



# NWT Cumulative Impact Monitoring Program

ANNUAL REPORT 2021-2022

## Programme de surveillance des effets cumulatifs des TNO

RAPPORT ANNUEL 2021-2022

Le présent document contient la  
traduction française du sommaire.

*To watch and understand the land so that it can be used respectfully forever.*

NWT CIMP vision

**Cumulative impacts** are the combined effects that human activities and natural processes have on our environment.

**Cumulative impact monitoring** is a legislative requirement in the NWT. It is a key feature of the Gwich'in, Sahtú and Tłı̨cho land claim agreements, as well as Part 6 of the *Mackenzie Valley Resource Management Act* (MVRMA). Monitoring cumulative impacts is important because, over time, the results of many individual resource management decisions can lead to changes to environmental conditions.

*Cover Credit: Paul Vecsei*

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## EXECUTIVE SUMMARY

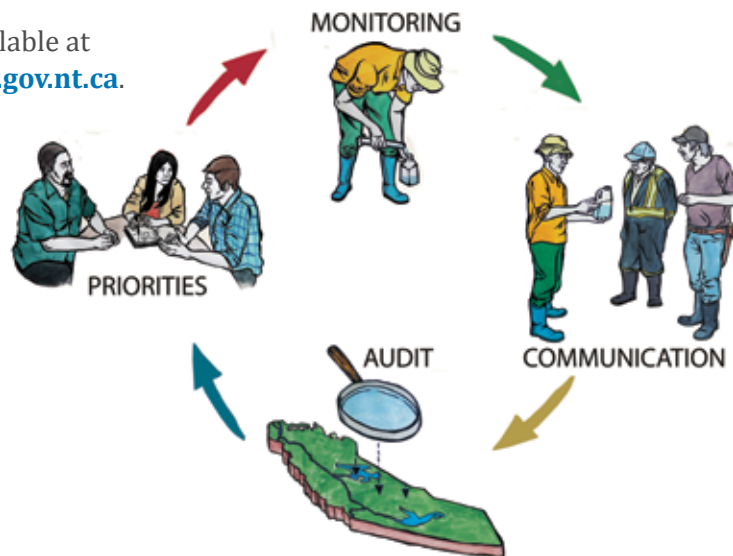
The Northwest Territories Cumulative Impact Monitoring Program (NWT CIMP) promotes and supports community-based monitoring and capacity-building associated with cumulative impact monitoring and research.

While many organizations monitor the NWT environment, NWT CIMP is mandated to understand cumulative impacts and environmental trends. We achieve this by conducting, coordinating, and funding the collection, analysis and reporting of environmental monitoring and research information. Funding is available through an annual call for project proposals.

NWT CIMP is focused on cumulative impacts related to three valued components that decision-makers agree are of critical importance to the people of the NWT: caribou, water and fish.

The goal of the program is to support resource management decision-making and sustainable development by improving our understanding of cumulative impacts. NWT CIMP considers all sources of knowledge, including traditional knowledge (TK) and scientific information.

Monitoring results are available at [NWTDiscoveryPortal.enr.gov.nt.ca](https://www.nwtcimp.ca).



## PROGRESS ON OUR ACTION PLAN

NWT CIMP is guided by a five-year (2021-2025) Action Plan that includes four key activity areas:

1. Working with partners to understand key monitoring priorities;
2. Conducting, coordinating and funding cumulative impact monitoring, research and analysis;
3. Communicating results to decision-makers and the public; and
4. Assessing the program and the regulatory regime by facilitating the NWT Environmental Audit.

Despite the challenges of COVID-19, the program made progress in 2021/22 on all main activities in the Action Plan. Please read the following pages to learn more. Additional information is available at [www.nwtcimp.ca](https://www.nwtcimp.ca).

## PROJECT HIGHLIGHTS

28 projects were supported across the NWT

- 8 projects focused on **caribou**, 5 focused on **fish**, 8 focused on **water**
- 4 projects had multiple valued components
- 3 other topics related to caribou, fish, or water
- 8 projects included traditional knowledge collection/analysis
- \$1.8M in funding was distributed and leveraged \$3M in partner funding
- 1 project was paused due to COVID-19

63 communications products released for NWT CIMP-funded projects

- 16 peer-reviewed publications
- 13 plain-language summaries
- 34 reports
- 17 community presentations in various formats to discuss project results delivered by NWT CIMP funded project leads

# SOMMAIRE

Le programme de surveillance des effets cumulatifs des Territoires du Nord-Ouest (PSECTNO) favorise et soutient la surveillance communautaire et le renforcement des capacités associées à la surveillance des effets cumulatifs et à la recherche dans ce domaine.

