards long-term testing, monitoring, and remediation plans and implemented the use of current data-gathering devices, such as drones, to further support the program.

Energy Coordination for the Inuvialuit Settlement Region (ISR)



↑ Photos courtesy of Elizabeth Kolb, IRC Communications Division

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Nipa Dutta, IRC's Clean Energy Program Coordinator
Shanay Williams, IRC's Research Administration Programs Manager

Communities Involved
Inuvialuit Settlement Region (Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Ulukhaktok, Sachs Harbour)

Completion Status
Multi-year (Year 1 of 3)

Project Objective/Purpose
The goal of this project is to increase energy literacy and develop local capacity in the ISR through on-the-job training, workshops, community engagement and implementation of the ISR Energy Action Plan. Increased capacity and active community participation in energy development across the ISR will contribute to eliminating energy poverty, achieving energy security, and transitioning towards Inuvialuit-owned autonomous energy systems that will benefit Inuvialuit for generations to come.

Project Description

The Inuvialuit Settlement Region (ISR) relies heavily on diesel fuel for heating and electricity. This dependence has led to significant energy insecurity. By developing Energy Coordination in the ISR, IRC aims to confront challenges related to energy availability and cost by providing practical solutions to attain a more sustainable, inclusive, and healthy future to benefit the residents of the ISR.

IRC is committed to utilize local capacity to achieve sustainable and clean energy growth within the ISR. To build local capacity and establish equitable work opportunities for Inuvialuit within the clean energy sector of the ISR, IRC will develop an energy coordination team in the ISR. IRC has already created a Clean Energy Coordinator position within IRC and is working to create seven additional support positions, including one energy Assistant and six Community Energy Champions (one for each ISR community). Together, this team will support community energy development at both a regional and local scale by developing training resources, promoting energy education, assisting Community Corporations with proposal writing, and facilitating community engagement to implement action and set tangible community goals. This planned coordination will increase energy literacy, increase energy inclusion through terminology translation, build capacity, train/mentor Youth, and create energy driven policies and research.

The Clean Energy Coordinator position has been active in the ISR for three years and has already completed projects such as drafting a regional energy action plan based on input from the community. This plan addresses concerns such as high energy costs, supply chain risks, and environmental impacts due to climate change. The coordinator will continue to support community energy development through outreach, mentorship, and program development.

The Clean Energy Coordinator will hire and mentor an energy assistant, who will focus on on-the-job learning, skill-building, networking, and engagement. The Assistant will help develop energy literacy materials and facilitate training workshops and skill-building opportunities for Inuvialuit.

In Years 2 & 3 of the project, six Community Energy Champions, one for each ISR community, will be hired to promote energy education and community engagement. They will conduct community meetings, surveys, and polling, ensuring that all communities have equitable opportunities to participate in energy planning.

The project's outcomes will bridge capacity gaps hindering energy development in ISR communities. By prioritizing community-based training and involvement, this initiative aims to eliminate energy poverty, achieve energy security, and transition to Inuvialuit-owned autonomous energy systems, benefiting generations to come. This project will ensure that community liaising and outreach are at the forefront of energy development in the ISR.

Powered by Youth

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Shanay Williams, IRC's Research Administration Programs Manager Roxanne Springer, IRC's Climate Change Program Coordinator

Communities Involved
Inuvialuit Settlement Region (Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Ulukhaktok, Sachs Harbour)

Completion Status
Ongoing

Project Objective/Purpose
IRC created the Powered by Youth discussion group in response to the Climate Change and Energy Tour in March 2020, where community members requested Youth engagement opportunities during their public engagement sessions. This outreach program aims to (1) educate youth and discuss current and future energy related projects of the ISR (Inuvialuit Settlement Region) and (2) ensure IRC includes the Youth- perspective in the implementation of the ISR Energy Action Plan for ISR. The participants of this program include Inuvialuit youth ages 15-30 from each of the ISR communities. Through this program, IRC aims to inspire Youth to consider STEM (Science, Technology, Engineering, and Math) careers in energy-related fields, raise awareness of in-demand skills and training opportunities, provide ongoing employment opportunities, ensure Youth-perspective in implementing the ISR Regional Energy Action Plan (EAP), and facilitate further discussions and questions from IRC Youth.

Project Description

IRC is involved in ongoing efforts to engage with Inuvialuit Youth across the ISR and to include their perspectives in research and policy in the region. The Powered by Youth (PbY) engagement forum, created by the Inuvialuit Regional Corporation (IRC), has been designed to boost Youth participation in energy development. A discussion group was created in September 2020 via Facebook to give Youth a platform to provide their input around climate change and energy needs in the ISR. IRC held four consecutive virtual meetings that autumn, followed by an energy engagement survey. The virtual sessions allowed Youth to discuss energy security and cleaner energy goals for their communities, while the survey allowed them to expand their ideas after the virtual discussions. The participants knew it would take a multi-pronged approach to achieve energy security in the ISR. However, they would like to see energy retrofits and increased education about energy conservation in the short term. IRC included the results of these discussions in the IRC Energy Action Plan and community outreach and programming.

In year two, IRC collaborated with the Canadian Centre for Climate Services and the Innovation and Youth Engagement Division to host a virtual session on careers in the climate-related job sector. Years 3, 4, and 5 will aim to inspire Youth to consider STEM careers in energy- related fields, raise awareness of in-demand skills and training opportunities, provide ongoing employment opportunities, ensure Youth- perspective in implementing the ISR Regional Energy Action Plan (EAP), and facilitate further discussions and questions from IRC Youth. Year 5 will also include an evaluation of the group to determine next steps to better suit the needs of the membership. The deliverables will include multiple virtual sessions, reports on Youth involvement, updated EAP Implementation Proposal, and increased Youth engagement in cleaner energy transition.

↑ Photo courtesy of Elizabeth Kolb (Photographer), IRC Communications Division

Qanuippitaa? National Inuit Health Survey (QNIHS)

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Meghan Etter, Director, Health and Wellness
Pauley Tedoff, Health Research Advisor

Communities Involved
All six ISR communities: Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk & Ulukhaktok

Completion Status
Ongoing

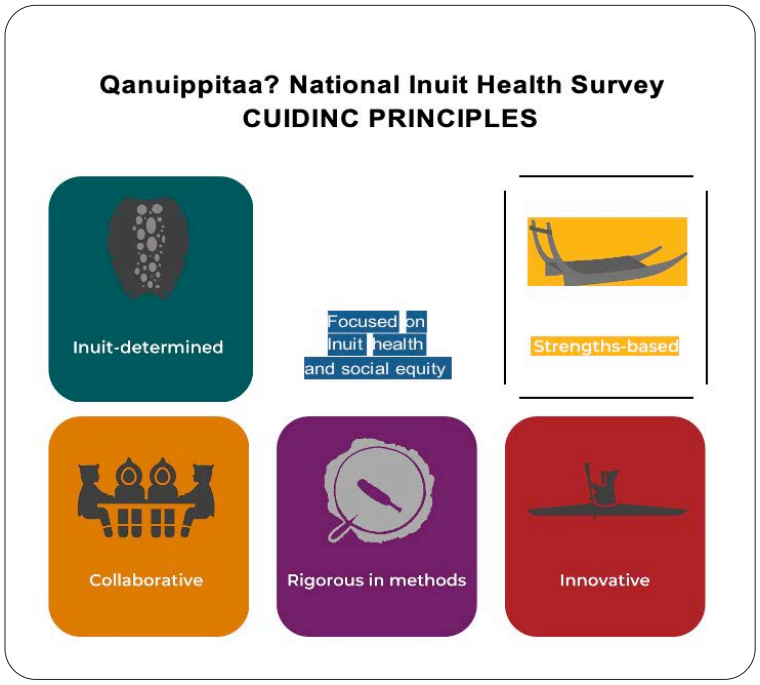
Project Objective/Purpose
QNIHS aims to address the current lack of Inuit-determined, quality data on the health of Inuit in Canada by providing data that are a) relevant and culturally safe; b) up-to-date; c) comparable across populations and time; d) comprehensive; e) Inuit- determined and owned; and f) easily accessible by Inuit. The survey results will provide the evidence needed to plan, implement, and improve on the design and execution of health policies, programs, and services towards improving the health outcomes of Inuvialuit.

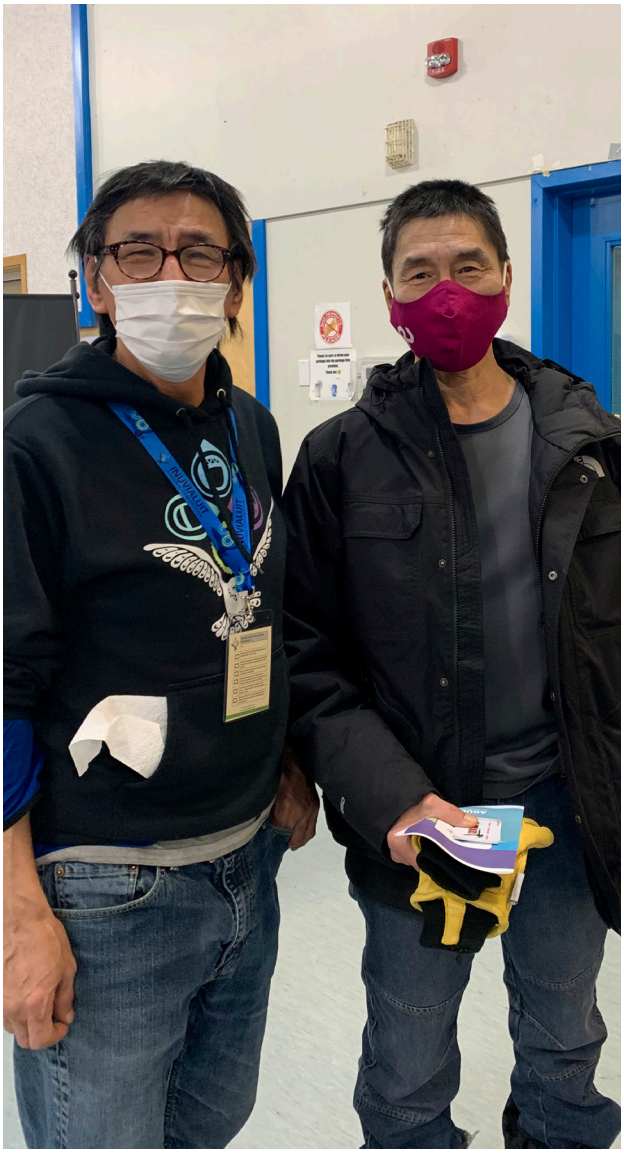
Project Description

Qanuippitaa? National Inuit Health Survey (QNIHS) is designed to increase access to Inuit-determined and Inuit-owned quality health information that is generated using sound research methodology and a decolonized theoretical approach. QNHIS was co-designed by the four Inuit Land Claims Organizations in collaboration with Inuit Tapiriit Kanatami. It is currently implemented as a permanent survey on Inuit health and wellbeing in Canada. The survey is informed by Inuit knowledge, values, and worldviews and is characterized by a high level of Inuit stakeholder engagement, as well as the latest health sciences research. The survey information will assist in the identification of a) the health needs of communities; b) gaps in service and programs delivery; and c) other aspects of the health system that are suboptimal. It will also highlight the strengths of Inuit culture, traditions, and people. The ultimate purpose of the survey is to improve health and well-being of Inuit in Canada through increased access to Inuit-determined quality health information that captures the real needs of the Inuit communities with respect to health and well-being.

The implementation of the QNIHS has both immediate and long- term benefits to the Inuit Nunangat. Capacities to implement a permanent survey and to own and manage health information will be built in the regions as an immediate outcome. Knowledge management, collaboration and partner engagement skills will also be improved and sustained for future surveys. Ultimately, the results of the survey will be harnessed to improve health policy dialogues, processes, and implementation; facilitate stronger Inuit control of health research; and empower Inuit to take control of their spiritual, mental, physical, and social well-being. The evidence generated from the survey will form the foundation for stronger health policies and programs that are tailored to the needs of the regions and delivered within a culturally safe framework.

In the Inuvialuit Settlement Region, the survey is being administered by the Inuvialuit Regional Corporation (IRC). The Health & Wellness Division in collaboration with ISCC, will govern and facilitate access to the survey data, including publishing results that are engaging and accessible to Inuit and organizations that serve Inuit populations. QNIHS data collection was successfully completed in May 2022, and data analysis is currently underway. Results of the survey will inform health decision-making and improvement in health services in the Inuvialuit Settlement Region. The design and implementation of the survey was community-led using a participatory action research framework that allowed for equal and meaningful contributions of elders, community leaders and other member stakeholders. The data will be analyzed to meet the specific 'information' needs of the communities based on several dialogues that were held to determine what will offer the most benefit to Inuvialuit. Information on mental health, adequate and affordable housing, food security, reproductive and sexual health, oral health, social and systemic discrimination, education, social capital, culture, language, and substance abuse are among the key constructs of the survey. Dissemination of the findings will be community-led using culturally appropriate and effective approaches. Communication of the survey findings will prioritize knowledge dissemination in ways that can empower Inuvialuit to take action towards improving their health and well-being.


Qanuippitaa? National Inuit Health Survey
CUIDINC PRINCIPLES
Inuit-determined
Focused on Inuit health and social equity
Strengths-based
Collaborative
Rigorous in methods
Innovative




EXIT

Understanding Patterns of Social Interaction in the Inuvialuit Settlement Region (or Community Connections Survey)

↑ Photos courtesy of Elizabeth Kolb, IRC Communications Division

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Jenn Parrott, Director, Innovation, Inuvialuit Science and Climate Change Division
Ryan Mazan, Applied Research Manager

Communities Involved
Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Ulukhaktok, Sachs Harbour

Completion Status
In progress

Project Objective/Purpose
The purpose of the study is to collect information about daily contacts between Inuvialuit to better understand how infectious diseases (such as COVID-19) spread through communities in the Inuvialuit Settlement Region. This is the first time that data of this nature will be collected in the Arctic. Results can support the development of public health guidelines and other preventative measures for virus transmission.

Project Description
The Inuit Qaujisarnirmut Pilirijjutit (IQP) program funded the IRC- led project to help us better understand virus transmission in the Inuvialuit settlement Region. The project design and Community Connections Survey (CCS) were developed and led by the Innovation, Inuvialuit Science and Climate Change (ISCC) division. The CCS is designed to collect information about interpersonal contact patterns of Inuvialuit adults, and also household and general information. The ISCC administered the paper-based CCS in each of the ISR communities with assistance from Community Representatives. Survey operations were carried out in March 2022. A total of 386 surveys were completed by the end of the collection period, yielding a response rate of about 64%. Data processing and analysis will be completed in the next fiscal year.

Inuvialuit Socio-Cultural Economic Indicators

↑ Photos courtesy of Elizabeth Kolb, IRC Communications Division

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Jenn Parrott, IRC's Director of Innovation, Inuvialuit Science, and Climate Change

Bob Simpson, IRC's Director of Intergovernmental Relations

Communities Involved
Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, Ulukhaktok

Completion Status
Ongoing

Project Objective/Purpose
To support evidence-based decision-making in the Inuvialuit Settlement Region by ensuring the best quality social, cultural, and economic data is available to decision-makers.

Project Description

The long-term goals of Inuvialuit self-governance and self-direction require a foundation of good social, cultural, and economic data. It is easier to govern well with access to reliable information about topics such as housing, health, social needs, and economic preferences.

To support these goals, the Inuvialuit Regional Corporation (IRC)'s Innovation, Inuvialuit Science, and Climate Change (ISCC) division is building institutions that will continually acquire, manage, and present regional data on these topics. The work includes forming partnerships with data-holding organizations, developing internal capacity — including policies, systems, and staff training — and cataloguing and making available the data we already have.

