



Polar Knowledge Canada

POLAR Report 2022

Presented to Nunavut Wildlife Management Board
Rankin Inlet, September 8, 2022



Polar Knowledge
Canada

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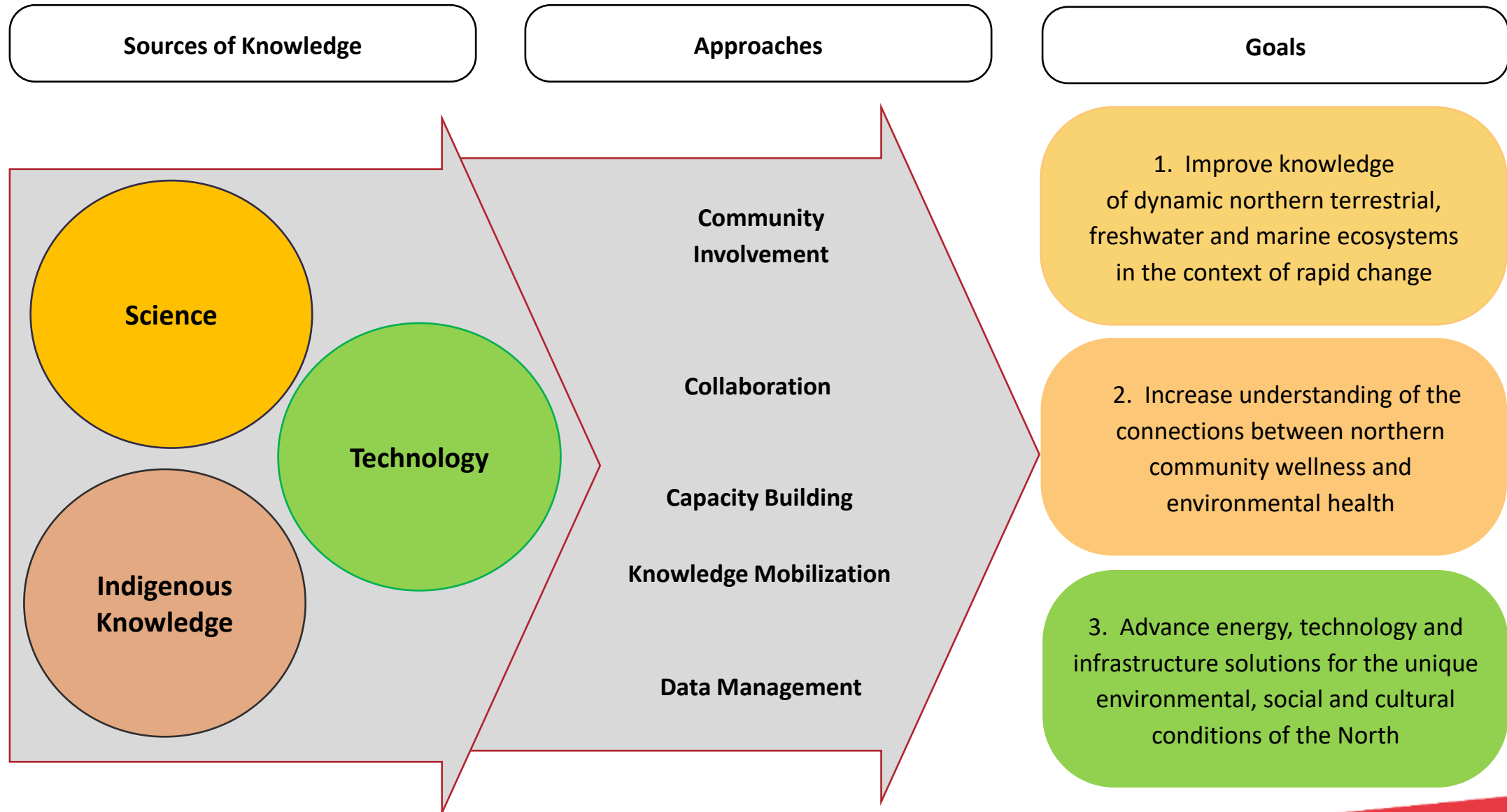
Polar Knowledge Canada's Mandate

- Advance knowledge of the Canadian North in order to improve:
 - 1) economic opportunities
 - 2) environmental stewardship
 - 3) quality of life of its residents & Canadians
- Promote the development and **dissemination of knowledge** of the other circumpolar regions, including the Antarctic
- Strengthen **Canada's leadership** on Northern issues
- Operate a hub for scientific research at the Canadian High Arctic Research Station (**CHARS**) campus in Cambridge Bay, NU



The operating area for POLAR's research, monitoring and related activities is depicted in orange.

Overall Approach to Deliver Science & Technology Goals



Polar Knowledge Canada

Regional Planning and Knowledge Sharing Workshop

Setting a foundation for respectful relationships



March 10 – 11, 2020

Canadian High Arctic Research Station, Cambridge Bay, Nunavut, Canada

Co-developing priority themes and questions – POLAR's Regional Planning and Knowledge Sharing Workshop, 2020, CHARS



After meaningful discussion the participants selected the following five themes of highest relevance:

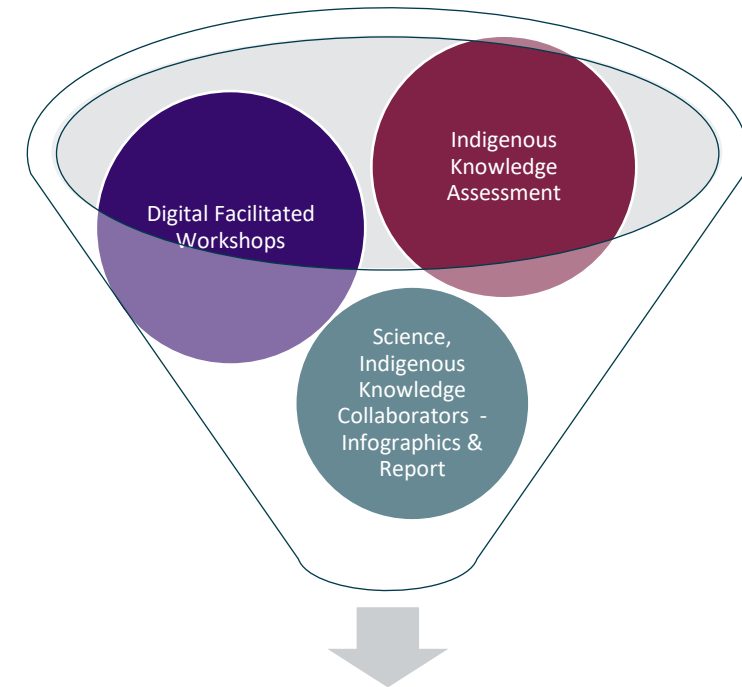
- Caribou population abundance and migration
- Arctic char and other fish population dynamics
- Whale populations and marine ecosystem biodiversity
- Climate Change research and monitoring
- Environmental change- snow, ice, precipitation, permafrost