Plusieurs organismes surveillent l'environnement ténos, mais le PSECTNO se distingue par le mandat qui l'oriente : comprendre les effets cumulatifs et les tendances environnementales. Pour y parvenir, l'équipe effectue, coordonne et finance la collecte, l'analyse et la communication d'informations sur la surveillance environnementale et de données de recherche. Le financement est accessible à partir d'un appel de propositions annuel.

Le PSECTNO porte sur les effets cumulatifs liés à trois composantes valorisées (CV) qui, de l'avis des décideurs, sont d'une importance cruciale pour les Ténos : le caribou, l'eau et le poisson.

Le Programme vise à faciliter la prise de décisions relatives à la gestion des ressources et au développement durable grâce à une meilleure compréhension des effets cumulatifs. Les responsables du PSECTNO considèrent toutes les sources de connaissances, y compris les connaissances autochtones (CA) et les données scientifiques.

Les résultats de la surveillance se trouvent à l'adresse suivante : [nwtdiscoveryportal.enr.gov.nt.ca](http://nwtdiscoveryportal.enr.gov.nt.ca)



# AVANCEES DU PLAN D'ACTION

Le PSECTNO est défini par un plan d'action quinquennal (2021-2025) qui comprend quatre grands domaines d'activité :

1. Collaboration avec les partenaires pour définir les priorités clés en matière de surveillance;
2. Coordination, exécution et financement de la surveillance, de la recherche et de l'analyse en matière d'effets cumulatifs;
3. Communication des résultats aux décideurs et à la population;
4. Évaluation du programme et du cadre de réglementation en facilitant la vérification environnementale aux TNO.

Malgré les défis liés à la COVID-19, le PSECTNO a réalisé des progrès dans tous les domaines d'activité du plan d'action en 2021-2022. Vous trouverez de plus amples renseignements au [enr.gov.nt.ca/fr/services/programme-de-surveillance-des-effets-cumulatifs-psec-des-tno](http://enr.gov.nt.ca/fr/services/programme-de-surveillance-des-effets-cumulatifs-psec-des-tno).

# FAITS SAILLANTS SUR LES PROJETS

28 projets were supported across the NWT

- 8 projets portaient sur le **caribou**, 5 sur **poisson**, 8 sur **l'eau**
- 4 projets portaient sur plusieurs composantes valorisées
- 3 projets portaient sur d'autres sujets relatifs au caribou, au poisson et à l'eau
- 8 projets comprenaient la collecte et l'analyse de connaissances traditionnelles
- 1,8 million de dollars de financement distribué au titre du PSECTNO et 3 millions de dollars de financement provenant de partenaires
- 1 projet a été suspendu en raison de la pandémie

63 produits de communication ont été publiés dans le cadre des projets financés

- 16 publications évaluées par les pairs
- 13 résumés en langage clair
- 34 rapports
- 17 présentations communautaires ont été données par des responsables de projets financés par le PSECTNO sur des résultats de projets

# 1. WORKING WITH PARTNERS TO UNDERSTAND KEY MONITORING AND RESEARCH PRIORITIES

## MONITORING PRIORITIES

This year we hosted a series of meetings with our partners to refine our monitoring and research priorities (Blueprints) for **caribou, water and fish**, ensuring they continue to meet the needs of northern regulatory decision-makers. Collectively, we also developed some guidance on Traditional Knowledge Monitoring Ideas.



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**NWT CIMP-funded projects identified as being able to contribute to a future decision-making process: 100%.**