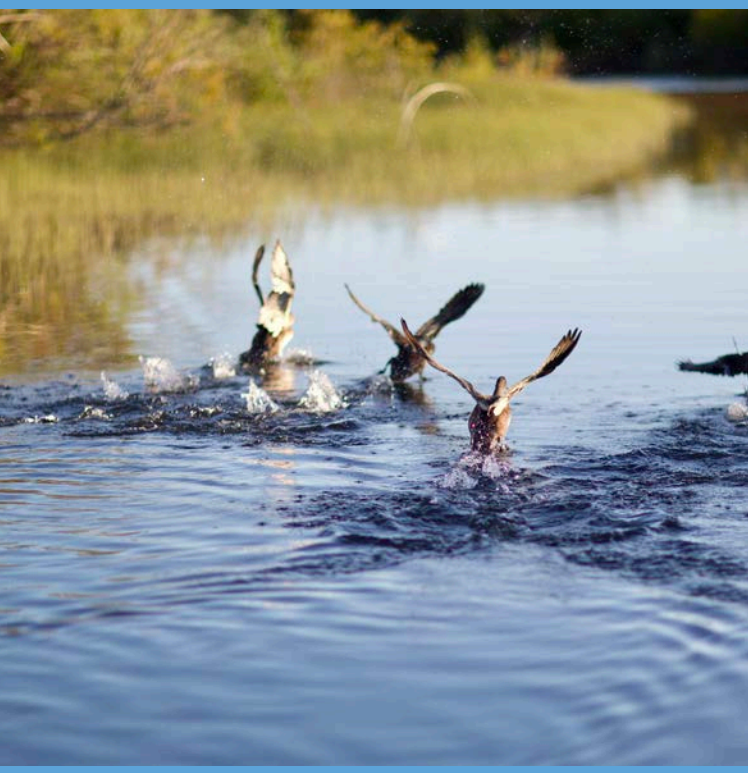
Inuvialuit Indicators was launched in 2007 to track the socio-economic well-being of Inuvialuit in the Western Arctic. The timing of its launch coincided with discussions and planning for the proposed Mackenzie Gas Project. IRC determined that this major infrastructure could substantially exacerbate existing social problems in the region. As a result, Inuvialuit Indicators helps monitor the impacts of oil and gas development on the socio-economic conditions in the region and create a database to show historical trends in the years to come. Data has been used from the Northwest Territories Bureau of Statistics; other Government of the Northwest Territories (GNWT) departments, boards, and agencies; Government of Canada; and IRC.

Working with Statistics Canada and the GNWT Statistics Department, we are compiling social, cultural, and economic indicators about life in the ISR.

We are working to ensure these statistics are always available in a consistent format, are available within IRC for staff and directors to use, and published online for ISR residents to reference.

Work is ongoing, but an updated indicator dashboard and factbook is underway and should be available in 2023. The website resides at ***https://research.inuvialuit.com/indicators/.***

Advancing Arctic Research Through Connected Infrastructure



↑ Photo courtesy of Elizabeth Kolb (Photographer), IRC Communications Division

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Jenn Parrott, IRC's Director of Innovation, Inuvialuit Science, and Climate Change

Communities Involved
Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, Ulukhaktok

Completion Status
Complete

Project Objective/Purpose
The Canadian Consortium for Arctic Data Interoperability (CCADI) supports Inuit self-determination, enabling informed actions for managing decision- making around multiple issues. It will support operational activities by making information from space- based technologies more accessible and usable for those charged with search and rescue, ensuring safe transportation and protection of life, environment, and infrastructure in Canada's Arctic.

Project Description
The Canadian Consortium for Arctic Data Interoperability (CCADI) is currently composed of Arctic scholars and Arctic data managers at the Inuvialuit Regional Corporation, University of Calgary (Arctic Institute of North America), the University of Waterloo (Canadian Cryospheric Information Network and Polar Data Catalogue), Carleton University (Geomatics and Cartographic Research Centre), the University of Manitoba (Centre for Earth Observation Science), Université Laval (Centre d'études nordiques), University of Ottawa (Faculty of Law), Natural Resources Canada, Polar Knowledge Canada, Cybera Inc., Polar View, and Sensor-Up Inc.

Based on a vision to support and grow a research community that fully engages Inuit, the CCADI will develop an Arctic Research Data Infrastructure that is properly governed to enhance individual, local, regional, national, and international initiatives in data management and research. Additionally, it will build capacity across a network of linked data centers with common standards, practices, tools, and expertise. It will facilitate data discovery and description, enabling data to be shared across systems for analysis, and visualization. The CCADI will also support efficient, effective use of data, allowing Canada to better realize the benefits of our decades of investment in Arctic research.

The Role of Genomics in Fostering and Supporting Arctic Biodiversity: Implications for Wildlife Management, Policy, and Indigenous Food Security

↑ Photo courtesy of Elizabeth Kolb (Photographer), IRC Communications Division

Organization Name
Inuvialuit Regional Corporation, University of Calgary, Carleton University, Ikaarvik, and Athabasca University

Project Lead(s)
Jenn Parrott, IRC's Director of Innovation, Inuvialuit Science, and Climate Change

Communities Involved
Aklavik, Inuvik, Paulatuk, Tuktoyaktuk, Sachs Harbour, Ulukhaktok

Completion Status
Ongoing

Project Objective/Purpose
The purpose of the Genomic Inventory and Assessment is to improve our knowledge of genomics applications to different Arctic species and their associated pathogens.

Project Description
The Genome Inventory and Assessment project is funded by Genomes Canada. The purpose of the assessment is to improve the knowledge of the applications of genomics to different Arctic species and their associated pathogens. The IRC (ISCC Division) has partnered with the University of Calgary and Carleton University to catalogue genomes- related flora and fauna research conducted in the Arctic and to inform organizations about the importance of such research in ensuring biodiversity in the regions. The project provides funds to hire Inuvialuit youth to assist with completing IRC's portion of the project.

Inuvialuit Settlement Region Platform

↑ Photos courtesy of Elizabeth Kolb, IRC Communications Division

Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Jenn Parrott, IRC's Director of Innovation, Inuvialuit Science, and Climate Change

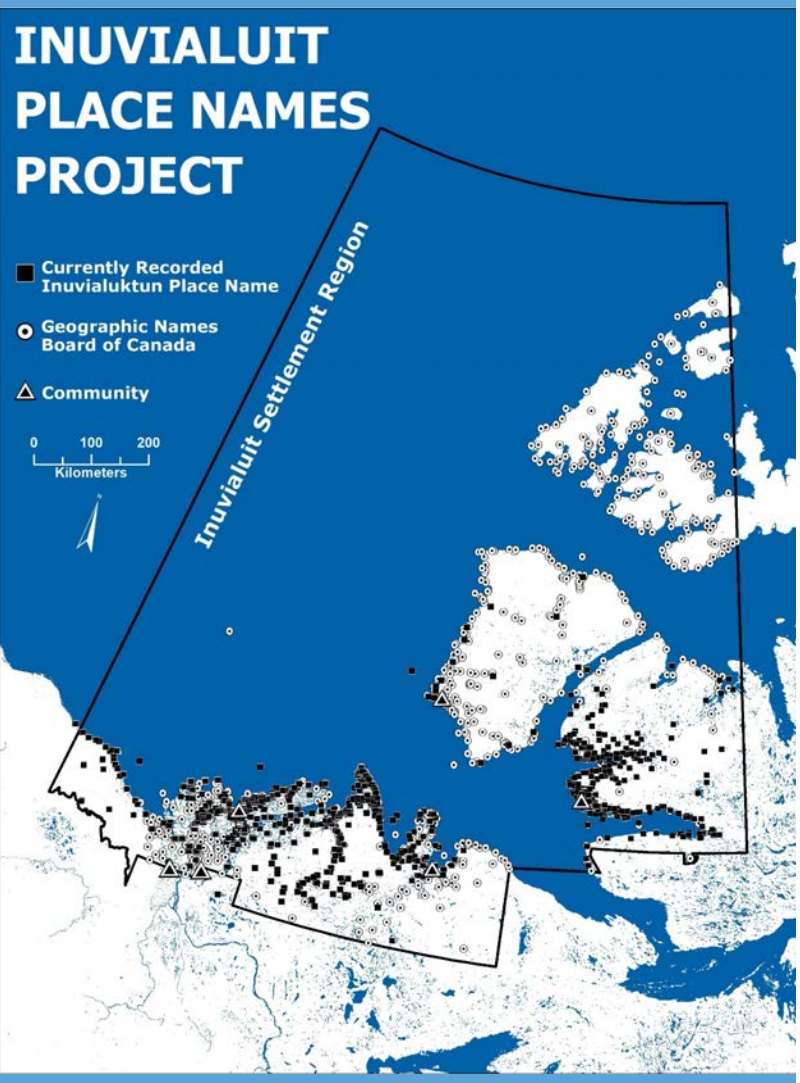
Communities Involved
Aklavik, Inuvik, Paulatuk, Tuktoyaktuk, Sachs Harbour, Ulukhaktok

Completion Status
Ongoing

Project Objective/Purpose
Spatial data is shared between the Department of Fisheries and Oceans, Joint Secretariat, Inuvialuit Game Council, Hunter and Trapper Committees, and Community Corporations, and maps and reports are disseminated.

Project Description
Data sharing between organizations in the ISR improves knowledge transfer and reduces duplicated effort. The Inuvialuit Settlement Region Platform was created for sharing of spatial data between Department of Fisheries and Oceans, Joint Secretariat, Inuvialuit Game Council. Hunter and Trapper Committees, Inuvialuit Community Corporations, and Inuvialuit Regional Corporation. It is also used by partner organizations for field surveys and for disseminating reports, maps, and dashboards.

Inuvialuit Place Names (IPN)



Organization Name
Inuvialuit Regional Corporation

Project Lead(s)
Jenn Parrott, IRC's Director of Innovation, Inuvialuit Science, and Climate Change (ISCC)

Communities Involved
Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, Ulukhaktok

Completion Status
Ongoing

Project Objective/Purpose
The goal of the Inuvialuit Place Names (IPN) project is to establish a centralized, Inuvialuit-controlled collection of all previously documented Inuvialuit place names.

➔ **Project description on 40**

Project Description

This collection of place name records will be securely maintained by the Inuvialuit Regional Corporation (IRC), with access to project results restricted to IRC agencies and their partners.

Such detailed records will position the IRC to work with the Geographic Names Board of Canada to officially include Inuvialuit place names on national maps. The project will also act as a baseline from which additional place name research programs will be developed in the years ahead.

Over the centuries, Inuvialuit and their ancestors have given names to places of cultural significance. These names may reflect the kinds of activities that were carried out there, the kinds of resources an area is known for, or the events/people that are associated with those places, among numerous other commemorative reasons. Place names help to shape and define the cultural landscape and exist as an enduring record of Inuvialuit history and heritage. Knowing place names and their meanings, the resources or landmarks at those locations, and the sequence of those place names as people journeyed along travel routes was one way that Inuvialuit learned to read the land prior to the influence of colonial lifeways. These locations are critically important to identifying key areas of significance within the ISR, and their continued use is an important aspect of Inuvialuit Culture. This initiative aims to identify, collect, overlap, and quality control Inuvialuit place names (both English and Inuvialuktun), which have been compiled from existing research and regulatory documents.

The IPN project has been developed to take place cyclically, conducted over a series of six phases meant to be repeated on a semi-regular basis (see diagram below). The documentation of place name information is intended to be an ongoing process, capable of including new place name details as time passes and new stories about culturally significant locations are shared by Inuvialuit.

The first three phases of the IPN project have been completed (see the Project Cycle Diagram). This has resulted in the compilation of a large volume of place name records sourced from research and regulatory reports. While the Community Vetting Process (Stage 4) has been delayed due to the COVID- 19 pandemic, interviews and language reviews have begun again and will continue into 2024.

The ISCC Division has secured project funding from Polar Knowledge Canada (POLAR), which is providing nearly $450,000 to support efforts on the IPN project.

This funding will ensure that the IPN project can meet its objectives, while providing a means of documenting Inuvialuit perspectives on the lands and waterways of the ISR through future project cycles, as shown in the Project Cycle Diagram on page 39.

↑ Photos courtesy of Elizabeth Kolb, IRC Communications Division

Inuvialuit Settlement Region Research Projects

Inuvialuit Regional Corporation's Partnered Research Projects

Egress of Contaminated Fluids From Drilling Waste Sumps, Western Arctic Canada

↑ Figure 1

Organization Name
NSERC PermafrostNet and Inuvialuit Lands Administration

Project Lead(s)
Rae Landriau, Chris Burn, Charles Klengenberg and Tim Ensom

Communities Involved
Inuvik, Tuktoyaktuk

Completion Status
Ongoing

Project Objective/Purpose
Warming of permafrost in western Arctic Canada, due to climate change, is threatening the stability and longevity of ground infrastructure like sumps. Sumps were developed by petroleum exploration projects between 1960 and 2009 as a means of permanent disposal for drilling fluid and other waste. The main objective of this research is to investigate the stability of sumps in the Mackenzie Delta and adjacent uplands by comparing current data with past records. One of the additional aims is to support local capacity development for sump monitoring that can inform sump risk assessment and remedial action.

Figure 1. Tim Ensom (NTGS) carrying the EM-31 to survey around one of the sump cap ponds on Taglu C-42 near Harry Channel of Mackenzie Delta approximately 140 m from the riverbank.

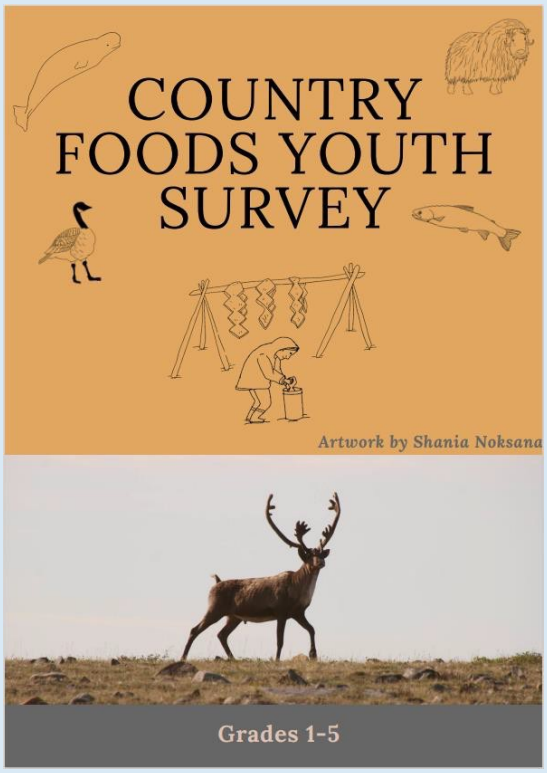
➔ Project description on 44

Project Description

In petroleum exploration, two main types of drilling fluids used are non-aqueous (oil based), and brine-based (saline). In saline drilling fluids, KCl (potassium chloride) is the primary additive, which lowers the freezing point of the fluids, enabling drilling into permafrost. These saline fluids can be traced, as they are very conductive, whereas permafrost is resistive. Ground conductivity mapping, done with a Geonics EM-31 survey system, can show the distribution of highly conductive soil. The EM-31 penetrates the ground to a depth of 5 m into the permafrost below the active layer. This allows us to trace where the fluids are in the ground to determine if the fluids are migrating from their original disposal site. In addition to EM-31 surveys, we have collected soil and water samples to determine the concentration of potassium, chloride, and sodium in the samples. KCl is present in high concentrations in the drilling fluids, whereas the environment has very low concentrations naturally. When soil samples report high concentrations of potassium, we can discern that drilling fluids are present within the sample. Using this combination of methods, we can show the present distribution of waste materials. These data can be compared with previous surveys of similar nature to determine changes in the distribution of waste materials over time and the overall containment performance of sumps. This helps to identify sumps that are at risk of failure or are currently failing, for discussion with Inuvialuit and other land management authorities, regulators, working groups, and industry.

https://www.permafrostnet.ca/

Country Foods in Community Programming (CFCP): Supporting Schools, Daycares and Cooking Circles in Tuktoyaktuk and Paulatuk, NWT



↑ Grades 1-5 Youth Survey

Organization Name
University of Waterloo and Inuvialuit Regional Corporation

Project Lead(s)
Kelly Skinner, Sonja Ostertag, Sonia Wesche, Tiff-Annie Kenny, Celina Wolki

Communities Involved
Paulatuk and Tuktoyaktuk

Completion Status
Complete

Project Objective/Purpose
In line with the objectives of the Northern Food Innovation Challenge, and with funding from the Canadian Northern Economic Development Agency (CanNor), the project aimed to:

1. improve connections and collaborative networks to support the harvesting, processing, and preserving of country foods in schools, daycares, and cooking circles;
2. provide opportunities for youth harvesters to increase and improve mentorship opportunities for children in the schools;
3. expand country food celebration activities, such as cookbook projects; and
4. tailor existing and new guidelines related to serving traditional food in schools, daycares, and other settings.

➔ Project description on 46

Project Description

1. Activities conducted

Principal activities conducted in 2022 included:

- supporting community harvests and on-the-land programming;
- documenting infrastructure (space, equipment, and resources) for food cooking, processing, and preserving;
- conducting student surveys on country foods; and
- a review of food security programming in the Canadian North, focused on the inclusion of country foods.