Creating collaborative synthesis technical papers, 2022
















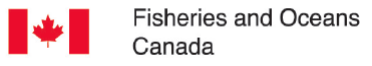
















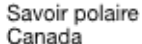
Synthesis technical papers available at POLAR's on-line Journal, *Aqhaliat*:

<https://www.canada.ca/en/polar-knowledge/aqhaliat.html>



**5 thematic technical papers
to support a Knowledge Sharing Forum, 2023-24**

POLAR Synthesis Technical Papers – Collaborators Affiliation

Environment	Caribou	Char & Fish	Marine	Climate Change
        	         	     	     	         
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“The Collaborative Assessment project that you describe is exactly the kind of work that is needed to begin to change how science is done in the North. I would welcome the opportunity to join the Whale Population and Marine Ecosystem Biodiversity Working Group, and work with Indigenous Knowledge holders and researchers to co-develop a paper.”

- Valeria Vergara, PhD, Program Director, Ocean Wise



The Knowledge Sharing Webinar Series, 2022



Canadian High Arctic Research Station

Learn more about each individual webinar (March, 2022):

Google search: [Polar Knowledge Canada - YouTube](#)

Caribou abundance and migration

Arctic char and fish population

Whale population and marine ecosystem biodiversity

Climate change research and monitoring

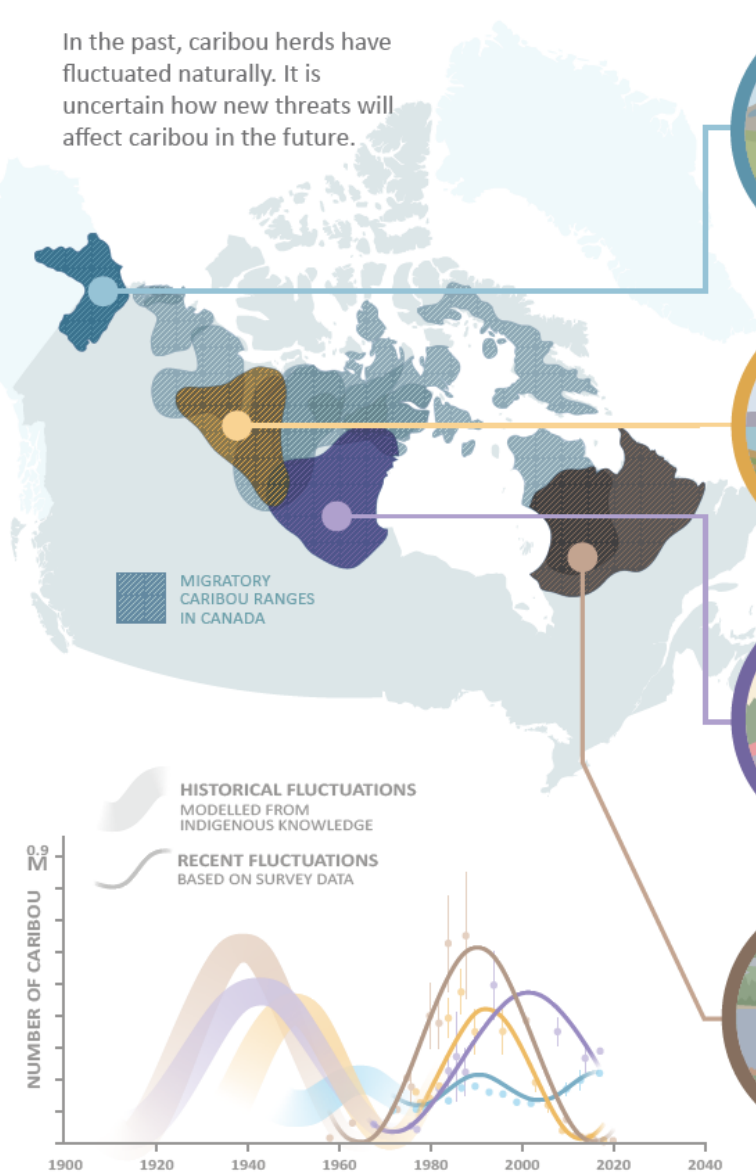
Environmental change - snow, ice and precipitation

Canada and the Antarctic



POLAR Caribou Working Group – Caribou Population Dynamics

In the past, caribou herds have fluctuated naturally. It is uncertain how new threats will affect caribou in the future.



PORCUPINE

CURRENT TREND
Increasing

MAIN CLIMATE CHANGE IMPACTS
Late spring drought and winter icing conditions decrease food

MANAGEMENT
<2% harvest
Caribou protection: Ivvavik National Park (Yukon), Arctic National Wildlife Refuge (Alaska)

OTHER THREATS
Development poses risk to calving grounds in Alaska



BATHURST

CURRENT TREND
Declining

MAIN CLIMATE CHANGE IMPACTS
Warmer summer decreases food; more insect harassment; freezing rain

MANAGEMENT
Restricted harvest
Caribou Protection: Mobile Core Bathurst Caribou Management Zone

OTHER THREATS
Industrial development, roads



QAMANIRJUAQ

CURRENT TREND
Slow decline

MAIN CLIMATE CHANGE IMPACTS
Warmer summer decreases food; increased shrubification; freezing rain

MANAGEMENT
Moderate harvest
No caribou habitat protection in Nunavut

OTHER THREATS
Industrial development, roads, potential power line corridor (enhances predation)



GEORGE RIVER

CURRENT TREND
Declining

MAIN CLIMATE CHANGE IMPACTS
Increased summer rains lead to changes in vegetation and more insect harassment

MANAGEMENT
Restricted harvest
Caribou Protection: George River Natural Reserves (Nunavik, Quebec)

OTHER THREATS
Industrial development, roads, power line corridors

<https://www.canada.ca/en/polar-knowledge/infographics/caribou-abundance-and-migration.html>