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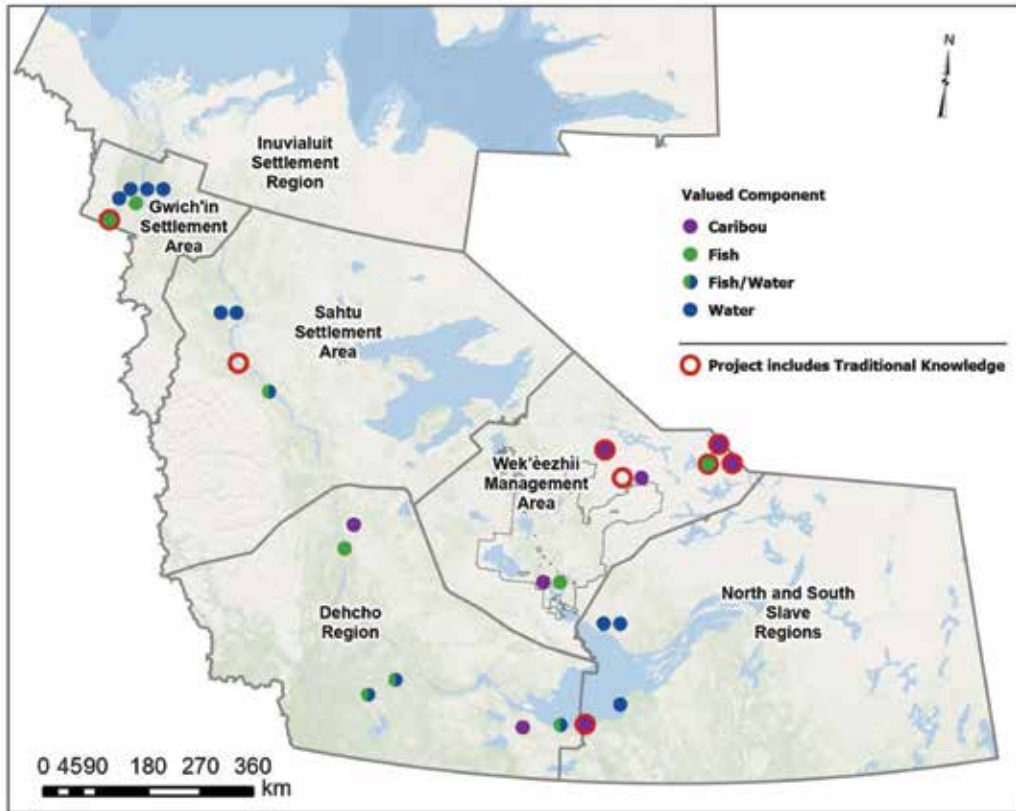
## NWT CIMP STEERING COMMITTEE

NWT CIMP continued to engage and support its Steering Committee, made up of representatives from eight regional Indigenous governments, territorial and federal governments, and several co-management boards. The Steering Committee met virtually (due to COVID-19) three times in 2021/22 to provide guidance on the overall program and 12 new project funding proposals.



*Steering Committee members engage in a discussion at a meeting held before COVID-19.*

## MAP OF 2021-22 NWT CIMP PROJECTS



## 2. CONDUCTING, COORDINATING AND FUNDING CUMULATIVE IMPACT MONITORING, RESEARCH AND ANALYSIS

NWT CIMP conducts, coordinates, and funds the collection, analysis and reporting of information related to environmental conditions.

### NWT CIMP FUNDING PROCESS:

The program continues to fund projects to generate new knowledge about caribou, water and fish. The knowledge generated is focused on furthering our understanding of cumulative impacts and environmental trends.

### GNWT-ENR CUMULATIVE IMPACT FRAMEWORK (CIF):

NWT CIMP continued leading the development of the Department of Environment and Natural Resources (ENR) CIF that describes an adaptive monitoring, modeling and management approach to cumulative impacts in the NWT. We anticipate sharing a draft with our Steering Committee in 2022/23.

### PILOT STUDY TO MONITOR CUMULATIVE IMPACTS OF WATER QUALITY IN LAKES:

- NWT CIMP successfully completed the second of three years of a pilot study testing a method of predicting cumulative impacts, modeling drivers of change and coordinating multiple water quality sampling programs.

- The pilot study is located in the Yamba Basin, north of Lac de Gras and samples 30 lakes, each three times a year (July, August, March).
- Data analysis is underway. A study evaluation is expected in 2023/24.

See Section 5 for highlighted projects that finished in 2021/22





## SUPPORTING INDIGENOUS COMMUNITIES





Twenty-one (21) funded projects were developed directly in response to community concerns, with six of these being completed. CIMP94 and CIMP154 are highlighted in Section 5 as examples of projects that were initiated based on a community concern.

A complete list of all projects funded by NWT CIMP is available at [www.nwtcimp.ca](http://www.nwtcimp.ca).

### 28 Projects

were supported across the NWT

-  **8** Projects focused on caribou.
-  **5** Projects focused on fish.
-  **8** Projects focused on water.
-  **3** Projects focused on other topics related to caribou, fish or water.

-  **1** Project was paused due to COVID-19.
-  **4** Multiple valued components.
-  **8** Projects that included traditional knowledge collection/analysis.
-  **\$1.8M** In funding distributed by NWT CIMP, leveraged \$3M in partner funding.



## 3. COMMUNICATING RESULTS TO DECISION-MAKERS AND THE PUBLIC

One key goal of NWT CIMP is to ensure environmental monitoring information, including all NWT CIMP-funded project results, are easily accessible to key decision-makers and the public.