This project supported a community harvest in Paulatuk and coordinated country food donations in Paulatuk and Tuktoyaktuk to support local programming. Youth participated in on-the-land programming through a partnership with Paulatuk Community Corporation, Mangilaluk School (Tuktoyaktuk) and Inuvialuit Regional Corporation (IRC). We provided support for two Project Jewel fish camps in Tuktoyaktuk (in kind) and Paulatuk (financial), respectively, and food processing equipment was purchased.

Infrastructure documentation was completed for school, daycare, youth centre, and community centre spaces for Paulatuk and Tuktoyaktuk. Guidelines for country foods in public institutions were reviewed with the Department of Health and Social Services to support the inclusion of country foods in community programs.

A student picture-based survey on country foods was developed to better understand the country foods students want to eat, what food-related skills they want to learn, and foods and activities to include in the IRC school breakfast/lunch programs, as well as for school programs and cultural calendars. Shania Noksana, a local artist, was hired to create drawings for the surveys.

2. Results and conclusions

The literature review was published in Canadian Geographies in 2023. Of programs included in the review, 16 (35%) provided or supported access to country food, four (9%) provided a mix of country food and market food, and 26 (56%) provided or supported market foods or non- local plants, fruits and vegetables. This review highlighted the importance of policy support for self-determination within food programs and the importance of food programs for food security. Sixty-six students in Tuktoyaktuk and 28 in Paulatuk completed the country foods survey. Surveys were also administered in other communities under the partner project Country Foods for Good Health. Students consistently reported wanting to eat, harvest, and prepare caribou, goose, and Arctic char. 92% of students in Tuktoyaktuk and 82% in Paulatuk reported wanting to eat caribou. Students reported wanting to learn about country foods specifically from their family members and wanting more opportunities to get out on the land.

Project partners and researchers attended and co-presented at the ArcticNet conference and participated in the session "Moving from understanding to action on food security in Inuit Nunangat" in December 2022. Preliminary results and community food programming experiences were shared with food security representatives among Inuit Nunangat.

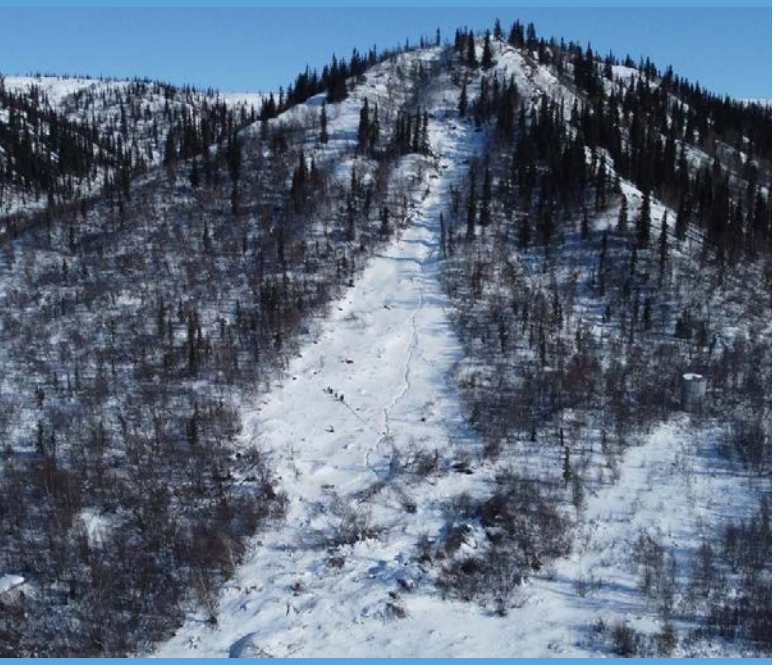
This project identified a complex policy and regulatory system and limited human resources and infrastructure capacity as the most significant barriers to facilitating community food programming.

Through multiple research and community activities, this project showcases the benefits of flexible project funding, investing in human resources, and supporting community-driven programming for food security. Likewise, this project highlights the importance of partnerships and coordination between community organizations/institutions (i.e., Hunters and Trappers Committees and Community Corporations, schools, and food security programs) for providing and serving country food and teaching harvesting and processing skills to children and youth through hands-on learning.

Inuvialuit Settlement Region Research Projects

Inuvialuit
Community-led
Research Projects

Reindeer Station Assessment and Mitigation Work



↑ Reindeer Station, photo credit: Aurora Research Institute. "Monitors completing snow surveys on one of the landslides."

Organization Name
Inuvik Community Corporation (ICC), Aurora Research Institute – Aurora College (ARI), Northwest Territories Geological Survey (NTGS)

Project Lead(s)
Twyla Amos (ICC), Garfield Giff (ARI), Alice Wilson (NTGS)

Communities Involved
Inuvik

Completion Status
Completed

Project Objective/ Purpose
The main goal of the project was to assess the current and possible future effects of climate-driven changes on the operation of Reindeer Station. This project had three distinctive objectives:

1. capacity building- train Inuvialuit beneficiaries in the science of climate change mapping and monitoring;
2. stability monitoring: monitor permafrost and landslides within the vicinity of Reindeer Station to identify or determine any significant changes that may affect operations at Reindeer Station; and
3. drainage management: map and monitor run-off within the vicinity of Reindeer Station and develop mitigation strategies to prevent negative effects of run-off on the site.

Project Description

Reindeer Station is located in the Caribou Hills along the East Channel of the Mackenzie River between Inuvik to the south and Tuktoyaktuk to the north. In September 2017, there were approximately 80 landslide events along a 20 km stretch of the Caribou Hills. An increase in the number and frequency of landslides would not only affect the landscape but also pose an imminent danger to cabins and people at Reindeer Station.

The Inuvik Community Corporation (ICC) sought support from the Aurora Research Institute (ARI) and the Northwest Territories Geological Survey (NTGS) in growing their capacity to assess the effects of climate driven changes on Reindeer Station. Starting in 2021, a team of Inuvialuit monitors were trained on several methods used in the collection of environmental data through in class learning, a hands-on interactive session and on-the-job training and mentoring. Items included training in installation, reading, and recording of ground temperature sensors; collecting water sampling; completing snow surveys; and mapping using remotely piloted aircraft systems (RPAS). At the end of the project, 25 personnel were trained and 13 received their basic RPAS pilot certification.

A ground temperature monitoring network was set up at Reindeer Station to start baseline monitoring of permafrost temperatures. Seven thermistors ranging from a depth of 3-10 m and 21 surface loggers were installed in the vicinity of Reindeer Station. Snow surveys were completed at the sensor sites in spring 2022.

Mapping using RPAS was completed over 2 years to determine if there was any significant movement of the slides surrounding Reindeer Station. Analysis of the 2021-2023 RPAS data as well as data from 2018- 2020 indicated no significant movement in any of the landslides monitored, and that re-vegetation was occurring.

Concerns with run-off and altered drainage patterns caused by landslides were also addressed through mapping. The current drainage pattern was surveyed using RPAS technique. The maps and 3D runoff models produced from the RPAS surveys were analyzed, and the results, along with local knowledge from the monitors and Elders, were used to identify the corrections required to the drainage system. These corrections would minimize the effects of runoffs on the Station and restore the drainage system to its prior status (pre-landslides). Since a series of man-made drainage channels were implemented by the monitors (completed in 2022), there has been no significant run-off flowing through the Reindeer Station compound.

The project was completed in March 2023, and management of Reindeer Station has since transferred out of the jurisdiction of the ICC. Monitors trained from this project have gone on to work with other groups in an environmental monitoring capacity. Continued baseline environmental monitoring of Reindeer Station will continue despite this project being complete.

For Garfield Giff's page on the Aurora Research Institute website, click ***https://nwtresearch.com/our-people/garfield-giff-phd-dip-ed***

For Alice Wilson's page on the NTGS website, click ***https://www.nwtgeoscience.ca/staff/alice-wilson***

↑ Reindeer Station, photo credit: Aurora Research Institute. "Aerial photo of Reindeer Station with landslides on either side."

Climate Change Impacts on Subsistence Fisheries in the ISR: The Ulukhaktok Calendar

↑ Intergenerational knowledge exchange with Allen Pogotak – Ulukhaktok calendar September 2023, Ulukhaktok, photo credits: Patrick Farnole

Organization Name

Fisheries and Oceans Canada (DFO),

Olokhaktomiut Hunters and Trappers Committee (OHTC), Ulukhaktok Community,

Fisheries Joint Management Council (FJMC), Inuvialuit Joint Secretariat (JS), University of Victoria (UVic), Queens University Kingston (QU)

Project Lead(s)

Nadja Steiner (DFO), Patrick Farnole (UVic), Allen Pogotak, Koral Memogana (Ulukhaktok), Mark Stoller, Queens University (QU)

Communities Involved

Ulukhaktok

Completion Status

Ongoing, Multi-year

Project Objective/ Purpose

Purpose: Production of a seasonal calendar from a traditional knowledge perspective for the community of Ulukhaktok. Co-designed between community members and southern scientists, its specifications and structure have evolved over time. The latest version provides a mapping of the most relevant environmental and ecosystem seasonal timings and their interconnections through Elders' stories, quotes, drawings, and local language. The project assesses how these timings and interconnections may change with changing environmental conditions (e.g. sea ice, temperatures) as a component of a multi-year project linking future environmental conditions from computer models with traditional knowledge to better understand climate change impacts on subsistence fisheries.

Project Description

Marine & Socio-cultural

In the ISR, the effects of a warming ocean are experienced by local Inuit in a variety of ways. These effects, which include seasonal shifts and increased year-to-year changes, influence the occurrence and location of subsistence species and the associated harvesting patterns and methods of local hunters. The ability to document and share knowledge of these changes is one of several steps towards adapting to the challenges of changing ocean and sea ice conditions.

Southern scientists have developed complex computer models to understand and project potential future changes in the Arctic environment and the ISR. However, local knowledge is essential to understand how these changes might impact the people and communities in the ISR.

Responding to a request from Ulukhaktok community members and moved by the desire to bring together Inuit Knowledge with Western scientific research methods, we have been working together with the community of Ulukhaktok on a local seasonal calendar. Throughout the project, we documented observations of current seasonal arrivals and harvesting of subsistence species by local hunters and are combining them with the Department of Fisheries and Ocean's climate modelling research to identify environmental changes that might impact timing and methods of subsistence fisheries. Our existing computer model couples ocean, ice, and biogeochemical components and provides simulations of the past and of future changes in environmental variables, including sea ice, temperature, nutrients, and phytoplankton. These can be linked with the observed changes in the local marine ecosystem.

Between May 2022 and March 2023, we conducted three series of interviews with community members, resulting in the identification of the main seasonal markers, elders' stories, and traditional knowledge through anecdotes, advice, quotes from hunters and specific Inuinnaqtun expressions.

Between March and September 2023, we brought together all layers of the calendar in a 36x48 poster and worked with community artists to include drawings showing seasonal changes on ocean and land. In September, we discussed the content and shape of the calendar with the community. The product was reviewed and unanimously approved by selected contributors from the community, the school principal and staff, the Elders Committee, the OHTC, and a community meeting with 40+ people.

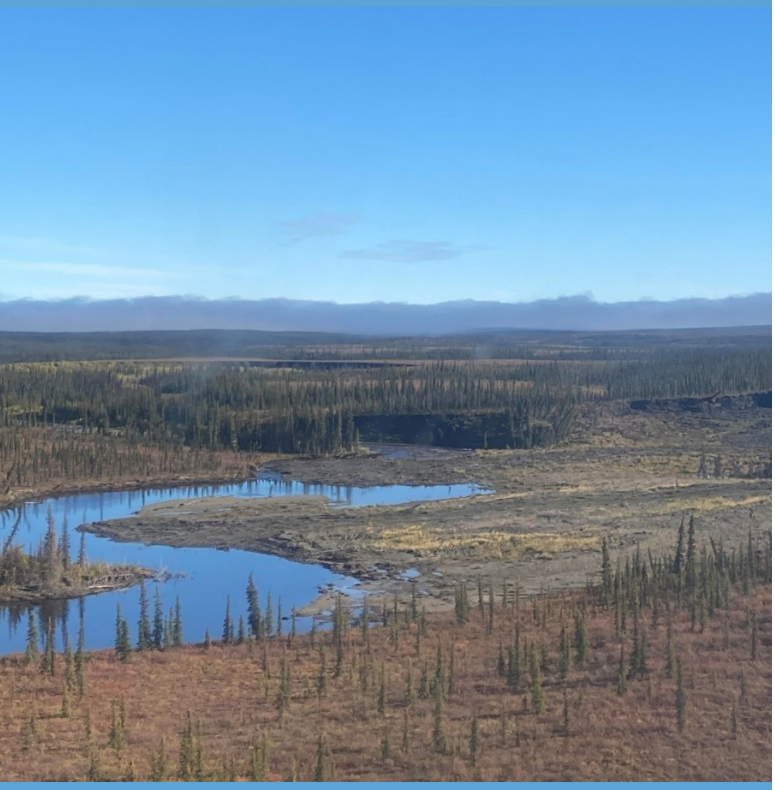
Responding to numerous observations and stories from local elders and hunters reporting significant changes that have impacted land, ocean, and species' timings over the past 70 years, we used simulations from a regional climate model to compare and project sea-ice timings into the future. We then reviewed and discussed these projections in terms of shifting ecosystems, with two selected groups: the Elders Committee and 18 high school students from the Helen Kalvak school.

As we finalize the community deliverables, we are also preparing a scientific publication describing the co-design process to make this project replicable by other communities and scientists, along with a reflection on bringing together climate projections with community seasonal timings.

Inuvialuit Settlement Region Research Projects

Academic Organizations' Research Projects

Characterizing the Sensitivity and Response of Arctic Streams and Rivers to Permafrost Thaw



Organization Name
Queens University and NSERC PermafrostNet

Project Lead(s)
Erika Hille

Communities Involved
Inuvik, Tuktoyaktuk

Completion Status
Ongoing

Project Objective/Purpose
To investigate the combined effects of peatland tributary streams and permafrost thaw slumping on the chemistry of the Miner River

➔ Project description on 54

Project Description

The Miner River is situated within the Imaryuk (Husky Lakes) watershed. The main channel of the river flows parallel to Kugaluk river, ultimately draining into Kugaluk Channel and Imaryuk (Husky Lakes). The contributing landscape is rich in organic deposits and delivers carbon- rich water to the Miner River via peatland streams. In addition to peatland tributary streams, the water quality of the Miner River is also influenced by permafrost thaw slumping. Thaw slumping is a common feature along the northern stretch of the river and contributes to a change in sediment concentrations that is even visible in satellite imagery.

In 2022, the Northwest Territories Geological Survey completed an aerial survey along the main channel of the Miner River. The purpose of the aerial survey was to record the location of thermokarst features, including active thaw slumps. In 2022 and 2023, water samples were collected before and after each active thaw slump that was fully connected to the main channel of the Miner River. Samples were sent to Taiga Environmental Laboratory (Yellowknife, NT) and the University of Alberta (Edmonton, AB) to be analyzed for species of carbon, nitrogen, and phosphorus, as well as mineral ions, trace metals, and contaminants (i.e., total and methyl mercury).

Our preliminary results indicate that thaw slumping is a source of total suspended solids to the Miner River and that this sediment is rich in particulate nitrogen, phosphorus, and trace metals. This increase in sediment concentration appears to be temporary. As the Miner River is very slow and meandering, it likely does not have the capacity to carry the sediment all of the way to Imaryuk. To verify this, we will be using river discharge measurements to calculate sediment fluxes at various points along the river.

Recent research suggests that mineral sediment from thaw slumping can influence dissolved organic carbon (DOC) concentrations in streams and rivers. In line with this, our data suggests that dissolved organic carbon concentration decreases after most thaw slump features, a phenomenon that is likely associated with the adsorption of DOC to mineral sediment. This effect, however, was small and there was an overall increase in DOC concentrations along the Miner River. Understanding the behavior of dissolved organic carbon in Arctic rivers is important because it influences the behavior of dissolved metals and contaminants (i.e., mercury). In the next phase of the project, we will examine the total DOC and methyl mercury data.

This project is a part of a larger project addressing key gaps in our understanding of how landscape factors influence the hydrology and water quality of streams and rivers in response to permafrost thaw. In addition to Miner River, we are studying a suite of peatland streams (Inuvik-to-Tuktoyaktuk Highway), Rengleng River (Dempster Highway), and the Niaqunguk River (Baffin Island).