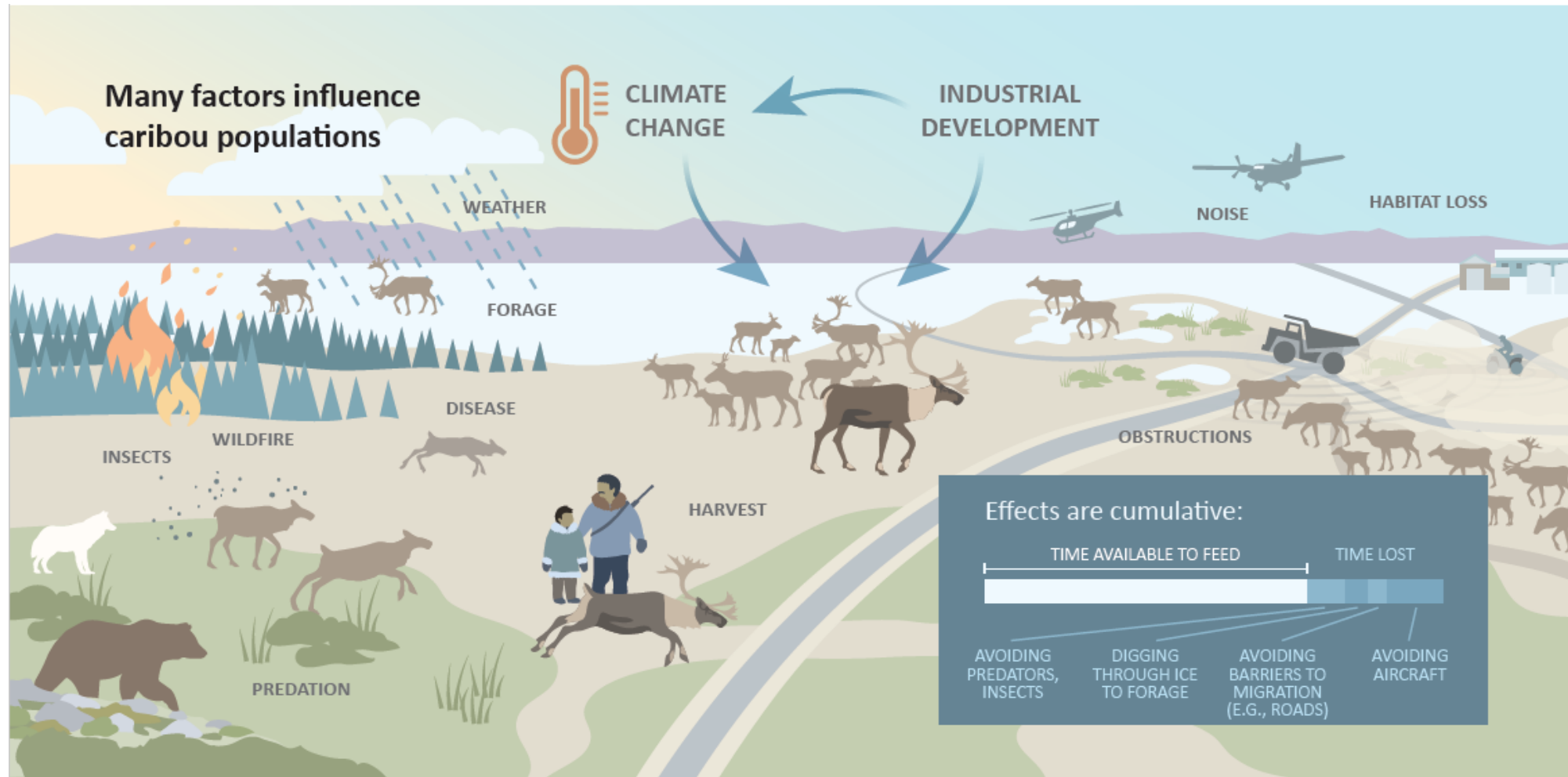


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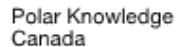
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POLAR Caribou Working Group - Caribou Cumulative Effects Science & *Inuit Qaujimagatuqangit*



<https://www.canada.ca/en/polar-knowledge/infographics/environmental-changes-temperature-impacts.html>



UNIVERSITÉ DE
SHERBROOKE



WILFRID LAURIER UNIVERSITY
LAURIER
Inspiring Lives.