In response to the COVID-19 pandemic, some NWT CIMP funded researchers used alternative methods, such as virtual meetings, to communicate with decision-makers and the public to ensure the continued dissemination of environmental monitoring information.

### 63 Communication Products

released for NWT CIMP-funded projects.

-  **16** Peer-reviewed publications
-  **13** Plain-language summaries

 **34** Reports

 **17**

Community presentations in various formats to discuss project results delivered by NWT CIMP-funded project leads.

## SUPPORTING DECISIONS ABOUT THE ENVIRONMENT

NWT CIMP focused on providing information to regulators and the public to support effective environmental decision-making. Project leads were required to contact local decision-makers as part of the funding application process to ensure projects met their needs. Several examples of projects that contributed to northern environmental decision-making are highlighted below.

NWT CIMP also participated in the Mackenzie Valley Environmental Impact Review Board’s environmental assessment process for the Pine Point Mine project, providing recommendations about how to consider cumulative impacts, for the Terms of Reference.

Project Title (report page #)	Environmental Decision
Tłı̨chǫ Ekwǫ̀ Nàxoèhdee K’è: “Boots on the Ground” Bathurst Caribou monitoring program (CIMP94) – (page 16)	Results are provided directly to the Tłı̨chǫ Government – ENR Joint Management Proposal on Bathurst ekwǫ̀ and Bluenose east ekwǫ̀ and directly to several ekwǫ̀ management committees.
Understanding fish mercury concentrations in Dehcho lakes (CIMP154) – (page 24)	Development and refinement of GNWT Health and Social Services human consumption advisories for fish that are related to mercury.
Community-based monitoring of whitefish in the lower Mackenzie River watershed (CIMP195) – (page 26)	Provides baseline information for the Gwich’in Renewable Resources Board to develop a stock assessment and management plan if a commercial whitefish fishery is implemented.
Clues in the water: Detecting populations and spawning migration of Inconnu ( <i>Stenodus leucichthys</i> ) in river systems around Great Slave Lake (CIMP218) – (page 28)	Will inform future management strategies for Great Slave Lake providing critical information areas important to Inconnu spawning migration in river systems.

More information on each project is provided in Section 5.

## COMMUNICATION WITH COMMUNITIES AND THE PUBLIC

Two-way communication about monitoring and research projects directly with communities continued to be a key activity of the program. All NWT CIMP project leads are required to engage with local communities or Indigenous governments and Indigenous organizations prior to and during their project and to report their results directly to them.

NWT CIMP hosts an annual, regional workshop to facilitate the sharing of project results and ideas. This workshop is an opportunity to bring together community members, regulators, government and researchers to discuss results and provide feedback, and encourages the development of partnerships.

A results workshop for the Dehcho region was scheduled for January 2022. Unfortunately, it could not be held due to COVID-19. Instead, pre-recorded video presentations of project results were distributed to Dehcho communities and made available at [www.nwtcimp.ca](http://www.nwtcimp.ca).

Credit: Tawna Brown Photography, www.nwtarts.com



Colville Lake, NWT.





## ONLINE INFORMATION SOURCES

Information and knowledge generated by NWT CIMP continues to be publicly available.

## NORTHERN ENVIRONMENTAL RESEARCH BULLETINS

Program staff worked with project leads to develop and publish 11 plain language summaries of their projects. Topics covered by the Bulletins included trends in berry harvesting, habitat selection by boreal caribou and remote sensing of vegetation on the Bathurst caribou herd range. An archive of Bulletins is available at [www.nwtcimp.ca](http://www.nwtcimp.ca).