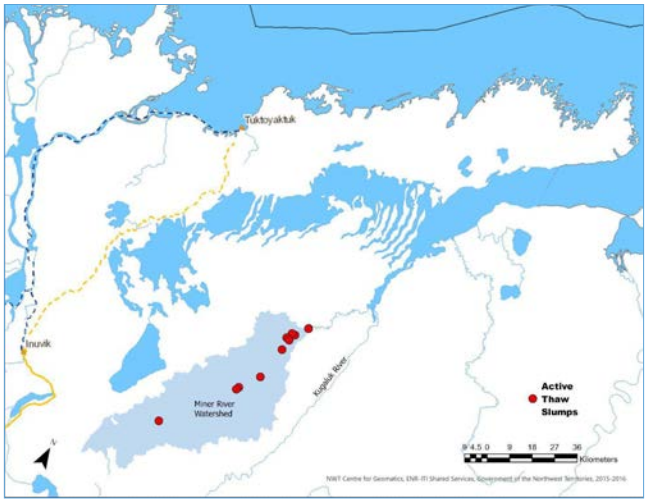


Figure 1: The Miner River watershed. The watershed was only delineated up to the last sampling location. The watershed was delineated by Erika Hille using the High Resolution Digital Elevation Model (HDEM) product provided by Natural Resources Canada. The locations of active thaw slumps were determined in collaboration with the Northwest Territories Geological Survey. The base layer was provided by the NWT Centre for Geomatics.

Permafrost and Infrastructure Monitoring Along the Dempster-ITH Corridor

Organization Name
Aurora Research Institute – Aurora College (ARI), Carleton University (CU), Northwest Territories Geological Survey (NTGS)

Project Lead(s)
Jennifer Humphries (ARI), Emma Stockton (CU), Alice Wilson (NTGS), Steve Kokelj (NTGS)

Communities Involved
Inuvik, Tuktoyaktuk, Fort McPherson, Tsiigehtchic

Completion Status
Ongoing. Multi-year.

Project Objective/Purpose
The researchers' measured ground temperatures within the road embankment, to better understand (1) how the ground temperatures vary from the Yukon–Northwest Territories border on the Dempster Highway (DH) up to the north end of the Inuvik-Tuktoyaktuk Highway (ITH), and (2) what is happening to the highways as a result of climate change.

→ Project description on 56

Project Description

Category/area of research: Physical Sciences, Permafrost, Infrastructure

Principle activities conducted:
The researchers have 200 ground temperature instruments along the Dempster and ITH with about:

- 50 deep ground temperature legacy sites installed during the planning and construction (2013-17) of the ITH by the GNWT department of Infrastructure; and
- 150 sites measuring the ground surface temperature along the Dempster and ITH, installed in partnership with Carleton University (Emma Stockton) in 2020. Sensors were placed in shallow holes drilled into the road and just off the road.

The instruments were visited in 2022, and data was downloaded onto laptops and brought back to Inuvik for analysis.

Results and conclusions obtained:
The ground surface temperatures are being analyzed as part of Emma Stockton's PhD thesis, which is ongoing, but some of the results are available in a paper (Stockton, et al., in press, 2023). Preliminary results show us that on average the temperature of the road surface is a few degrees warmer than the annual air temperature. For example, air temperature was about –7 °C in Inuvik in 2020-21, and the road surface temperature near Inuvik was about –5 °C. Interestingly, the researchers also found that the difference between the road and air temperature depends on the season: in the winter, the road surface was about the same temperature as the air, but in the summer, the road is about 2.5°C warmer than the air. Along the DH-ITH corridor the road was warmest near Fort McPherson (–4 °C) and gets cooler towards Tuktoyaktuk (–7 °C near Husky Lakes).

The deeper cables along the ITH were analyzed for another conference paper (Humphries et al., in press, 2023). Temperatures in the road were warmer towards the shoulders and cooler in the center. At about 1 m deep, the annual ground temperature of the ITH embankment was about –6 °C. It was also found that the top of permafrost had degraded beneath the road at sites where the embankment was less than 1.5 m high. See photo for some of the issues that have been observed along the ITH that are related to permafrost and ground ice.

URL for Jen's page on the Aurora Research Institute website:

https://nwtresearch.com/our-people/jennifer-humphries-bsc-msc

URL for Steve's page on the NTGS website with contact info:

https://www.nwtgeoscience.ca/staff/steve-kokelj

Publications

Rudy, A.C.A., Kokelj, S.V., and Ensom, T. 2020a. Permafrost Geotechnical Report: Inuvik to Tuktoyaktuk Highway Embankment Boreholes, Northwest Territories Geological Survey, NWT Open Report 2019-011, 7 pp. + geotechnical data + appx.

Rudy, A.C.A., Kokelj, S.V., and Ensom, T., 2020b. Permafrost Ground Temperature Report: Inuvik to Tuktoyaktuk Highway Embankment Sites, Northwest Territories Geological Survey, NWT Open Report 2019-016, 8 pp. + ground temperature data + appx.

↑ Disturbances along the ITH. (a) "A depression caused by ice wedge thaw and surface subsidence at km 100." Photo credit: GNWT – Jurjen Van der Sluijs, August 2022. (b) "An aerial view of ice-wedge degradation beneath the highway embankment at km 46, with the thin arrows indicating degraded troughs and thick arrows indicating degraded troughs with ponds at the embankment edge." Photo credit: Aurora College – Celtie Ferguson, September 2023. (c) "Ponding, embankment sloughing, degrading ice wedges, and a heaved mat of organic materials from a large icing and frost blister that developed in the winter 2020/21 at km 106." Photo credit: Aurora College – Celtie Ferguson, June 2021. (d) "Erosion of the road embankment and degraded ice wedges beside the road at km 84." Photo credit: GNWT – Jurjen Van der Sluijs, August 2022.

Nunataryuk – Permafrost Thaw and the Changing Arctic Coast, Science for Socioeconomic Adaptation (Social Science Components)

Organization Name
University of Vienna (Austria), George Mason University (USA)

Project Lead(s)
Susanna Gartler, Susan Crate

Communities Involved
Aklavik, Inuvik, Tuktoyaktuk, Fort McPherson

Completion Status
Ongoing

Project Objective/Purpose
The project purpose is to identify the perceived changes associated with increased permafrost thaw and resulting risks for Arctic coastal communities.

Project Description

The research team aimed to identify the perception of change and risks associated with permafrost thaw in Arctic (near-coastal) communities through in-depth ethnographic interviews with Indigenous land users and knowledge holders, as well as through participant observation and the multi-day workshop called "Permafrost Days 2023". A community-based, participatory approach focusing on local needs and capacity-building forms the backbone of this research project. The following is a compilation of links to research results and more information on the project.

Publications

Larsen et al. (2021) Thawing Permafrost in Arctic Coastal Communities: A Framework for Studying Risks from Climate Change

Ramage et al. (2022) 'No longer solid': perceived impacts of permafrost thaw in three Arctic communities. Check out also the corresponding Story-map!

Timlin et al. (2022) "Self-Rated Health, Life Balance and Feeling of Empowerment When Facing Impacts of Permafrost Thaw—A Case Study from Northern Canada"

Reports:
Larsen et al. (2023). Risk model, with identified key risks
Two more reports will come out in November 2023 on indicators of permafrost thaw impacts and on adaptation and mitigation strategies.

An important product of the overall Nunataryuk project is the Atlas of Permafrost which is currently in the final editorial review. It will be officially launched at the Arctic Circle Assembly in Reykjavik, Iceland in October 2023. The atlas will become available online in October 2023 and in print format in the fall 2023. Check out https://nunataryuk.org/news/atlas for more news and a link to the final document as the date approaches!

Media reports:
"Sinking In" ***https://www.cbc.ca/newsinteractives/features/sinking-in*** (CBC 2023)
How does permafrost thaw's impact compare in Siberia and the NWT? ***https://cabinradio.ca/108038/news/beaufort- delta/how-does-permafrost-thaws-impact-compare-in- siberia-and-the-nwt/ (Cabin Radio 2023)***

↑ Photo of Susie Crate, Samuel McLeod, and Susanna Gartler, conducting interviews in Aklavik in October 2022.

Towards Inuvialuit Heritage Data Sovereignty: Current Practices and Paths Forward

Organization Name
Western University

Project Lead(s)
Emily Henry, Lisa Hodgetts (Supervisor)

Communities Involved
Inuvik; Tuktoyaktuk; Yellowknife, NWT

Completion Status
Ongoing Year 2/2

Project Objective/Purpose
This research is a critical review of cultural heritage management frameworks in place in the Inuvialuit context, specifically at Prince of Wales Northern Heritage Centre (PWNHC) and the Inuvialuit Cultural Resource Centre (ICRC).

My research asks the following:

1. What data governance frameworks are currently in place in the Inuvialuit context? How do they support and/or undermine Inuvialuit data sovereignty?
2. What are Inuvialuit's aims and concerns regarding heritage data sovereignty?
3. What changes are needed to better support Inuvialuit data sovereignty?
4. What are the barriers to implementing changes to support Inuvialuit data sovereignty?

Project Description

Phase 3 of the Inuvialuit Living History project ***(https://www.facebook.com/InuvialuitLivingHistory https://www.inuvialuitlivinghistory.ca/)*** aims to build Inuvialuit capacity in digital heritage, and to develop a model for Indigenous heritage data governance that other Indigenous communities can draw on. As part of Phase 3, over the Summer of 2023, I (Emily Henry) travelled to Yellowknife, NWT and spent two weeks working out of the PWNHC. I interviewed staff (Archivists, Collections Management, Archaeologists) and took tours of the exhibits and collections spaces. I then travelled to Inuvik, where I stayed for 4 weeks. I spent time at the ICRC and had informal conversations and semi-structured interviews with the staff, visitors, and community members. I toured the spaces and looked at the items held in their collections. I also interviewed staff at the IRC about overall data management goals and plans. Through these interviews, I learned how cultural heritage data held at the PWNHC are organized, accessed, controlled, and legally owned. I also gained insight into some of the goals and concerns of the Inuvialuit regarding their cultural heritage data as it is held by southern institutions (such as museums and archives), made available online in digital databases, and curated in the ISR. I also interviewed other academic researchers involved with digital heritage projects in the ISR to survey how they navigate issues of data sovereignty and reviewed and analyzed NWT legislation, and PWNHC and IRC policies to observe how they may support and/or undermine Inuvialuit sovereignty over their cultural belongings. Research is ongoing and results are pending.

Facebook: ***https://www.facebook.com/InuvialuitLivingHistory Website: https://www.inuvialuitlivinghistory.ca/***

↑ Photograph taken in June at the Prince of Wales Northern Heritage Centre, Yellowknife, NWT.

Brucellosis in the Arctic: A Component of Community-Based Muskox and Caribou Health Monitoring

↑ Brucella lesion: Caribou with a swollen joint.

Organization Name
Kutz Research Group, Faculty of Veterinary Medicine, University of Calgary

Project Lead(s)
Susan Kutz, DVM PhD, Principal Investigator

Communities Involved
Ulukhaktok, NWT; Kugluktuk, NU; Ekaluktutiak, NU

Completion Status
Ongoing

Project Objective/Purpose
Brucellosis is a disease found in caribou and muskoxen that is caused by the bacterium Brucella suis biovar 4. People may also get infected with Brucella by butchering infected animals or eating uncooked infected meat. In this project, we are testing samples collected by harvesters as part of community-based monitoring programs in the Arctic. Specifically, we are testing filter paper blood samples and abnormal tissues to determine how common Brucella is in muskoxen and in Dolphin and Union caribou.

Project Description

In muskoxen, to date we have tested 427 filter paper blood samples collected between 2011-2022. Overall, approximately 8% of muskoxen have tested positive for Brucella antibodies. The results show that Brucella seropositivity (exposure) is increasing in muskoxen on Victoria Island. In recent years, near Ulukhaktok, we have found that one of every three adult muskoxen harvested is seropositive. As well, we have detected exposure in mainland muskoxen on Kent Peninsula.

In the Dolphin and Union caribou herd, we have tested 298 filter paper blood samples that were collected between 2015 and 2022. Approximately 15% of these caribou tested positive for Brucella exposure.

Infected animals may have swollen joints and may limp. Other signs of brucellosis are swollen, bigger-than-usual testicles and udders. In muskoxen, we often see abscesses that will appear as yellow-white lumps in tissues or organs (see photo). Signs of brucellosis in muskoxen may differ from those seen in caribou.

In people, signs of brucellosis are not specific. Typically, it feels like a flu, but stronger, with fever, muscle and joint pain, tiredness, or swollen glands. Sometimes infected people have a skin rash. Signs of illness start between 1 week and 2 months after handling or eating infected meat. Contact your health centre if you think you may have signs of brucellosis. Brucellosis can be treated with medications.

For more info on brucellosis and other disease concerns in wildlife, visit ***https://www.gov.nt.ca/ecc/en/content/field-guide-wildlife-diseases-and- parasites-nwt***. If you see an abnormality, report the observation to your local wildlife officer.

Early Warning Detection of Slope Failure to Enable Hazard Forecasting

Organization Name
NSERC PermafrostNet

Project Lead(s)
Andrew Clark and Brian Moorman

Communities Involved
The community of Tuktoyaktuk, the Tuktoyaktuk Community Corporation, the Hunters and Trappers Committees of Inuvik and Tuktoyaktuk, and the Inuvialuit Game Council.

Completion Status
Ongoing

Project Objective/Purpose
Arctic coasts are rapidly eroding in some areas and require widespread monitoring. Traditional means of doing this are labour intensive, subjective, and application and data dependent. Andrew's project is focused on remote sensing of Arctic coasts in the Western CanadianArctic.

Project Description
Andrew's research introduces techniques for automating coastal feature analysis and monitoring. This work will be used to better understand the role of Arctic coastal erosion on the climate system and in carbon cycling. Andrew's research investigates the volumetric change along Arctic coasts by leveraging the availability of 3D data from ArcticDEM and UAV- SfM datasets. From this research, we are now able to classify large areas of the Arctic coast, create coastal boundary lines, and monitor erosion. This research can be used to provide early detection of slope instability and measure and quantify the changes in the Arctic coast resulting from climate change in a more systematic and efficient way. His research has been supported by the Inuvialuit Game Council, the community of Tuktoyaktuk, the Tuktoyaktuk Community Corporation, and the Hunters and Trappers Committees of Inuvik and Tuktoyaktuk.

https://www.permafrostnet.ca/

Exploring Traditional Knowledge of Permafrost in the Inuvialuit Settlement Region and Gwich'in Settlement Area

↑ Interviews in Paulatuk for NSERC PermafrostNet

Organization Name
NSERC PermafrostNet

Project Lead(s)
Emma Street and Trevor Lantz

Communities Involved
Paulatuk, Sachs Harbour, Tuktoyaktuk, Ulukhaktok, Inuvik, Aklavik, Fort McPherson, Tsiigehtchic

Completion Status
Ongoing

Project Objective/Purpose
In collaboration with the Inuvialuit Game Council, Gwich'in Renewable Resource Board, local Hunters and Trappers Committees, Renewable Resource Councils, and community members, Emma's research focuses on Traditional Knowledge related to permafrost, the historical range of variation in permafrost conditions, and observations of anomalous permafrost conditions in Inuvialuit and Gwich'in communities. Emma hopes to better understand the implications of thawing permafrost in this region and contribute to programs that are responsive to local needs.

➔ Project description on 66

Measuring Surface Displacement Using Winter SAR

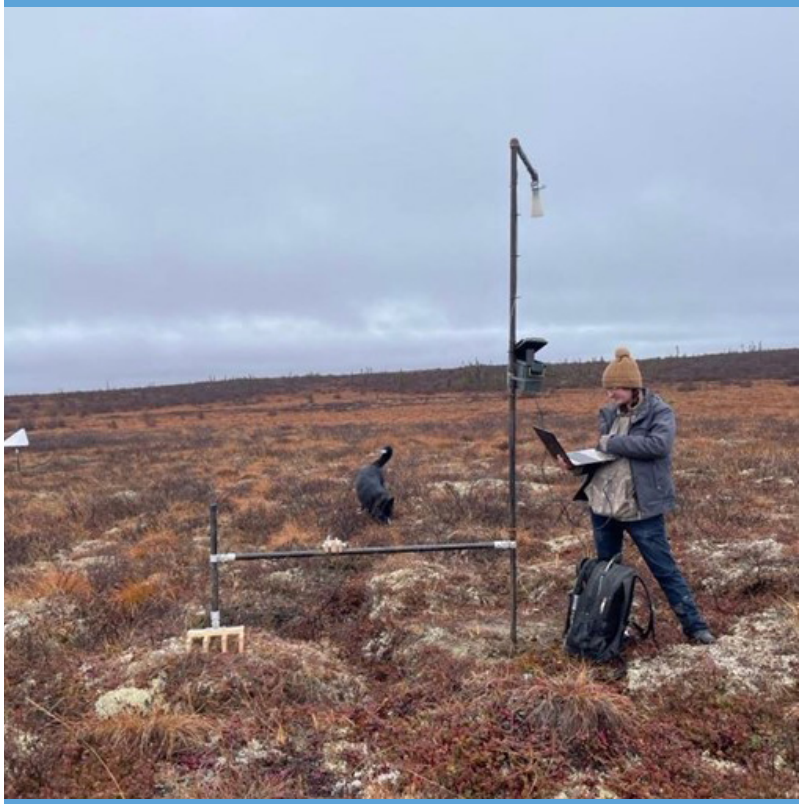
Project Description

As climate change affects the Arctic, permafrost landscapes are undergoing changes that impact local livelihoods, ecosystems, and infrastructure. This project seeks to better understand the implications of these changes in Inuvialuit and Gwich'in communities. Specifically, the goals of this project are to (1) document Traditional Knowledge pertaining to permafrost;(2) map evidence of permafrost change through interviews with land users; and ultimately, (3) work with Hunters and Trappers Committees and Renewable Resource Councils to co-develop projects that are responsive to local needs and will inform decision- making.