University
of Victoria

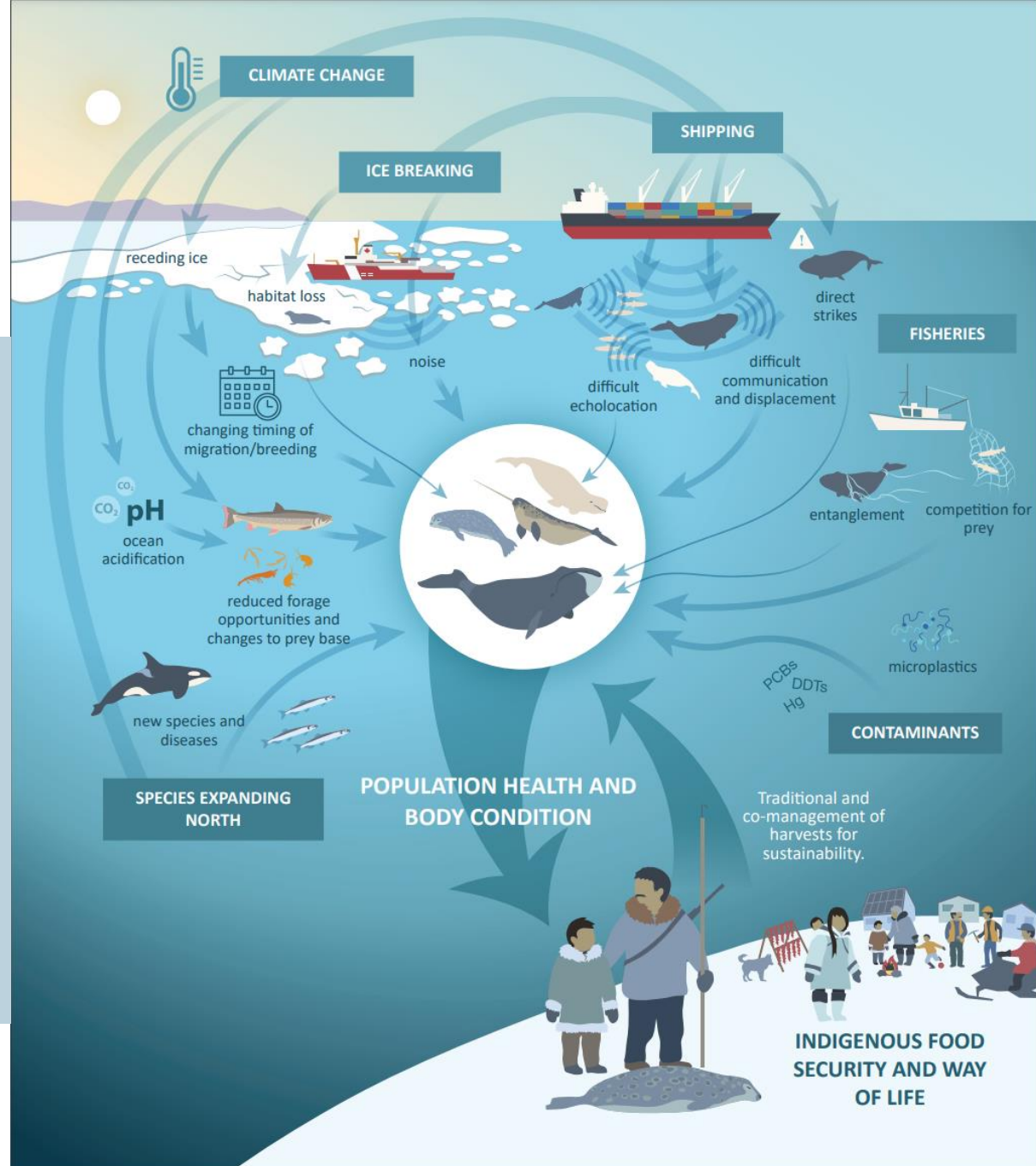
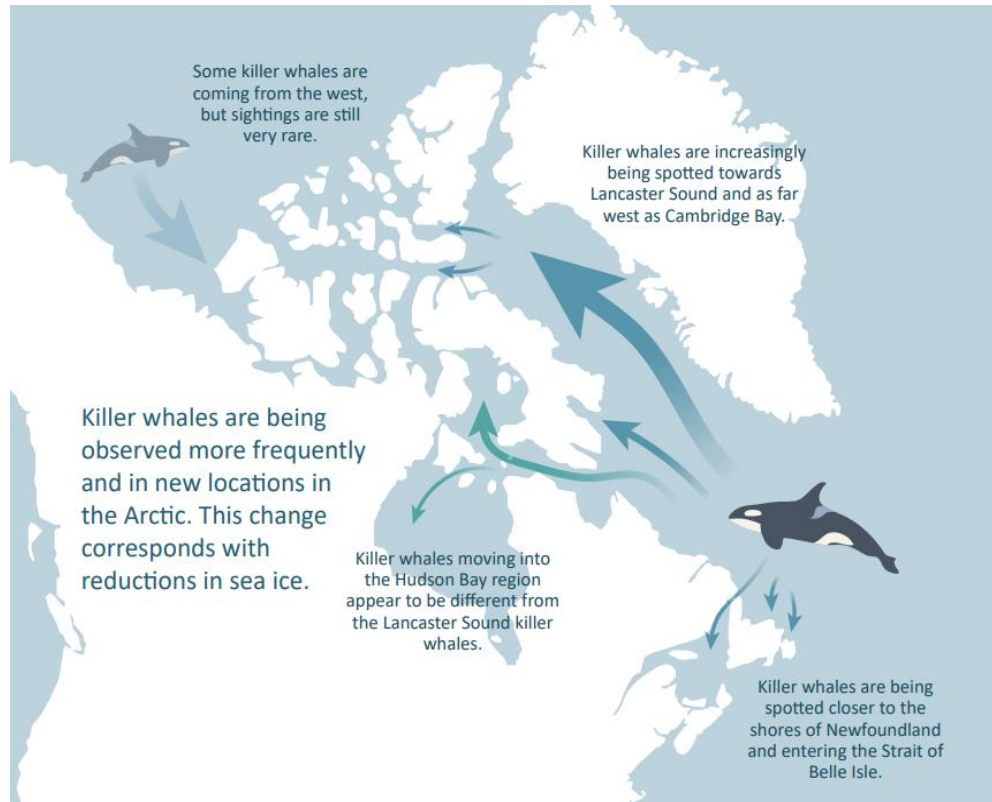
UNIVERSITY OF
CALGARY



MEMORIAL
UNIVERSITY

Warming soils, reduced snow cover, and changes to ocean currents can have a feedback effect lead to even more warming.

POLAR Working Group - Whales and Marine Ecosystem Biodiversity



Fisheries and Oceans
Canada



University
of Manitoba




ocean wise



POLAR Working Group - Arctic Char and other fish populations

<https://www.canada.ca/en/polar-knowledge/infographics/arctic-char-and-other-fish-population-dynamics.html>