Over the last year and a half, 110 interviews have been conducted with community members in Paulatuk, Sachs Harbour, Tuktoyaktuk, Ulukhaktok, Inuvik, Aklavik, Fort McPherson, and Tsiigehtchic. Some of the emerging themes from these interviews include concerns for transportation and travel, food storage within permafrost, community infrastructure, and access to hunting, fishing, and trapping.

Findings from these interviews will support community-driven projects, including workshops, training, and monitoring programs that can contribute to development and thaw mitigation strategies. This knowledge and these development strategies will also inform policy and decision- making in other communities facing permafrost change across the circumpolar Arctic.

https://www.permafrostnet.ca/



Organization Name
NSERC PermafrostNet

Project Lead(s)
Allison Plourde and Bernhard Rabus

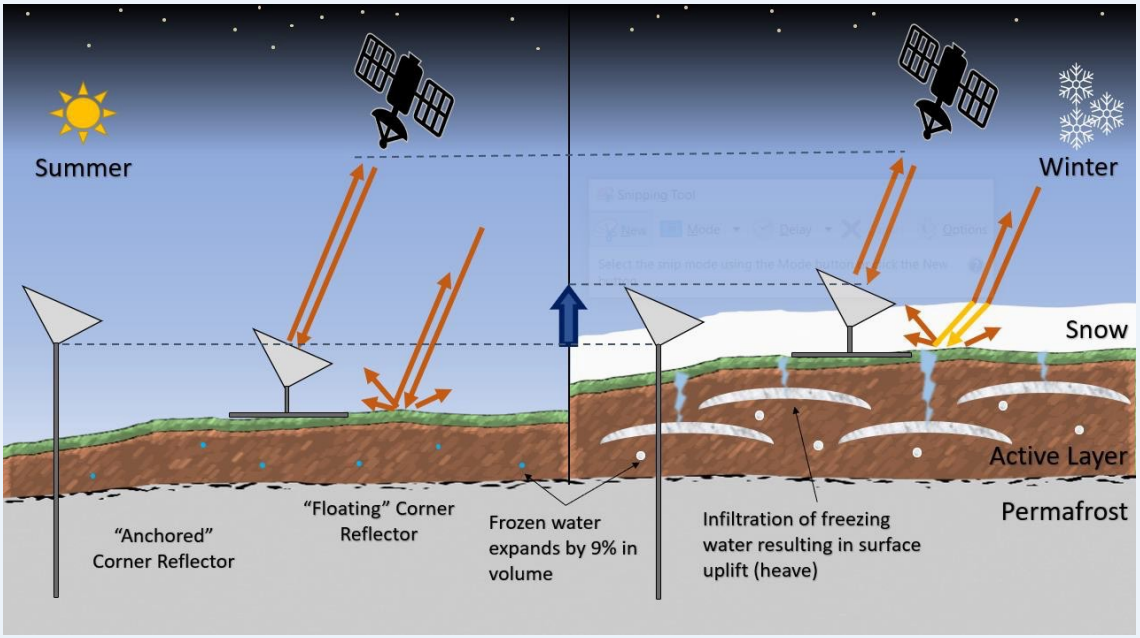
Communities Involved
Research stations are between kilometers 20 and 40 of the Inuvik- Tuktoyaktuk Highway (ITH).

Completion Status
Ongoing

Project Objective/Purpose
The objectives of this project are to investigate permafrost active layer dynamics using InSAR methods, with a focus on identifying seasonal trends and challenges related to snow cover, as well as potential opportunities for long-term modeling related to permafrost degradation. Specifically, this research will address the following key objectives: (1) demonstrate how the phase component due to snow can be subtracted from InSAR measurements to isolate displacement; (2) examine the spatial variability of both snow distribution and surface displacement; and (3) show how the results can be used to monitor long-term trends in permafrost environments.

Project Description
This is part of an NSERC PermafrostNet project using InSAR to measure surface displacement of the permafrost active layer near the Inuvik- Tuktoyaktuk Highway, NT. Previous methods to measure long-term surface displacement have only made use of images taken during the summer months. This project will apply new methods to remove the snow layer to detect centimeter-scale displacements of the ground surface.

https://www.permafrostnet.ca/



The Effects of Wildfires on Permafrost Thaw and Soil Nutrients in an Arctic Tundra Ecosystem

Organization Name
NSERC PermafrostNet

Project Lead(s)
Léa Cornette (master's student) supervised by Oliver Sonnentag Ph.D. and Christian Von Sperber Ph.D.

Communities Involved
Inuvik

Completion Status
Ongoing

Project Objective/Purpose
The goal of this project it to shed light on how permafrost thaw accelerated by wildfires affects soil nutrient dynamics along an Arctic tundra fire chronosequence (1968, 2012, 2023) in the Inuvialuit Settlement Region. To meet this goal, the objectives are to (1) understand the dynamics and evolution of soil nutrients, such as phosphorus and nitrogen, as a function of permafrost thaw; (2) assess the availability of these nutrients throughout the short Arctic growing season and thus the deepening of the seasonally-thawed active layer (June to September); and (3) determine the extent to which those nutrients might be limiting factors in the microbial decomposition of soil organic matter and primary productivity.

Project Description

At each study site (i.e., one unburned site near the Trail Valley Creek Research Station and major tundra fire scars from 1968, 2012 and 2023 near Inuvik, NT), I will collect soil samples from three different mineral upland tundra cover types (i.e., bare soil/lichen, tussocks, and shrubs) comprising six replicates per cover types and two depths per replicate. Soil samples will be collected during three field campaigns in June (early summer), July (mid-summer) and August (late summer), resulting in 432 soil samples (i.e., 4 sites x 3 cover types x 6 replicates x 2 depths x 3 field campaigns = 432). A final field campaign may be carried out in September when the frost table is assumed to have reached its deepest position (i.e., active layer depth). Auxiliary measurements accompanying each soil sample will include soil temperature and moisture, frost table position, and vegetation characteristics (e.g., percent cover).

The size and bioavailability of different soil nitrogen and phosphorus pools will be determined in the laboratory at McGill University by combining Hedley sequential fractionation with the analysis of the oxygen isotope composition of nitrogen and phosphates. Furthermore, I will conduct fertilization experiments to assess whether the supply of nitrogen and phosphorus limits microbial decomposition of soil organic matter and primary productivity. Collectively, these experiments and analyses will provide an overall understanding of how permafrost thaw accelerated by wildfires affects nutrient cycling in Arctic tundra ecosystems.

https://www.permafrostnet.ca/

Impacts of Environmental Stressors on Arctic Freshwater Ecology and Aquatic Ecosystems in the Northwest Territories

↑ Two researchers sampling water chemistry on a small thermokarst lake near the Inuvik-Tuktoyaktuk Highway, close to Inuvik. Photo credited to Annabe U. Marquardt.

Organization Name
Dalhousie University

Project Lead(s)
Dr. Andrew S. Medeiros and Annabe U. Marquardt

Communities Involved
Inuvik, Tuktoyaktuk

Completion Status
Ongoing

Project Objective/Purpose
We use an exploratory paleolimnological approach to understand climatic developments and their impacts on aquatic freshwater ecosystems in the Inuvialuit Settlement Region (ISR). Our main objective is to examine changes in freshwater ecology and chemistry by looking at a) the relative abundance of Chironomidae taxa and b) isotopic and nutrient data of 60 small thermokarst lakes over a geospatial gradient between Inuvik and Tuktoyaktuk.

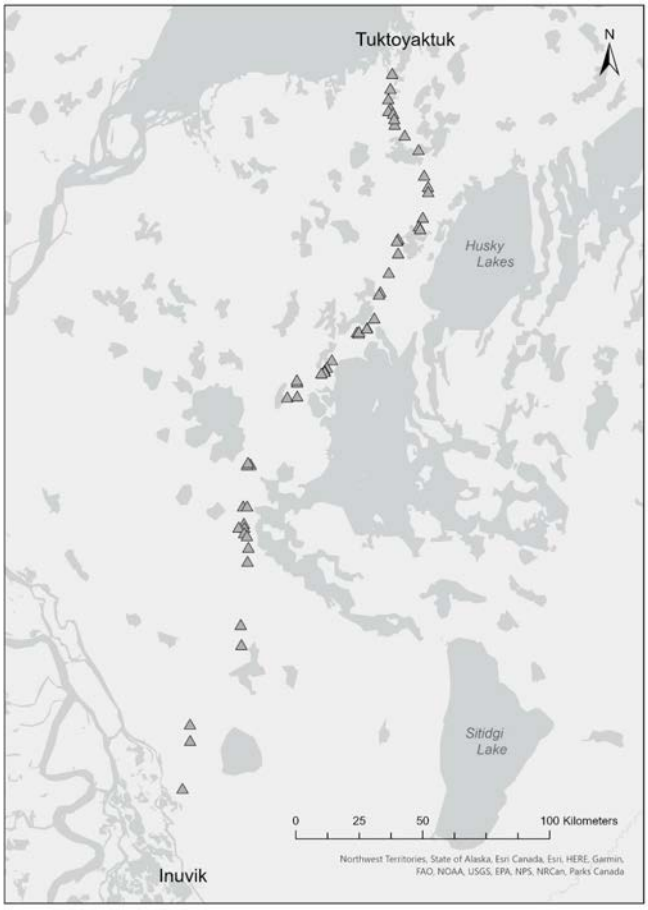
Project Description

Aquatic freshwater systems, such as lakes and ponds, are a promising medium for reconstructing variability in the local climate and terrain. Lake sediments act as an archive of regional temperature shifts, extreme weather events, and soil erosion. We can use biological and geochemical indicators that we find in these freshwater systems and sediment to enhance our understanding of such shifts and events and to gain a more detailed understanding of the local climate and how it is changing.

Chironomids (non-biting midges) are among the most common family of insects in the Arctic and are popular biological indicators due to their sensitivities to fluctuations in limnological (aquatic) parameters such as temperature, oxygen, nutrients, and water depth. Their remains are preserved in the lake sediments, and we can use them to make inferences upon these limnological parameters at the point in time at which these insects lived in the aquatic system. Isotopes of oxygen are useful indicators of evaporative stress and changes in water level. Together, these indicators can provide insight into how freshwater systems change with time. Small thermokarst lakes are particularly vulnerable and sensitive to environmental change and are therefore an important source of information on climate change. As such, more research exploring changes in small aquatic systems is needed to contribute to a more enriched understanding of climate change in Arctic freshwater environments.

Between two field seasons in June-July 2022 and July 2023, four researchers from Dalhousie University and two collaborating researchers from Northwestern University collected surficial sediment and water samples from 60 thermokarst lakes in the geospatial area between Inuvik and Tuktoyaktuk. All 60 lakes were within walking distance from the Inuvik-Tuktoyaktuk Highway and accessed with a six-foot Zodiac. For sampling the sediment, we used different coring devices, including a Uwitec Gravity Corer and Ekman Grab. The samples are currently being analyzed in the laboratory at Dalhousie University in Halifax, Nova Scotia.

As we move forward in our analysis, we hope to provide an enhanced understanding of how aquatic freshwater systems are changing in the ISR.



↑ Sixty sampling sites between Inuvik and Tuktoyaktuk, within walking distance from the Inuvik-Tuktoyaktuk Highway.

NSERC CREATE LEAP: Training Tomorrow's LEAders in Permafrost Thaw and Northern Research

↑ Two researchers sampling water chemistry on a small thermokarst lake near the Inuvik-Tuktoyaktuk Highway, close to Inuvik. Photo credited to Annabe U. Marquardt.

Organization Name

Carleton University, Host Organization
Other participating research institutions:

- University of Alberta
- University of Calgary
- McGill University
- University of Victoria
- Wilfrid Laurier University
- Université de Montréal

Other collaborating organizations:

- BGC Engineering Inc.
- Palmer Environmental Consulting Group
- Northwest Territories Geological Survey
- Yukon Geological Survey
- BC Ministry of Forests, Lands and Natural Resource Operations
- University of British Columbia
- St. Francis Xavier University

Partner organizations involved:

- Inuvialuit Land Administration
- Northwest Territories Association of Communities
- Government of the Northwest Territories
- Environment and Climate Change Canada
- Polar Knowledge Canada

Project Lead(s)

Dr. Stephan Gruber, Principal Investigator

Communities Involved

Inuvik, Tuktoyaktuk

Completion Status

Ongoing (Multi-year, Year 1 of 6): NSERC CREATE LEAP began in September 2023 and will continue until August 2029.

Project Objective/Purpose

LEAP is a training program that aims to equip students and professionals with the fundamental knowledge, professional skills, and northern experience required for permafrost thaw related careers in the North. This program hopes to contribute to a more climate-resilient Canada by meeting northern needs collaboratively with Northern communities seeking to understand and adapt to permafrost thaw challenges. By connecting people with diverse experience in this interdisciplinary topic, this program will foster personal relationships among participants, while learning from each other about how we think about permafrost in the North.

Project Description

Funded through the Natural Sciences and Engineering Research Council of Canada's (NSERC) Collaborative Research and Training Experience Program (CREATE), as well as through participating organizations, the NSERC CREATE LEAP program trains experts with the ability to work and engage in permafrost research in a northern context.

Recently kicked off in September 2023, LEAP has already welcomed its first cohort of students, professionals, and northern experts to the program. These trainees will be supported by scientists from collaborating research institutions and organizations, as well as the northern partners helping to shape the direction of the program, including the Inuvialuit Land Administration, the Government of the Northwest Territories, Environment and Climate Change Canada, and Polar Knowledge Canada. LEAP's program activities are offered throughout two formal training opportunities: (1) an Online Training Course, and (2) an in-person Northern Field School.

LEAP's Online Training Course offers weekly seminars about permafrost science topics ranging from thermal modelling, mapping, and geologic history to field safety, working together collaboratively, and knowledge co-creation. Sessions include an interactive activity and opportunity for discussion to hear from all participants' perspectives. Each week will feature a different expert who will share their ideas and experience in permafrost research. The Online Training Course will be offered yearly from September to March.

Supported by its partners, LEAP also is underway in their planning of a Northern Field School, which will occur for the first time in the summer of 2024. This experience will last for approximately two weeks and aims to tangibly contribute to northern needs related to permafrost thaw adaptation. Following a Northern Community Resilience concept, this training will include the development of group projects and knowledge products to solve practical permafrost thaw challenges in line with communities' goals. Specifically, the first Northern Field School hopes to collaborate with community members in Inuvik and Tuktoyaktuk to develop its first series of programming alongside partners in those regions. Simultaneously, trainees will receive hands-on opportunities to practice their field work skills and present their own research findings to the communities involved.

LEAP has only just begun and strives to be as meaningful as possible for northern communities and for its trainees. For more information about the NSERC CREATE LEAP program, please visit our website at

www.permafrost-leap.ca.

CREATE LEAP
NSERC | CRSNG

The Effects of Disturbance on Green Alder and Dwarf Birch Health and Productivity in the Low Arctic Tundra

↑ Claire O'Brien measuring photosynthesis of the leaves on an alder shrub. Photo credited to Todd Gruben.

Organization Name
Wilfrid Laurier University

Project Lead(s)
Dr. Jennifer Baltzer, Dr. Cory Wallace, Claire O'Brien

Communities Involved
Inuvik

Completion Status
Ongoing

Project Objective/Purpose
The purpose of this project is to find out how naturally occurring disturbances like landslides affect alder and birch shrubs. Overall, these shrubs have been thriving and expanding in the tundra because of the effects of climate change. I want to determine if disturbances are making shrubs healthier and more productive. This knowledge is important because shrubs can alter the plant species near them, influence the carbon cycle, and change the properties of water runoff that eventually enters streams.

Project Description

This project is led by student researcher Claire O'Brien from Wilfrid Laurier University in Ontario and supervised by Dr. Jennifer Baltzer and Dr. Cory Wallace. It is a 2-year research project that is now halfway done. The project looks at small to medium-sized bushy plants, or shrubs, and their productivity within disturbances to permanently frozen soil, or permafrost. Two different permafrost disturbances were studied: thaw slumps (landslides caused by thaw) and polygonal terrain (patterned ground caused by underground ice wedges freezing and thawing). The location for the research was between 20 – 70 km north of Inuvik along the Inuvik-Tuktoyaktuk Highway (ITH). Some sites were located near the Trail Valley Creek research station, 50km north of Inuvik. A wildlife monitor from Inuvik Hunters and Trappers Committee (HTC) was hired as a member of the team. The research team parked along the ITH and hiked out to disturbances within 1km of the highway. We measured shrub productivity by recording characteristics of shrubs, such as leaf area and plant height. Each disturbance site was visited twice: once in the summer and once in the fall.

In the summer, we collected leaf and wood samples so we could understand how these characteristics were related to the health and productivity of the alder and birch. We will compare our samples to see if the plants' health and productivity differed between disturbed and undisturbed tundra.

In the fall, we collected some leaves and soil from the same alder and birch plants to see how fast the leaves break down or decompose with help from the microbes in the soil. We transported the soil and leaves to Ontario where we can measure the leaf decomposition in a laboratory experiment.

My hypothesis is that shrubs within the disturbances will be healthier and more productive compared to those on the undisturbed tundra. I also think that leaf decomposition will be faster within disturbances. If my hypothesis is correct, then it will contribute evidence that permafrost disturbances lead to increased shrub productivity. The lab experiment and analysis of the collected samples and data are ongoing, so there are no results to report for this project yet.

↑ Emma Sherwood collecting fallen leaves in autumn to use in their decomposition experiment. Photo credited to Claire O'Brien.

Country Foods for Good Health

Organization Name
University of Waterloo

Project Lead(s)
Sonja Ostertag, Brian Laird, Kelly Skinner

Communities Involved
Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, Ulukhaktok

Completion Status
Ongoing- Year 4 of 4

Project Objective/Purpose
This research builds on existing environmental monitoring programs and partnerships with communities in the NWT, the 2016 ISR Beluga Summit, and the 2007-2008 International Polar Year Inuit Health Survey in the ISR and Nunavut. This project is partnered with the Inuvialuit Regional Corporation, Fisheries Joint Management Committee, local Hunter and Trapper Committees (HTCs) and Community Corporations, Fisheries and Oceans Canada (both Inuvik and Winnipeg offices), GNWT Environment and Natural Resources (Inuvik office) and Health and Social Services (Yellowknife).

This collaborative study in the ISR responds to the following questions:

How good is this food to eat? What are the levels of contaminants and nutrients in Inuvialuit country foods and market foods? What country foods are enjoyed by Inuvialuit Elders and Youth?

How do doctors, Elders and harvesters share information about food? What are the best ways to communicate information about food and health?

How healthy is beluga to eat? What are the health benefits of eating beluga maktaaq, drymeat and uqsuk? Are there any risks from eating beluga?

Project Description

Phase One of this project was launched in February 2020, and Phase Two began in April 2022. We prioritized four community tours immediately after Covid- 19 travel restrictions were dropped. We were able to launch research activities in all six ISR communities following these community tours. Community Research Leads were hired in each community and led or co-led sample collection of country foods, interviews with Elders, surveys, and a Youth photo project.

Interviews with Elders and the Youth photovoice project were completed in each community. These projects provided Youth an opportunity to participate in research and connect with Elders. Engagement with local schools included school cooking workshops, school cookbooks, a student survey on country foods and a participatory photo and recipe project, which provided opportunities for youth to participate in the project.

Country food samples were collected through community-based sampling in Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk and Ulukhaktok and in collaboration with federal and territorial departments and HTCs. Samples from the ISR beluga monitoring program (Lisa Loseto and FJMC), Arctic Salmon Project (Karen Dunmall), Tuktoyaktuk Harbour fish project (Ellen Lea, Sarah Lord and THTC), Sachs Harbour ringed seal project (Magali Houde and SHHTC) and Bear monitoring programs (Steven Baryluk) have been shared with the Country Foods for Good Health project. Food samples are analyzed for nutrients, contaminants, and diseases.

The Inuvialuit Food Messages Survey was launched in all six communities to record community perspectives about store-bought and traditional foods. Survey participants shared their experiences with country foods and harvesting, concerns about food quality and safety, and preferred ways to learn about healthy foods. All research results will be co-interpreted with communities and local and regional partners to support the co-development of dietary health messages. Co- interpretation workshops with community organizations and select community members took place in Paulatuk and Tuktoyaktuk in spring 2022 to support the finalization and communication of results from Phase One. Results will

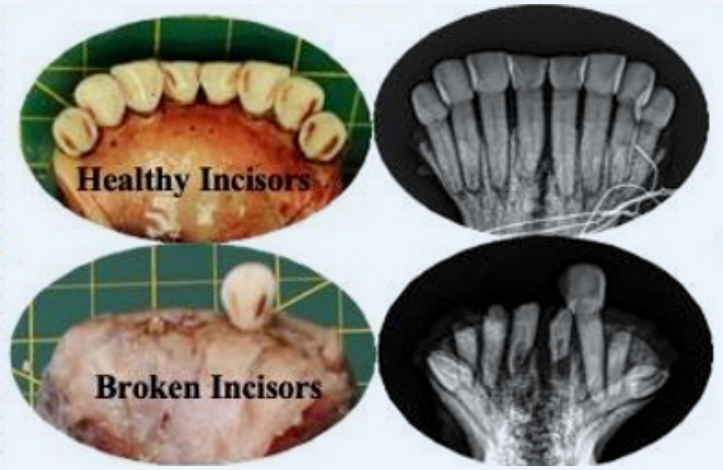
be shared through community presentations, one-pagers and reports.

The researchers with the Country Foods for Good Health project recently learned that some study documents were not stored as they should have been. Due to an unfortunate situation, some of the forms that community members completed and signed have been lost. This means the names of some participants were not kept confidential as promised. We are very sorry for any impacts that may arise from the loss of these documents. Between October and December 2023, we are reaching out to all the participants who we know to have been affected to notify them on what happened. Each of those individuals can choose, if they wish, to re-consent or withdraw from the study. Due to a technical problem with one of our mobile devices, data collected from the Inuvialuit Food Messages Survey cannot be downloaded. We will re-run the survey in Inuvik in November 2023. We sincerely apologize for what happened and we are updating our methods to ensure this does not happen again.

Please reach out to Sonja Ostertag (Sonja.ostertag@uwaterloo.ca) or the Community Research Leads for more information on how to get involved in this project.

The team will present an update to the Inuvialuit Game Council in November 2023. The results from this study will be shared in Paulatuk and Tuktoyaktuk in November 2023 and in all six communities in February 2024.

Outcomes From Community-Based Monitoring Programs: Assessing Severe Incisor Abnormalities in Muskoxen from the Kitikmeot and Inuvialuit Region



Organization Name
Kutz Research Group, Faculty of Veterinary Medicine, University of Calgary

Project Lead(s)
Erica Suitor, PhD Student; Susan Kutz, DVM PhD, Principal Investigator

Communities Involved
Ulukhaktok, NWT; Kugluktuk, NU; Ekaluktutiak, NU

Completion Status
Ongoing

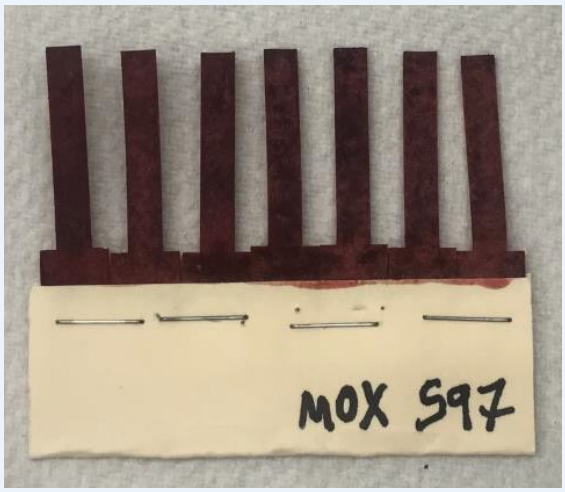
Project Objective/Purpose
Healthy teeth are critical for an animal to obtain enough nutrients to survive and reproduce. While examining the jaws of muskoxen that were collected between 2011 and 2021, we observed many abnormalities in the incisor (or lower front) teeth. The purpose of this project is to learn why these abnormalities are occurring by exploring the patterns in relation to location, age, and sex of the muskoxen.

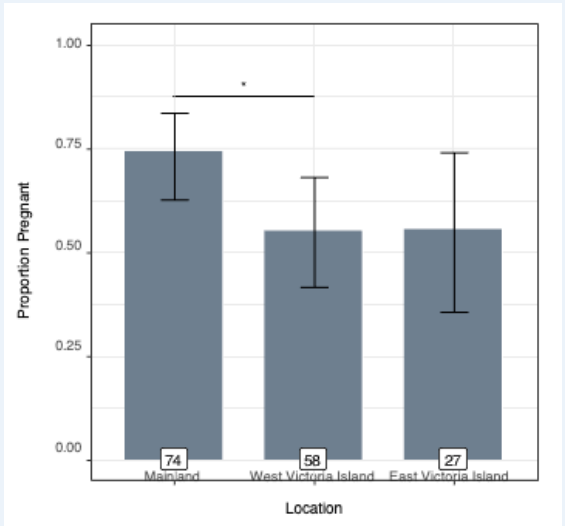
Project Description
Through partnerships with the communities of Ulukhaktok, Kugluktuk, and Cambridge Bay, 264 lower jaws from muskoxen were collected between 2011 and 2021. We recorded abnormalities and detailed measurements for each jaw and noted that many incisor teeth were damaged. To investigate further, we x- rayed the incisor bars (the full set of lower front teeth) in 135 jaws.

Main findings:

1. Muskoxen from Victoria Island have more broken, rotated, crowded, and missing incisors than those from the adjacent mainland (frequency of damage to "incisor 1" teeth: 60% vs 18%, respectively).
2. Muskoxen on the mainland are much more likely to exhibit anterior wear on their incisors. This is a new finding since the 1990sand was most prevalent in the four most forward-facing incisors. Given that these teeth have the most contact with the environment, the observed damage suggests that mainland muskoxen must be more prone to scraping their teeth on hard surfaces than their island counterparts.
3. We are also seeing more anterior incisor wear in mainland females than males. This may reflect mineral-seeking behaviour since females require more nutrients to sustain pregnancy and lactation.

Community-Based Muskox and Caribou Health Monitoring: Using Filter Paper Samples to Determine Pregnancy in Muskoxen





↑ Results from filter-paper pregnancy testing of muskoxen: The proportion of pregnant animals from three arctic locations, with sample size shown at the bottom of each bar.

Organization Name
Kutz Research Group, Faculty of Veterinary Medicine, University of Calgary

Project Lead(s)
Olivia Hee, MSc Student; Susan Kutz, DVM PhD, Principal Investigator

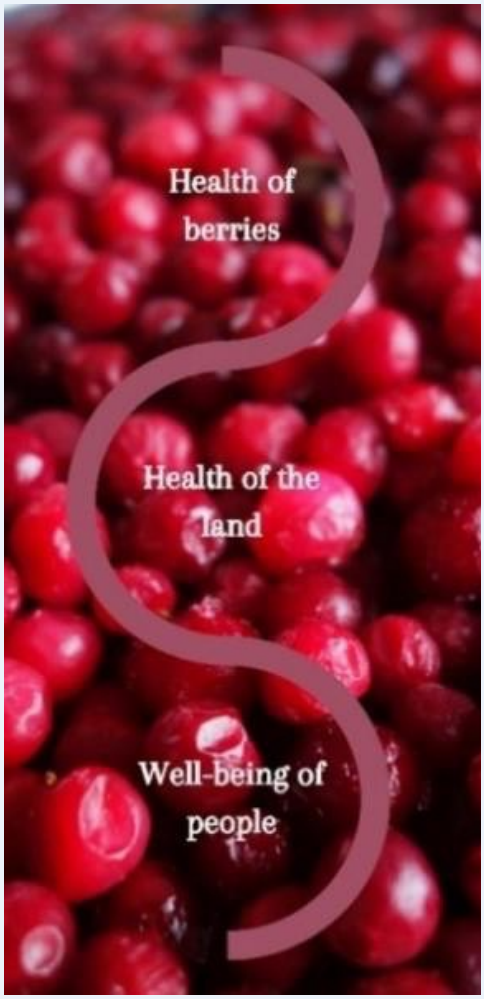
Communities Involved
Ulukhaktok, NWT; Kugluktuk, NU; Ekaluktutiak, NU

Completion Status
Complete

Project Objective/Purpose
The current method of diagnosing pregnancy in wildlife, measuring a hormone in feces, is not very accurate for muskoxen. This project focused on pregnancy diagnosis methods and on the mechanism behind muskoxen population declines.

Project Description
We collected samples of dried blood on filter paper from captive pregnant muskoxen and evaluated the utility and accuracy of these samples for measuring a pregnancy-specific protein. The results verified this method for determining pregnancy in wild muskoxen, and this technique can now be used in the community-based harvester sampling program. Muskox populations on Victoria Island have experienced recent declines, whereas the population on the adjacent mainland in Kugluktuk appears to be stable. When we calculated pregnancy rates using harvester-collected filter paper blood samples from the past 8 years, the findings reflected this. The preliminary results also showed that younger animals and animals exposed to Brucella were less likely to be pregnant. This new method of pregnancy diagnosis is allowing us to test for pregnancy earlier and more accurately with a sample type that can be collected by hunters in the arctic environment. We can now use filter paper blood samples and data from the harvester-based wildlife health monitoring program to explore the importance of disease and nutrition in pregnancy. Ultimately, this can help scientists gain better understanding of the drivers of pregnancy, which will contribute to long-term conservation efforts for muskoxen.

Indigenous Knowledge of Berries in NWT



Organization Name
Saint Mary's University and Affiliated Groups

Project Lead(s)
Claire Singer

Communities Involved
Aklavik, Inuvik, Ft. McPherson, Tsiigehtchic, Behchokǫ̀, Gamètį , Wekweètį, (with more to be confirmed)

Completion Status
Ongoing

Project Objective/Purpose
To complete a territory-wide Indigenous Knowledge study in the form of interviews with berry pickers to better understand how berries are doing in NWT.

Project Description

In the NWT, berries have been important for many generations of people, being used for food, medicines, and household products. Berries are also important for many animals, particularly birds, small mammals, grizzly bears, and pollinators. However, we've heard about berries changing in the NWT – the number of berries being less than they used to be, the size of berries being smaller, and berries being drier and 'mealier' than they used to be. This is especially relevant after this hot and dry 2023 summer. This fall, some berry pickers have noticed fewer berries growing and berry habitat being changed by wildfire.

In the Inuvialuit Settlement Region, Anne Thrasher from Paulatuk shares an update on the recent berry season. She says there was some successful berry picking, but that sometimes travel was difficult, especially during rain and after rainstorms. Notably,
there were some mud slides by the ocean and on lakes, making travelling across the land especially challenging. However, Anne suggests that despite the long trips, there were still some berries harvested, and people generally felt that the benefits to their mental health made their time on the land worthwhile. Anne also recognizes that the high cost of food and gas, as well as the demanding physical conditions, can create further challenges when berry picking.

Our research group was formed to learn more about berries in the NWT –- how berries are used, where they grow, whether they are changing, and what Indigenous Knowledge holders and berry pickers think is causing these possible changes. We call ourselves the 'Berry Happy Pickers'. We are Indigenous knowledge holders, university researchers, and support staff.
Our names are Claire Singer, Alestine Andre, Michele Grabke, Lauren King, 'Dëneze Nakehk'o, Lila Erasmus, Margaret McDonald, Annie Buckle, Bea Lepine, Celine Proctor, Anne Thrasher, Margaret Leishman, Elaine Lamalice, Dr. Erin Cameron, and Dr. Noémie Boulanger- Lapointe.

We have spoken with 12 Inuvialuit berry pickers in Aklavik and Inuvik and hope to meet with more berry pickers in other Inuvialuit communities soon. The knowledge collected through our research will be returned to communities in the form of recorded interviews, transcripts, maps, written reports, a book about berries, a recipe book and a seasonal ripening calendar. In these ways, berry knowledge will be returned to communities in various formats for long term use.