 Fisheries and Oceans Canada

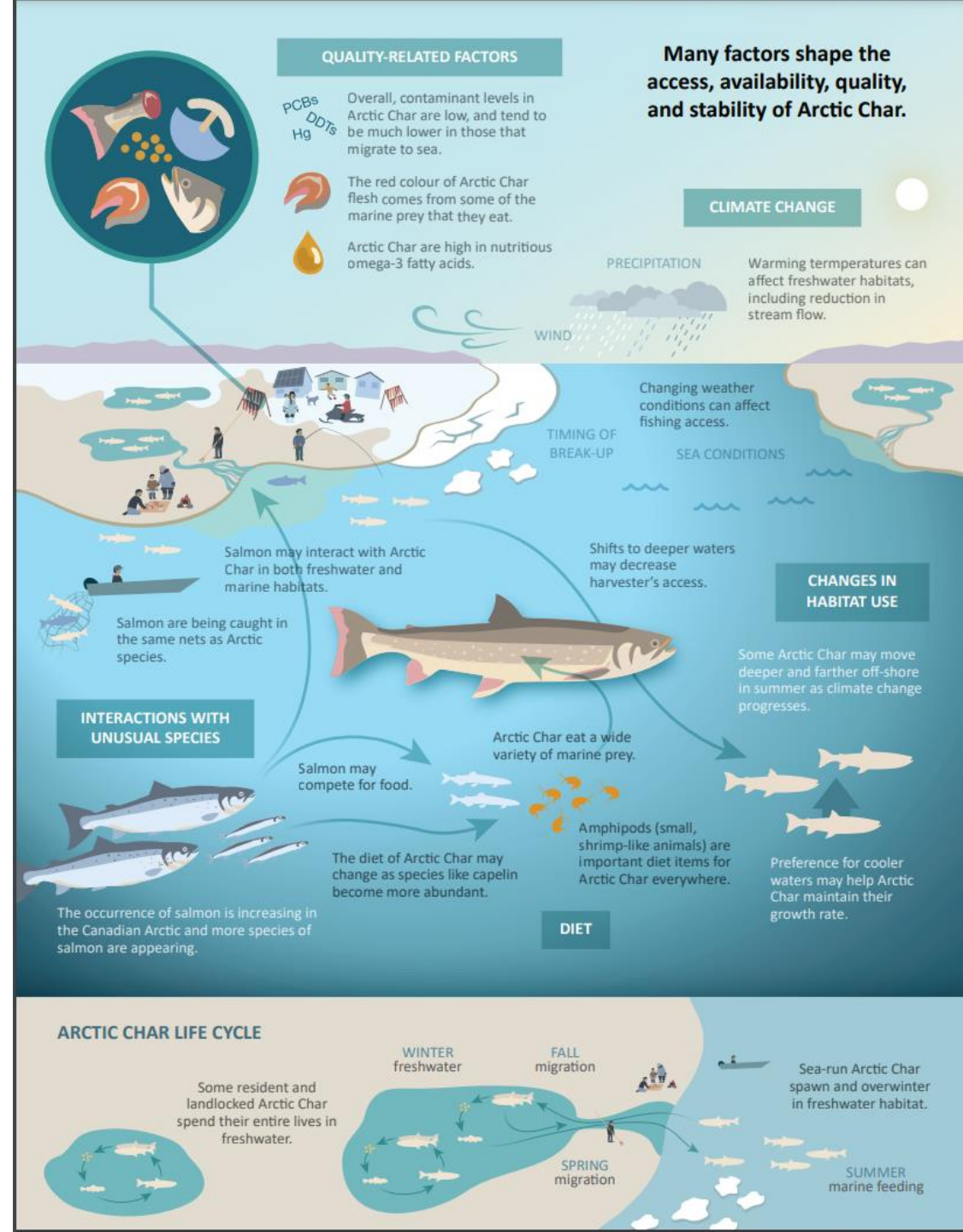
 UNIVERSITÉ LAVAL

 McGill UNIVERSITY

 UNIVERSITY OF WATERLOO

 UBC

 Environment and Climate Change Canada



POLAR Working Group - Climate Change affects Indigenous Food Security

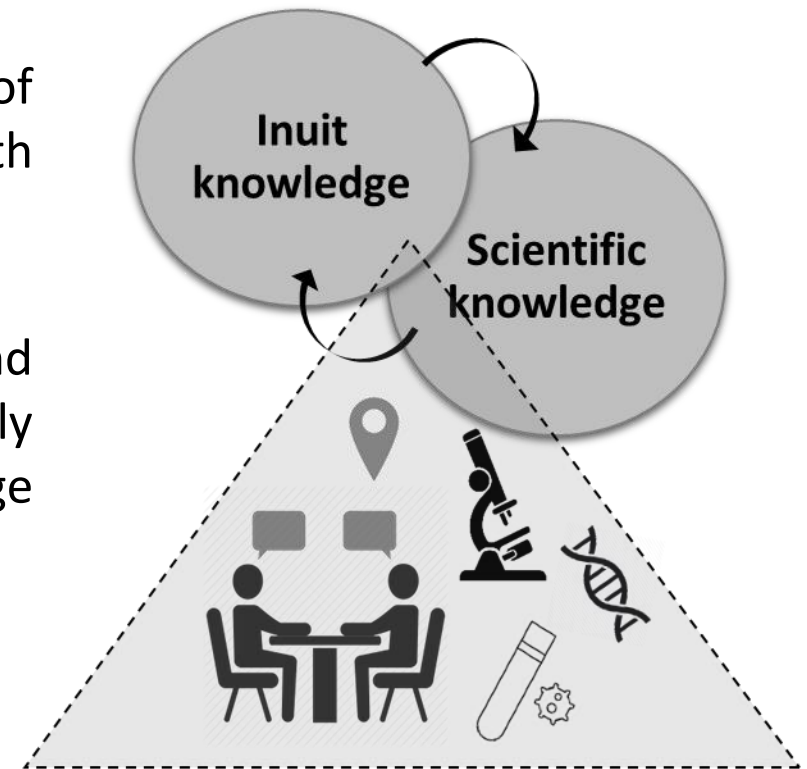
<https://www.canada.ca/en/polar-knowledge/infographics/climate-change-research-and-monitoring.html>



EHTO – POLAR wildlife monitoring: Community-driven program to monitor caribou, muskoxen, and predators on Victoria Island



- Partnership between Ekaluktutiak Hunters & Trappers Association of Cambridge Bay and POLAR in the Kitikmeot Region of Nunavut, with collaboration of University of Calgary
- Objective: To monitor the health status and trends of Dolphin and Union caribou, muskoxen and predators – wolves, wolverines, grizzly bears - on Victoria Island (Cambridge Bay area) using Inuit knowledge in combination with scientific knowledge
- Project initiated in 2019 and still ongoing



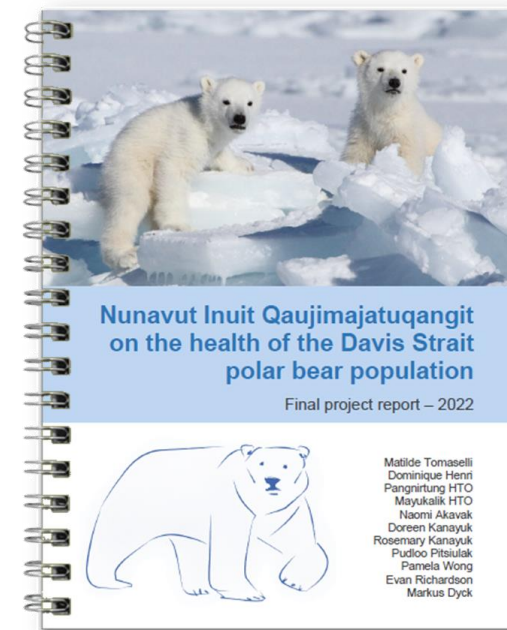
Participatory implementation and interpretation



Nunavut *Inuit Qaujimajatuqangit* on the health of the Davis Strait polar bear population



- Partnership between Government of Canada (POLAR, ECCC), Government of Nunavut (DOE) and HTOs of Pangnirtung and Kimmirut in the Qikiqtani region of Nunavut
- Objective: Gathering and documenting *Inuit Qaujimajatuqangit* on polar bear health around the communities of Kimmirut and Pangnirtung, Nunavut, to support management decisions for the Davis Strait polar bear subpopulation
- Report is publicly available: <https://www.nwmb.com/en/conservation-education/list-all-documents/docs-for-articles/inuit-qaujimajatuqangit-documents/9383-nunavut-iq-polar-bear-report-davis-strait-june-2022-eng/file>



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Environment and
Climate Change Canada

Environnement et
Changement climatique Canada



Avian Influenza monitoring in wild birds

- POLAR is working to increase understanding of the connections between northern community wellness and environmental health
- This includes work to advance and share knowledge of avian influenza in Arctic and Northern Canada
- To guide this work, early engagement with partners including Inuit organizations and other collaborators was initiated in 2022
- Remember to:
 - Consult and follow public health advisory of territorial governments
 - Report dead/sick wild birds to your Conservation/Wildlife Office
 - Remain informed by checking the National Avian Influenza public interface (updated real time)
 - Available searching: [National Avian Influenza – Wild Positives \(argis.com\)](#)
- More Info: <https://www.canada.ca/en/polar-knowledge/publications/avian-influenza-in-canada.html>
- Community Poster: https://www.gov.nu.ca/sites/default/files/en_prevent_the_spread_06062022.pdf ;

<https://www.gov.nu.ca/health/information/programs/avian-influenza>; and [Avian influenza in Canada - Canada.ca](#)



Kitikmeot Health and Food Security Workshop, CHARS 2022

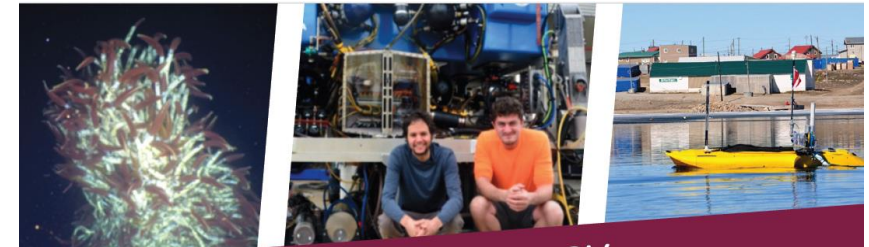
- Kitikmeot Health and Food Security Workshop hosted at CHARS campus, May 2022
- sponsored by Canadian Northern Economic Development Agency (CANNOR) - Northern Innovation Food Challenge fund
- Collaboration led by Government of Nunavut Department of Health with University of Carleton researchers and HTOs
- Using POLAR-funded research: Advancing Community Biomonitoring, Fishery Assessment and Data Stewardship in Nunavut (University of Carleton)
- POLAR presentation and active participation in Kitikmeot Health and Food Security Workshop and working group; ongoing workshops 2022-23



Niqihaqut - A new country food cut-and-wrap facility is coming to Taloyoak. *Niqihaqut* aims to provide affordable healthy food, preserve traditional knowledge, get people out on the land to hone their skills and learn new skills, foster a country food-based economy, and create new jobs for Inuit. (Screenshot from Arctic Inspiration Prize broadcast/APTN)

POLAR Speaker Series at CHARS, 2022


- POLAR Speaker Series brings visiting researchers to share and exchange knowledge with the community and Kitikmeot region
- POLAR collaboration and partnership with research institutions, knowledge holders and Municipality of Cambridge Bay
 - >100 students in schools enjoyed hands-on robotics demos
- POLAR Speaker Series 2022 to feature, among others:
 - Woods Hole Oceanographic Institution – robotics in ocean research in relation to climate change
 - Government of Nunavut – Kitikmeot Grizzly Bear population assessment – non-invasive, community-based initiative
 - Canadian Museum of Nature – Arctic plant responses to climate change
- All welcome – keep an eye out for community posters!



*From Drones to ROVs
Exploring the Arctic Ocean using science and robotics in relation
to climate change*

Polar Knowledge Canada and Woods Hole Oceanographic Institution

Thursday, June 16 from 6:30 PM to 7:30 PM
at the Canadian High Arctic Research Station (CHARS) campus

 *Continuous shuttle between Community Hall and CHARS starting at 6:15 PM*

The community of Cambridge Bay is invited to learn about robotics in research and ocean science in relation to climate change. Researchers from Woods Hole Oceanographic Institution will share important insights about their work and demonstrate remotely operated vehicles (ROVs) including drones and robots on kayaks for science exploration.

Build your own robot—discover weird and wonderful creatures in the depths of Canada's Arctic Ocean and beyond! Learn about a career in science and engineering together with Inuit Qaujimajatuqangit.

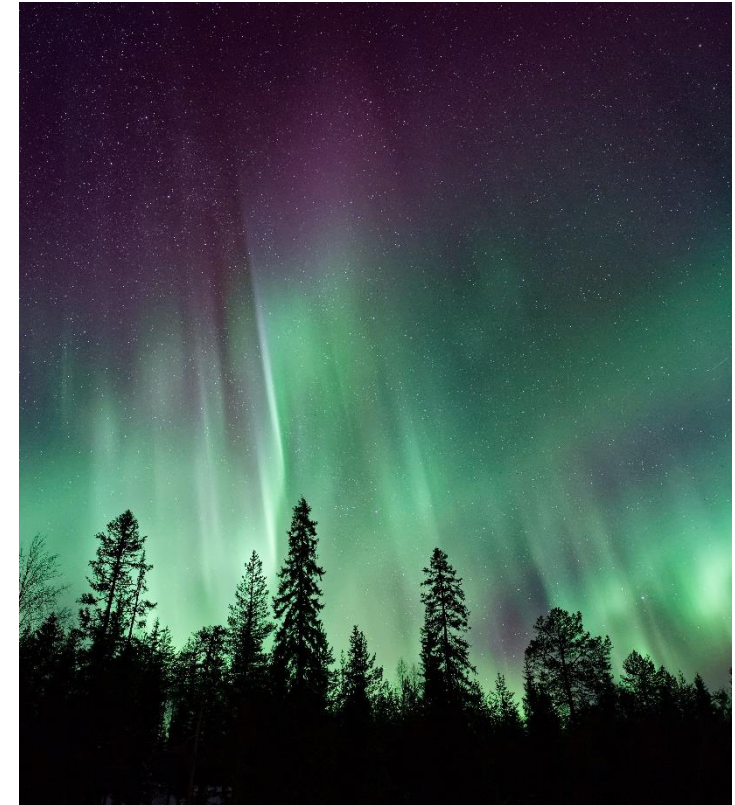
Talks will feature:

- Dr. Anna Michel, Dr. Roo Nicholson, Kevin Manganini, William Pardis, Shawnee Traylor and Sarah Youngs (Woods Hole Oceanographic Institution)