Contact us:
Claire Singer Project Manager
NWTBerries@outlook.com

↑ Figure 1. Members of the working group and advisory committee (aka Berry Happy Pickers). Back row, left to right: Michele Grabke, Elaine Lamalice, Madison Menacho-Melnyk, Lila Erasmus, Claire Singer, 'Dëneze Nahkehk'o. Front row, left to right: Anne Thrasher, Margaret Leishman, Margaret McDonald, Celine Proctor, Alestine Andre, Annie Buckle.

Carving out Climate Testimony: Inuit Youth, Wellness & Environmental Stewardship

Organization Name
Newcastle University, University of Saskatchewan

Project Lead(s)
Dr Jen Bagelman and Dr Karla Jessen Williamson

Communities Involved
Tuktoyaktuk

Completion Status
Ongoing (three-year project, funded by CINUK)

Project Objective/Purpose
Climate change has a disproportionate impact on the Canadian Arctic with temperatures rising twice as fast compared to elsewhere in the world. As academics and health practitioners have noted, these ecological changes directly impact the mental health and well-being of Inuit communities (Willox et al., 2020; IRC, 2016). Our project addresses this pressing issue through a community-driven approach that views Inuit youth not simply as 'at-risk' but pivotal agents of change. We specifically work with an Inuit understanding of 'storytelling' and sharing (Unikkausivut), which refers to verbal but also artistic expressions. Working alongside Inuit artists, we explore how long-standing practices of storytelling can be used as a material and intergenerational method to visually convey climate testimony and shape policy that enhances resilience strategies.

Project Description

We are animated by the two-fold question: how does climate change impact Inuit youth, and what are the resilience factors that enhance mental health and \ well-being?

Our project is especially interested in innovative forms of adaptation key to continued livelihood and cultural continuity. National Inuit Strategy on Research (NISR) has noted that this question of health is a vital Inuit research priority (ITK, 2018:5). Specifically, our project explores how changes to terrestrial, freshwater and coastal ecosystems (sea-ice and coastal processes, freshwater, snow, permafrost thaw, and changing marine ecosystems) impact mental health and well-being.

Our interdisciplinary and international (Canada and the UK) team, with expertise across the physical and social sciences, takes a community-engaged approach to this research. Additionally, we have developed an Inuit-led structure and methodological pathway for community members to themselves determine how these systems are experienced. This approach is a corrective to a problem identified by NISR: that there exists 'science research bias' and a lack of social science perspectives addressing Inuit priorities (Inuit Tapiriit Kanatami, 2018: 4).

Given that Inuit youth remain chronically underrepresented in shaping climate policy, we believe our work remains vital. Our project co- develops Inuit-specific storytelling methodologies for documenting indicators and determinants of Inuit community health and resilience. As our project Collaborator Silla Watt-Cloutier has long argued, these tools depart from conventional methods that do not adequately address cultural and embodied experiences (Watt-Cloutier, 2018).

↑ Photo Credit: Jen Bagelman, produced by Inuit youth during 'participatory mural workshop' led by Brian Kowikchuk

Inuvialuit Settlement Region Research Projects

Federal Government's Research Projects

Paden Lennie is Awarded the Canadian Parks Council's Micah Messent Young Professional Award of Excellence

Organization Name
Parks Canada

Project Lead(s)
Paden Lennie

Communities Involved
Aklavik, Paulatuk, Sachs Harbour

Completion Status
Complete

Project Objective/Purpose
Each year the Canadian Parks Council recognizes extraordinary achievements, innovation, organizational leadership, and the advancement of park and protected areas programs in Canada's national, provincial and territorial park agencies through a national awards ceremony.

Project Description
Paden Lennie, Resource Management Officer II for the Western Arctic Field Unit, was recently awarded the Micah Messent Young Professional Award of Excellence during the Canadian Parks Council's Annual Awards of Excellence in New Brunswick.

Since joining Parks Canada in 2017, Paden has demonstrated outstanding leadership through exceptional achievements and contributions related to environmental stewardship and conservation awareness of Arctic ecosystems. Through bridging gaps between Indigenous wisdom and Western scientific research, Paden has been an inspiring leader and role model in monitoring the ecological health of Western Arctic freshwater ecosystems.

Paden is an outstanding and passionate steward of the land and is truly an exceptional young professional. Congratulations, Paden, on receiving this award and continuing to mentor and empower the next generation!

Check out this 4.5-minute video highlighting Paden at work, with Dolly Varden, Species at Risk. ***https://www.youtube.com/watch?v=zk4NG3ZxWBE%20***


Cooperative Management
camis

Contaminants in Ringed Seals From the Canadian Arctic

Organization Name
Environment and Climate Change Canada (ECCC)

Project Lead(s)
Magali Houde (ECCC, Montreal), Derek Muir (ECCC, Burlington) and Steve Ferguson (Fisheries and Oceans, Winnipeg)

Communities Involved
Sachs Harbour, NWT
Resolute Bay, Nunavut Arviat, Nunavut
Nain, Nunatsiavut

Completion Status
On-going. This ringed seal core monitoring project is funded by the Northern Contaminants Program (Government of Canada).

Project Objective/Purpose
The major questions that this project addresses are:

- How are concentrations of legacy and new contaminants changing over time in ringed seals?
- Are trends similar across the Canadian Arctic, and
- How does climate change influence the accumulation of contaminants in seals?

➔ **Project description on 88**

Project Description

The ringed seal is a species of high cultural, economic, and nutritional importance among Indigenous Peoples. Since the 1990s, this monitoring project has been assessing a series of contaminants in ringed seal tissues. Ringed seals are currently sampled annually by the four core communities involved in this project (Sachs Harbour, Resolute Bay, Arviat, and Nain). Through the coordination of the local Hunters and Trappers groups and the Nunatsiavut government (for Nain), tissues of ringed seals are collected during subsistence hunts using sampling kits provided by researchers. Pieces of blubber, liver, muscle, and the lower jaw are collected, and the seal length, blubber thickness, and sex are recorded. All samples are then shipped to different laboratories to be analyzed. Blubber and liver of seals are analyzed to determine trends of a large suite of persistent pollutants. Metals, including mercury, are also analyzed in meat and liver. The diet of seals is assessed using stable isotopes (from muscle) and fatty acids (from blubber) as indicators of the diet of the animals.

Results have shown that levels of contaminants vary among locations and age/sex of the seals. Most concentrations of legacy contaminants have been decreasing in seals over time. Newer contaminants (more recently used by industries) have been found in seals but at lower levels. Every year, updated contaminant results are shared with the communities and the regional health agencies to help community members make informed decisions on their diet. An outreach project has also been created to increase communication, results dissemination, and capacity sharing in communities involved in this on-going study. Most recently, in September 2023, Magali Houde and her team visited Sachs Harbour where they met with the Hunters and Trapper Committee to share results from the project and gain feedback on current and future directions of the project. A contaminants/ringed seal workshop was also held at the school where science activities and games were played with the students to engage the youth in contaminants research.

↑ Photo Credit: Jen Bagelman, produced by Inuit youth during 'participatory mural workshop' led by Brian Kowikchuk.

Monitoring Grizzly Bear Occupancy in Ivvavik National Park

↑ Elders in front of HBC Store in Ivvavik, on August 14th, 2022. From left to right: Nellie Arey and Renie Arey. Photo credited to Parks Canada.

Organization Name
Parks Canada, Western Arctic Field Unit

Project Lead(s)
Jacqueline Menzies

Communities Involved
Aklavik

Completion Status
Ongoing →long-term ecological integrity monitoring

Project Objective/Purpose
To study grizzly bear occupancy metrics along the Firth River valley corridor in Ivvavik National Park using an array of wildlife cameras.

Is grizzly bear occupancy changing significantly over time along the Firth River?

What is preferred grizzly bear habitat within the Firth River corridor and is their preference changing over time?

→ **Project description on 90**

Project Description

Ivvavik National Park (INP) has a remote camera program that was designed to monitor grizzly bear habitat use and their relative occurrence in a non-invasive manner. Grizzly bears are the largest terrestrial predator in INP. They are a keystone species due to their predation and ecosystem disturbances caused by their search for roots, forbs, grasses, and berries.

Since 2014, image data collected by INP's remote camera program has been retrieved, recorded, and analyzed to report on the grizzly bear's ecological status on an annual basis. Currently, INP has 30 remote camera sites located within and adjacent to the Firth River corridor, transecting the park from its southern boundary all the way to its northern boundary at the Beaufort Sea. The study area is approximately 4,000 km2, split into a 10 x 10 km2 grid pattern. Each grid cell has a remote wildlife camera that captures photos year-round. The cameras are set up to record photos when wildlife triggers the camera's motion sensor, as well as take a daily timelapse photo at noon. Images are collected twice per year (in late spring and late summer) when we swap out camara cards and install fresh batteries. Annual changes in occupancy and detection probability are monitored along with annual patterns of habitat use.

Currently, the status of grizzly bear occurrence within INP is in good condition and has a stable long-term trend.

↑ Elders being interviewed in front of HBC Store in Ivvavik, on August 14th, 2022. From left to right: Matthew McLeod, Sharon Thomson, Nellie Arey, Renie Arey, Coby Elanik. Photo credited to Parks Canada.

↑ Staff (Kieron Amos Sidney (right), Emma Windfield (left)) setting up the remote camera in Ivvavik. Photo credited to Parks Canada.

↑ Sow bear with 3 cubs taken with a remote camera in Ivvavik. Photo credited to Parks Canada.

↑ Matthew McLeod examines HBC Store in Ivvavik, on August 14th, 2022. Photo credited to Parks Canada.

Cultural Connections at Qainiiruviq

Organization Name
Parks Canada
Partners: Aklavik Community Corporation, Aklavik Elders Committee, Inuvialuit Communications Society, Moose Kerr School

Project Lead(s)
Becky Goodwin (Parks Canada)

Communities Involved
Aklavik

Completion Status
Ongoing

Project Objective/Purpose
The project objectives were to:

1. Document tangible (archaeology) and intangible (Oral History) cultural resources in Ivvavik National Park.
2. Increase youth interest in cultural resource management with capacity building opportunities and paid work experiences.

↑ Youth developing interview topics in Aklavik, on February 8th, 2022. From left to right: Margaret Noksana-Elias, Brayden John, Kieron Amos Sidney. Photo credited to Karli Zschogner for Inuvialuit Communication Society.

↑ Elders being interviewed in Aklavik, on February 9th, 2022. From left to right: Renie Arey and Nellie Arey. Photo credited to Karli Zschogner for Inuvialuit Communication Society.

Project Description

This project is part of a larger, multi-year Cultural Resource Management (CRM) plan that focuses on one Parks Canada Western Arctic Park each year and one Inuvialuit gateway community in the ISR. Each year, Parks Canada hopes to engage in youth capacity building and on-the-land cultural resource documentation based on the wants and needs of each unique community. This year's project focused on Ivvavik National Park and the community of Aklavik.

In Spring 2023, we held a 2-day Oral History workshop with youth at Moose Kerr School in Aklavik. Parks Canada facilitated interviewing and Oral History documentation skills. Youth selected their own topics, wrote their own interview questions, and conducted short interviews with Elders Nellie and Renie Arey. ICS produced video clips of and a short documentary about the workshop (available to IRC on request) that our partners will share across their social media sites.

In summer 2023, we brought two of these trained youth (Coby Elanik & Matthew McLeod) to Ivvavik National Park for a paid work opportunity. Although we were forced to shorten the project because of the wildfire activity, the youth still used their newly acquired CRM skills to interview Elders Nellie and Renie Arey about Qainiiruviq and assisted in archaeological site monitoring. Despite helicopter mechanical issues preventing their videographer (Aiden Kunnizzi) from joining the team on site, the ICS was able to produce short video clips about this process. Original transcripts and recorded media from the interviews will be held by ICS and the Inuvialuit Cultural Centre so that they are accessible for beneficiaries in the future. ICS will also produce a series of digital articles about the project for Tusaayaksat Magazine by early 2024. We are grateful to all our project partners and participants. Quyanaqpak.

↑ Elders being interviewed in Aklavik, on February 9th, 2022. From left to right: Mason Elanik, Jordan Archie, Renie Arey, and Nellie Arey. Photo credited to Karli Zschogner for Inuvialuit Communication Society.

Inuvialuit Settlement Region Research Projects

Government of Northwest Territories' Research Projects

Snow Compaction and Permafrost Monitoring

↑ Snowcat completing snow compactions at a site. Photo taken by: NTGS – Alice Wilson, December 3rd, 2021.

Organization Name
Northwest Territories Geological Survey

Project Lead(s)
Alice Wilson

Communities Involved
Inuvik, Tuktoyaktuk

Completion Status
Ongoing, Multi-year

Project Objective/Purpose
Snow cover is a characteristic feature of Arctic regions and is an important factor influencing ground temperatures. Snow is an effective ground insulator, and a decrease or compaction of snow in winter is expected to result in decreased ground temperatures. The purpose of this field experiment is to examine the influence of snow compaction on permafrost ground thermal regimes, active layer thickness, and vegetation conditions.

➔ **Project description on 96**

Project Description

The western Arctic is experiencing increasing ground temperatures, active layer thicknesses, and near-surface ground ice melt. Ground ice melt can reduce the stability of the ground, initiate subsidence and, therefore, affect infrastructure built on permafrost environments. Snow cover is an important variable that influences ground temperatures. Thicker snow pack results in higher ground temperatures by limiting ground heat loss, essentially working as a blanket to retain heat in the ground and slowing the cooling down of the permafrost in winter. Starting in 2019, we are conducting a field experiment to look at the influence of snow compaction on the properties of snow, permafrost ground temperatures, active layer thickness, and vegetation dynamics, and to assess the general feasibility of snow management as a tool to help decrease ground temperatures. Snow manipulations were completed with a snowcat throughout the winters of 2019/2020, 2020/2021, and 2021/2022 at six paired undisturbed and disturbed 50 x 50 m sites across the tree line along the Inuvik-Tuktoyaktuk Highway. Manipulations occurred in December, January, and March; snow depths and densities were collected at the sites before manipulation and repeated following compaction. Manipulated sites have three 2-3 m ground temperatures cables and several near-surface temperature loggers 5 cm below the surface and are paired with control sites where permafrost temperatures are monitored at depth and by more near-surface temperature loggers. Results from the field experiment will help determine whether snow compaction can effectively change the ground by reducing temperatures and increasing rate of active-layer freeze back. They will also be used to assess the most effective time and environments for snow compaction to occur. This will be completed through analysis of n-factors—the relationship between air and ground temperatures—by comparing n- factors within sites, between sites, and between years to better understand how important a role snow plays in our ground temperatures.

URL for Alice's page on the NTGS website with contact info: ***https://www.nwtgeoscience.ca/staff/alice-wilson***

↑ ILA Environmental Monitor and researcher complete snow surveys post-compaction.
Photo taken by: NTGS – Alice Wilson, December 21st, 2020.

Baseline Permafrost Monitoring Along the Dempster-ITH Corridor

↑ Visit to a site along the ITH, with Alice Wilson, and Max Kotokak Sr. Photo taken by: Aurora College – Jen Humphries, July 2022.

Organization Name
Northwest Territories Geological Survey (NTGS), Aurora Research Institute – Aurora College (ARI), Carleton University (CU)

Project Lead(s)
Steve Kokelj (NTGS), Jennifer Humphries (ARI), Alice Wilson (NTGS)

Communities Involved
Inuvik, Tuktoyaktuk, Fort McPherson, Tsiigehtchic

Completion Status
Ongoing. Multi-year.

Project Objective/Purpose
To monitor ground temperature and provide baseline information on permafrost in the Beaufort Delta Region, from the Yukon-Northwest Territories border on the Dempster Highway up to Tuktoyaktuk, with the overall objective of having a better understanding of ground temperatures in the region and how they are being impacted by climate change.

➔ Project description on 98

Project Description

Category/area of research:
Physical Sciences, Permafrost

Principle activities conducted:
Approximately 100 ground temperature instruments are installed along the Dempster and Inuvik-Tuktoyaktuk Highway (ITH) for the purpose of collecting baseline data for the region over a long time frame, with:

- 16 baseline "Sentinel" sites, with approximately 5 instruments at each site, including a deep cable measuring the ground temperature up to 20 m below the surface, and a few ground surface sensors. These were installed in 2017 and represent a range of undisturbed environments along the ITH; and
- 10 legacy sites, with 2 instruments measuring ground temperature at each site, along the Dempster. These were installed in 2010 at depths of 5-8 m.