For more information, write to communications@polar-polaire.gc.ca

POLAR Grants and Contributions - select funded projects

- **University of Calgary** - Healthy Animals, Healthy Communities: Using complementary knowledge systems to promote wildlife sustainability
- **Kivalliq Inuit Association** - Braiding western science and *Inuit Qaujimajatuqangit* monitoring in support of freshwater and fish health characterization for Inuu'tuti, the Baker Lake Regional Cumulative Effects Monitoring Program
- **Kitikmeot Regional Wildlife Board** - Kitikmeot caribou IQ: developing an Inuit-led monitoring program
- **University of Windsor** - Co-Producing Indigenous knowledge and scientific understanding to avoid conflict between polar bears and humans in common eider colonies
- **Government of Nunavut** - Kitikmeot Grizzly bear monitoring— non-invasive and community-based initiative
- **Carleton University**— Advancing community biomonitoring, fishery assessment, data stewardship in Nunavut
- **World Wildlife Fund Canada** - Future-proofing community access to country foods: generating community conservation strategies for terrestrial and marine ecosystems in the east Kitikmeot Region of Nunavut
- **Arctic Eider Society** - The Hudson Bay Consortium: mobilizing knowledge for environmental stewardship
- **Qikiqtani Inuit Association** - Food sovereignty and harvesting: Arctic Bay, Iqaluit, Qikiqtarjuaq
- **Kugluktuk Angoniatit Association** – Community monitoring of the health and geochemical composition of the Coppermine River
- **Université Laval** - Arctic Char migrations in a changing Arctic
- **Kitikmeot Inuit Association** - Integration of archival Inuit Knowledge into the Kitikmeot Naonaiyaotit Traditional Knowledge Project



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- **Qikiqtani Inuit Association** - Food sovereignty and harvesting: Arctic Bay, Iqaluit, Qikiqtarjuaq
- **Kivalliq Inuit Association** - Braiding western science and *Inuit Qaujimajatuqangit* monitoring in support of freshwater and fish health characterization for Inuu'tuti, the Baker Lake Regional Cumulative Effects Monitoring Program
- **University of Calgary** - Healthy Animals, Healthy Communities: Using complementary knowledge systems to promote wildlife sustainability
- **Qulliq Energy Corporation** – Geothermal Resource Assessment for Community Energy planning, Nunavut
- **Kitikmeot Regional Wildlife Board** - Kitikmeot caribou IQ: developing an Inuit-led monitoring program
- **Ocean Wise Conservation Association** – Arctic Community Ocean Plastics Initiative
- **Carleton University** - Advancing community biomonitoring, fishery assessment, data stewardship in Nunavut
- **Illu Inc** – Arctic Homes of the Future: Renewable Energy Technologies and Energy-efficiency
- **World Wildlife Fund Canada** - Future-proofing community access to country foods: generating community conservation strategies for terrestrial and marine ecosystems in the east Kitikmeot Region of Nunavut
- **Government of Nunavut** – Coastal Restoration Nunavut: Understanding the impacts of rapid ecosystem change on northern communities
- **University of Ottawa** – Glacier2Ocean Watch: Community-led environmental monitoring in Aujuittuq
- **Institut National de la Recherche Scientifique** – Vulnerability of northern drinking water sources to environmental change
- **Kitikmeot Inuit Association** - Integration of archival Inuit Knowledge into the Kitikmeot Naonaiyaotit Traditional Knowledge Project



Canada - Inuit Nunangat - United Kingdom Arctic Research Program (#CINUK)

- **CINUK** - a collaborative research funding program led by Canada (POLAR, National Research Council, Parks Canada and Fonds du Recherche du Quebec), Inuit Tapiriit Kanatami and the United Kingdom
- Leverages funding from UK and Canada supporting a 20.1M investment in cutting-edge Arctic research, 2022 – 2024/25
- **Each project must have an Inuit lead investigator and demonstrate community partnership and investment**
- 13 projects began in April 2022:
- English: <https://www.canada.ca/en/polar-knowledge/news/2022/05/successful-canadian-inuit-and-uk-research-teams-announced-for-major-new-arctic-research-programme.html>
- Inuktitut: <https://www.canada.ca/content/dam/polar-polaire/news/CINUK-2021-2025-announcement-new-release-inuktitut.pdf>



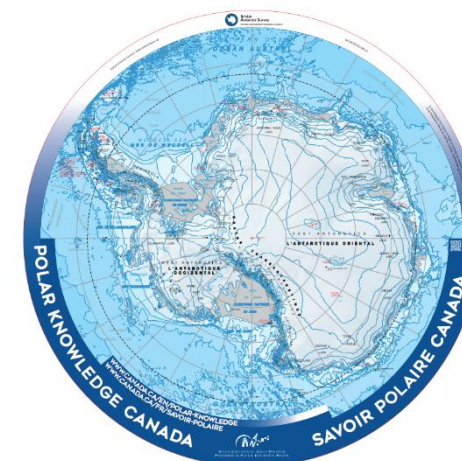
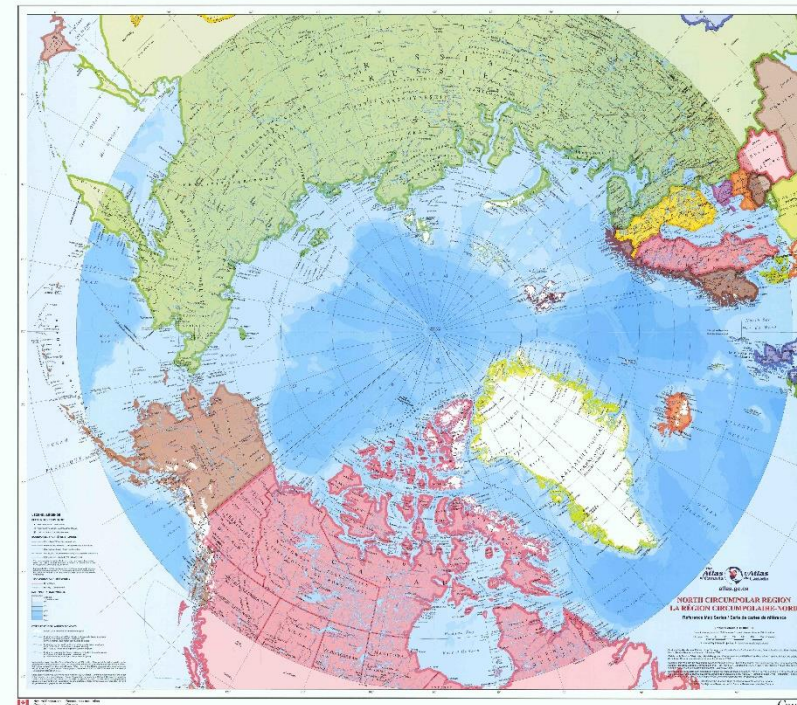
POLAR Research Funding - select CINUK funded projects

- Inuit Qaujisarnirmut Pilirijjutit on Arctic shipping risks in Inuit Nunangat – University of Ottawa
- Carving and Climate Testimony – Inuit Youth, Wellness, and Environmental Stewardship – University of Saskatchewan
- SmartICE – Empowering our communities to map rough ice and slush for safer travel in Inuit Nunangat – Memorial University
- Effective mitigation and adaptation to changing ground conditions for resilient coastal futures – Hamlet of Tuktoyaktuk
- Beavers and socio-ecological resilience in Inuit Nunangat – Wilfred Laurier University
- Nunavut Search and Rescue (NSAR) Project: Supporting Inuit health and well-being, food security, economic development, and community resilience by strengthening Nunavut's whole of society SAR capabilities – St. Francis Xavier University
- Renewable energy microgrid integration for remote, off-grid cabins in Nunavut - Nunavut Nukiksautiit Corporation
- Inuksiutit: Food sovereignty in Nunavut and the coproduction of country food knowledge – York University



International Activities Update

- Canada and 6 other Arctic countries have suspended Arctic Council activities in response to Russian invasion of Ukraine
- COP26 Climate Change meeting, Glasgow, Scotland, 2021 – POLAR panel member: Indigenous Self-determination in Research for Better Climate Outcomes
- POLAR is developing an environmental scan of Arctic and non-Arctic country research interests and capabilities
- Advancing Canada's Antarctic research activity in 2022 for:
 - Consultative Party status under the Antarctic Treaty
 - Full membership status under the Council of Managers of National Antarctic Programs

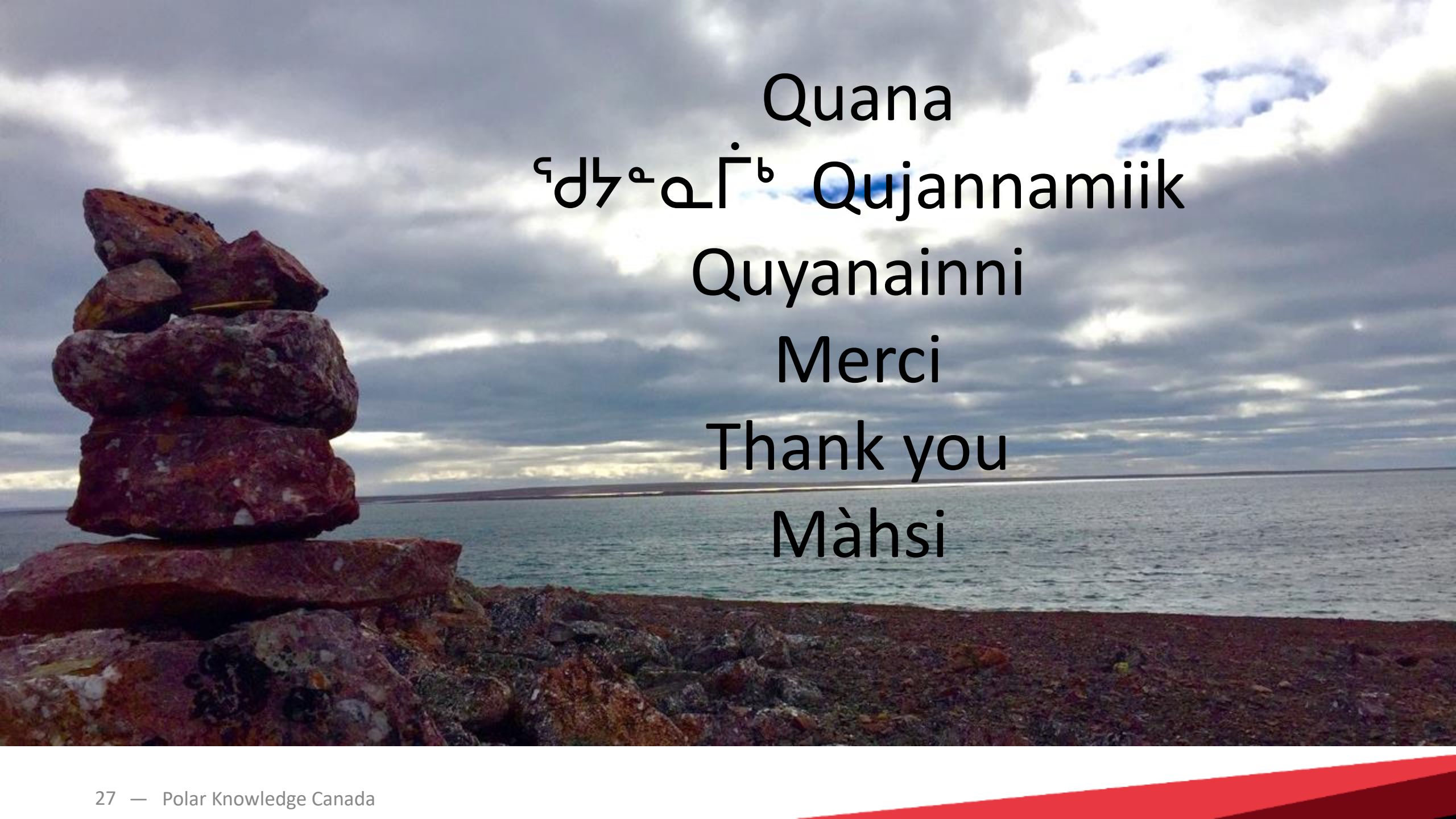


Looking Ahead and Working Together

1) **POLAR Program review, 2022-23** – Science, Technology, Knowledge Management & Engagement

POLAR invites input on:

- POLAR Programs evaluation - new ideas, direction (INP)
- 2023 POLAR engagement process to develop new S&T Framework and Goals, 2025-30
- anticipate 2024 Call for Proposals – new science, IQ and technology research funding

A photograph of a rocky coastline. In the foreground on the left, a stack of several reddish-brown stones is balanced on top of each other. The background shows a calm body of water meeting a distant, flat horizon under a sky filled with large, grey, and white clouds. The text is overlaid on the right side of the image.

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Thank you
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