Together, the sites cover a wide range of environments (peatland, riparian, and hilltop) that exist along the Dempster-ITH corridor. The instruments were visited in 2022, and data was downloaded onto laptops and brought back to Inuvik for analysis.

Results and conclusions obtained:
Full details of the drilling, installation, and geotechnical data for the Sentinel sites are available in Rudy et al., (2020a), and the first year of data collection at the Sentinel sites is available in Rudy et al., (2020b). The data from 2022 were used in a conference paper that is in publication (Humphries et al., in press, 2023). Data from the Sentinel sites show us that in undisturbed tundra in the Inuvik-Tuktoyaktuk region, the average ground temperature 1 m below the surface ranged from –3.7 °C to –6.0 °C. The Sentinel data also indicates that the top of permafrost in the region sits around 0.5 to 1.0 m below the ground surface.

URL for Jen's page on the Aurora Research Institute website: ***https://nwtresearch.com/our-people/jennifer-humphries-bsc-msc***

URL for Steve's page on the NTGS website with contact *info:* ***https://www.nwtgeoscience.ca/staff/steve-kokelj***

URL for Alice's page on the NTGS website with contact info: ***https://www.nwtgeoscience.ca/staff/alice-wilson***

Publications

Humphries, J., Kokelj, S.V., Van der Sluijs, J., and Morse, P.D. 2023 (in press). Embankment evolution of a frozen core road five years after construction: the Inuvik-Tuktoyaktuk Highway, In 12th International Conference on Permafrost, Whitehorse, YT, Canada.

Rudy, A.C.A., Kokelj, S.V., Morse, P.D., and Ensom, T. 2020a. Permafrost Geotechnical Report: Inuvik to Tuktoyaktuk Highway Sentinel Program Boreholes, Northwest Territories; Northwest Territories Geological Survey, NWT Open Report 2019-008, 7 pp. + geotechnical data + appx.

Rudy, A.C.A., Kokelj, S.V., Morse, P.D., and Ensom, T. 2020b. Permafrost Ground Temperature Report: Inuvik to Tuktoyaktuk Highway Sentinel sites, Northwest Territories Geological Survey, NWT Open Report 2019-017, 8 pp. + ground temperature data + appx.

Bibliographies
List of Bibliographies

Inuvialuit Regional Corporation's Internal Research Projects

Project Title	Project Lead(s)
Evaluating Microplastic and Additive Concentrations in the ISR Waterways	S. Williams
Investigating Water Quality in Fish-bearing Lakes between Inuvik and Tuktoyaktuk	S. Williams
Inuvialuit Settlement Region (ISR) Energy Action	N. Dutta and D. Desrosiers
Improving Communication on Climate Change & Cleaner Energy Terminology for Inuvialuit and Researchers in the Inuvialuit Settlement Region (ISR).	R. Springer, N. Dutta, and S. Williams
ISR Climate Change Action Map	R. Springer
Boating Safety in the Inuvialuit Settlement Region	T. Forbes and S. Williams
Siqinirmin Aullan — Energy from Our Environment	D. Desrosiers, T. Cockney-Goose, S. Williams, and J. Parrott
A Special Day with Anaanaga – A Children's Book on Knowledge Transfer between Elders and Youth	J. Parrott, M. Etter, D. Desrosiers, and T. Cockney-Goose
Inuvialuit Stewardship on the Land Program	C. Klengenberg and C. Gruben
Energy Coordination for the Inuvialuit Settlement Region (ISR)	N. Dutta and S. Williams
Powered by Youth	S. Williams and R. Springer
Qanuippitaa? National Inuit Health Survey (QNIHS)	M. Etter and P. Tedoff
Understanding Patterns of Social Interaction in the Inuvialuit Settlement Region (or Community Connections Survey)	J. Parrott and R. Mazan
Inuvialuit Socio-Cultural Economic Indicators	J. Parrott and B. Simpson

Inuvialuit Regional Corporation's Internal Research Projects

Project Title	Project Lead(s)
Advancing Arctic Research Through Connected Infrastructure	J. Parrott
The Role of Genomics in Fostering and Supporting Arctic Biodiversity: Implications for Wildlife Management, Policy, and Indigenous Food Security	J. Parrott and R. Mazan
Inuvialuit Settlement Region Platform	J. Parrott
Inuvialuit Place Names (IPN)	J. Parrott

Inuvialuit Regional Corporation's Partnered Research Projects
(Funded by Northern Contaminants Program)

Project Title	Project Lead(s)
Egress of Contaminated Fluids From Drilling Waste Sumps, Western Arctic Canada	R. Landriau, C. Klengenberg, and T. Ensom
Country Foods in Community Programming (CFCP): Supporting Schools, Daycares and Cooking Circles in Tuktoyaktuk and Paulatuk, NWT	K. Skinner, S. Ostertag, S. Wesche, T. Kenny, and C. Wolki

Inuvialuit Community-led Research Projects
(Funded by Northern Contaminants Program)

Project Title	Project Lead(s)
Reindeer Station Assessment and Mitigation Work	T. Amos, G. Giff, A. Wilson
Climate Change Impacts on Subsistence Fisheries in the ISR: The Ulukhaktok calendar	N. Steiner, P. Farnole, A. Pogotak, K. Memogana, and M. Stoller

Academic Organizations' Research Projects

Project Title	Project Lead(s)
Characterizing the Sensitivity and Response of Arctic Streams and Rivers to Permafrost Thaw.	T. Amos, G. Giff, A. Wilson
Permafrost and Infrastructure Monitoring Along the Dempster-ITH Corridor	J. Humphries, E. Stockton, A. Wilson, S. Kokelj
Nunataryuk – Permafrost Thaw and the Changing Arctic Coast, Science for Socioeconomic Adaptation (Social Science Components)	S. Gartler and S. Crate
Towards Inuvialuit Heritage Data Sovereignty: Current Practices and Paths Forward	E. Henry and L. Hodgetts
Brucellosis in the Arctic: A Component of Community-Based Muskox and Caribou Health Monitoring	S. Kutz

Academic Organizations' Research Projects

Project Title	Project Lead(s)
Early Warning Detection of Slope Failure to Enable Hazard Forecasting	A. Clark and B. Moorman
Exploring Traditional Knowledge of Permafrost in the Inuvialuit Settlement Region and Gwich'in Settlement Area	E. Street and T. Lantz
Measuring Surface Displacement Using Winter SAR.	A. Plourde and B. Rabus
The Effects of Wildfires on Permafrost Thaw and Soil Nutrients in an Arctic Tundra Ecosystem	L. Cornette, O. Sonnentag, and C. Von Sperber
Impacts of Environmental Stressors on Arctic Freshwater Ecology and Aquatic Ecosystems in the Northwest Territories	A.S. Medeiros and A.U. Marquardt
NSERC CREATE LEAP: Training Tomorrow's LEAders in Permafrost Thaw and Northern Research	S. Gruber
The Effects of Disturbance on Green Alder and Dwarf Birch Health and Productivity in the Low Arctic Tundra	J. Baltzer, C. Wallace, and C. O'Brien
Country Foods for Good Health	S. Ostertag, B. Laird, and K. Skinner
Outcomes from Community-Based Monitoring Programs: Assessing Severe Incisor Abnormalities in Muskoxen from the Kitikmeot and Inuvialuit Region	E. Suitor and S. Kutz
Community-Based Muskox and Caribou Health Monitoring: Using Filter Paper Samples to Determine Pregnancy in Muskoxen	O. Hee and S. Kutz
Indigenous Knowledge of Berries in NWT	C. Singer
Carving out Climate Testimony: Inuit Youth, Wellness & Environmental Stewardship	J. Bagelman and K.J. Williamson

Federal Government's Research Projects

Project Title	Project Lead(s)
Paden Lennie is Awarded the Canadian Parks Council's Micah Messent Young Professional Award of Excellence	Paden Lennie
Contaminants in Ringed Seals From the Canadian Arctic	M. Houde, D. Muir, and S. Ferguson
Monitoring Grizzly Bear Occupancy in Ivvavik National Park	J. Menzies
Cultural Connections at Qainiiruviq	B. Goodwin

Government of Northwest Territories' Research Projects

Project Title	Project Lead(s)
Snow Compaction and Permafrost Monitoring	Liz Pijogge
BaselinePermafrost Monitoring Along the Dempster-ITH corridor	S. Kokelj, J. Humphries, and A. Wilson

Index of Organizational Acronyms

AAC	ABoVE Airborne Campaign
AN MPA	Anguniaqvia niqiqyuam Marine Protected Area
ABoVE	Artic-Boreal Vulnerability Experiment
AMAP	Arctic Monitoring and Assessment Program
CCADI	Canadian Consortium for Arctic Data Interoperability
CEO	Chief Executive Officer
DFO	Department of Fisheries and Oceans Canada
IPN	Inuvialuit Place Names
C4FS	Community Capacity for Climate Change and Food Security
CCS	Community Connections Survey
EBS	Eastern Beaufort Sea
ECCC	Environment and Climate Change Canada
FJMC	Fisheries Joint Management Committee
GNWT	Government of the Northwest Territories
GSA	Gwich'in Settlement Area
ISCC	Innovation, Inuvialuit Science and Climate Change
IHS	Inuit Health Survey
IQP	Inuit Qaujisarnirmut Pilirijjutit
ITK	Inuit Tapiriit Kanatami
IFA	Inuvialuit Final Agreement
IRC	Inuvialuit Regional Corporation
ISR	Inuvialuit Settlement Region
ITH	Inuvik-Tuktoyaktuk Highway
JSC	Johnson Space Center
LCO	Local Community Organization
NASA	National Aeronautics and Space Administration
NRCan	Natural Resources Canada
NWT	Northwest Territories
NU	Nunavut
NNC	Nutrition North Canada
PFAS	Perfluoroalkyl and Polyfluoroalkyl Substances
POPs	Persistent Organic Pollutants
RNA	Ribonucleic Acid
TN MPA	Tarium Niryutait Marine Protected Area
TVC	Trail Valley Creek

WORD SEARCH

P	A	N	I	R	Y	U	A	R	U	T	A	A	N	I
D	D	U	I	A	I	R	S	I	B	Q	I	D	I	Q
A	E	I	Y	R	Q	R	I	T	T	E	Y	S	R	F
M	I	H	I	N	G	N	A	R	Y	U	A	N	G	-
I	T	T	A	A	N	G	A	N	I	W	E	W	Q	I
N	I	I	E	F	A	O	Q	R	Q	R	F	T	E	R
I	K	U	A	L	L	A	K	Y	U	A	Q	T	U	Q
T	Q	Q	V	D	O	U	D	N	R	U	E	K	H	K
U	I	R	R	T	A	N	N	G	U	T	I	T	I	P
R	Q	M	S	F	R	R	Y	J	A	E	S	P	L	G
L	H	H	A	D	G	G	U	D	N	O	O	R	A	F
I	Q	S	G	Q	A	U	K	L	H	A	U	U	U	I
I	U	D	U	P	Q	I	N	A	M	U	Q	I	Q	K
T	Q	Q	U	Q	T	O	E	T	H	H	Q	E	E	A

Climate Terms – Inuinnaqtun

✔	Words	Definition
	Qiqumaniq	When you reach the frozen part
	Paniryuarutaani	Very dry period/time
	Kininnaqtut	Things that make you wet
	Hila	Weather
	Imaq	Water
	Hilaryukyuaq	Really bad weather
	Uumaviat	Every living thing
	Halumailrutit	Something that dirties something - things that makes other things dirty

Q	I	Q	U	M	A	N	I	Q	H	W	U	U	E
S	G	S	ł	F	ł	E	S	Q	J	O	E	H	T
P	A	L	A	N	G	A	H	I	P	A	Y	A	-
A	Q	T	A	Q	M	M	A	Y	T	K	I	H	Q
S	ł	F	ł	E	H	W	S	Q	U	V	H	E	N
W	S	Q	J	O	E	H	F	T	A	K	E	H	I
M	M	A	F	E	S	Q	K	A	U	W	H	q̂	R
A	L	I	H	Q	S	A	L	ł	S	Q	T	T	ř
Q	U	U	E	T	L	L	Q	U	U	E	L	F	U
S	E	F	W	L	U	A	F	S	E	R	I	F	T
U	U	E	A	N	N	D	H	O	O	F	A	Y	I
S	Q	U	Q	N	M	M	A	U	K	F	F	q̂	T
S	K	Q	A	E	S	S	O	E	S	E	X	q̂	X
I	L	P	T	Q	E	W	D	W	W	Q	A	M	I

Climate Terms – Uummarmiutun

✔	Words	Definition
	Qiqumaniq	Water
	Paniryuarutaani	Weather
	Kininnaqtut	Damp weather
	Hila	Every living thing
	Imaq	Very dry
	Hilaryukyuaq	Things that make other things dirty -something that makes it dirty - all is dirty
	Uumaviat	Frozen part
	Halumailrutit	Really big, bad weather

WORD SEARCH

P	E	E	I	N	G	N	I	R	Y	U	A	Q	E	N	F
Q	A	O	O	R	D	D	T	F	V	T	O	R	R	I	F
I	D	L	V	K	A	Y	Y	F	U	E	U	Y	G	R	Ł
Q	T	T	A	I	T	V	R	Ł	F	A	A	K	F	Y	H
U	R	V	H	N	H	R	H	H	G	A	S	E	F	U	H
M	F	A	A	I	N	K	R	H	X	A	H	K	Ł	T	U
A	G	A	S	T	R	G	D	U	U	E	T	O	H	I	O
N	X	A	H	U	F	D	A	X	D	H	T	D	H	T	R
I	U	E	T	R	F	O	D	A	X	X	U	E	U	R	M
Q	D	H	T	L	Ł	O	E	T	L	Ł	X	O	H	D	Y
F	H	E	X	I	H	L	D	K	Q	A	X	E	U	Y	G
F	X	T	O	A	H	A	K	A	X	R	G	T	O	T	X
Ł	S	K	O	L	U	D	N	D	T	V	D	L	E	D	E
H	I	K	L	U	O	A	H	E	U	Y	G	X	U	H	O
H	L	O	A	I	P	D	D	R	X	O	D	R	H	G	D
U	A	E	O	T	O	E	T	R	I	M	A	Q	E	H	U

Climate Terms – Sallirmiutun

✔	Words	Definition
	Pannaqłuk	Very dry
	Silaqłukpavialuk	Big, bad weather (XXLweather, extreme weather)
	Sila	Weather
	Qiqumaniq	Frozen part - when you reachthe frozen part
	Imaq	Water
	Salumainniq	Bad things/stuff - dirtystuff
	Uumaviat	Where everything lives
	Miniqłuk	Damp weather

H	W	A	J	X	A	V	S	O	A	R	O	H	E	A
G	I	X	K	V	O	I	U	V	Y	K	X	I	I	K
G	L	S	S	W	X	G	J	R	U	S	J	A	J	D
A	D	W	T	H	G	U	O	R	D	W	U	P	L	P
A	F	V	I	O	R	I	W	K	Y	R	J	A	A	E
K	I	E	Y	V	R	X	A	O	S	T	M	F	O	R
S	R	R	H	E	S	I	R	F	R	I	V	H	A	M
S	E	I	T	S	I	X	C	W	N	R	K	O	F	A
K	A	V	F	J	H	O	R	A	I	S	I	U	O	F
A	J	O	H	J	T	Y	F	T	L	S	H	G	P	R
S	W	E	A	T	H	E	R	E	S	S	W	U	A	O
A	J	H	K	W	F	W	S	R	X	R	I	H	O	S
O	Y	X	G	P	Y	E	E	X	F	T	R	T	A	T
N	O	I	T	A	G	I	T	I	M	V	H	H	E	U
F	T	P	J	F	T	I	F	V	P	J	E	T	I	S

Climate Terms – English

✔	Words	Definition
	Precipitation	Rain, snow, sleet, or hail that falls to the ground.
	Pollution	The presence in or introduction into the environment of a substance or thing that has harmful or poisonous effects
	Permafrost	A thick subsurface layer of soil that remains frozen throughout the year
	Water	A colourless, transparent, odourless liquid that forms the seas, lakes, rivers, and rain and is the basis of the fluids of living organisms
	Drought	A prolonged period of abnormally low rainfall, leading to a shortage of water
	Weather	The short-term conditions of the lower atmosphere,such as precipitation, temperature, humidity, wind direction, wind speed, and atmospheric pressure.
	Extreme Weather	Unexpected, unusual, severe or unseasonal weather
	Environment	The natural world, as a whole or in a particular geographical area, especially as affected by human activity

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