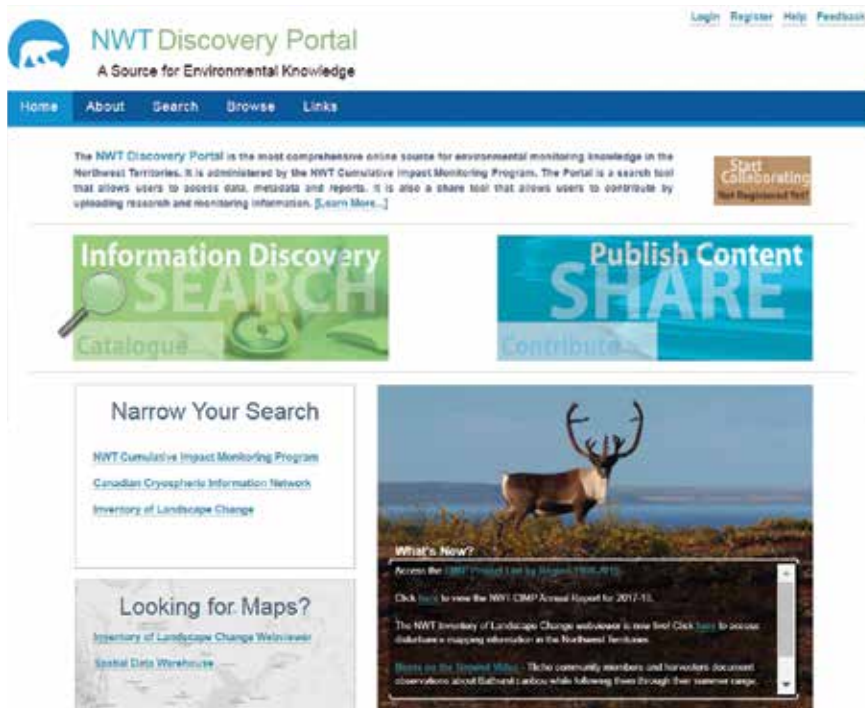
## INVENTORY OF LANDSCAPE CHANGE (ILC) WEB VIEWER

Comprehensive maps of human and natural disturbance, such as roads and forest fires, are available online through the Inventory of Landscape Change Web Viewer at [www.nwtcimp.ca](http://www.nwtcimp.ca). This tool can be used to explore cumulative impacts by layering disturbance maps and are available for download. Planned updates to the ILC in 2022/23 include improving existing datasets, incorporating new data and providing training to GNWT and other users.

## NWT Discovery Portal

The NWT Discovery Portal continued to be the most comprehensive online source for environmental monitoring knowledge in the NWT. There is a wide range of information to meet the needs of various audiences, including scientific journal articles, plain language presentations, raw data and maps:  
[www.nwtdiscoveryportal.enr.gov.nt.ca](http://www.nwtdiscoveryportal.enr.gov.nt.ca).

The easiest way to find NWT CIMP project results is to consult the list of funded projects from 1999 to 2022 on the NWT Discovery Portal main page ([www.nwtdiscoveryportal.enr.gov.nt.ca](http://www.nwtdiscoveryportal.enr.gov.nt.ca)) and then conduct a search using the NWT CIMP project number (e.g. CIMP197). A list of current projects is available at the end of this report.



## 4. FACILITATE THE NWT ENVIRONMENTAL AUDIT

The NWT Environmental Audit is an independent review to assess the effectiveness of the regulatory regime, as well as the quality of environmental information and processes related to monitoring cumulative impacts. It is meant to check how well our regulatory system is working to protect the environment.

The Audit is a commitment of the Gwich'in, Sahtú and Tłı̨cho land claim agreements and a legislated requirement of the MVRMA. The Audit highlights both successes and challenges. A key purpose of the Audit is to consider the challenges and provide useful recommendations that will improve how the environment is managed.

The MVRMA requires an Environmental Audit to be completed at least every five years by an independent consultant. The latest NWT Environmental Audit was released in the fall of 2020.

Preparations have begun for the next Audit, to be released in 2025.

For more information visit this website:

[www.enr.gov.nt.ca/en/services/nwt-environmental-audit](http://www.enr.gov.nt.ca/en/services/nwt-environmental-audit).



## 5. HIGHLIGHTED PROJECT SUMMARIES

Seven (7) projects were completed in 2021/22; the results of these projects have been highlighted below.

### CARIBOU FOCUSED PROJECTS

#### **T̨ı̨cho Ekwò Nàxoèhdee K'è: “Boots on the Ground” Bathurst caribou monitoring program (CIMP94)**

*Petter Jacobsen, T̨ı̨cho Government (petterjacobsen@gmail.com)*

Ekwò Nàxoèhdee K'è (Boots on the Ground) is an ekwò (caribou) monitoring program based upon the traditional knowledge of T̨ı̨cho and Inuit Indigenous elders and harvesters. Due to the dramatic decline of the barren-ground caribou herds and a self-imposed ban on hunting, the T̨ı̨cho Government Chiefs want their own people on the land to monitor the current state of the barren-ground ekwò.

T̨ı̨cho chiefs want to understand the current situation of the Bathurst herd based on the traditional knowledge and methods of their own elders and harvesters, to make accurate and effective management decisions.

From 2016 to 2021, the project observed:

- Habitat and food were in excellent condition due to much rain and wind.
- Ekwò were ‘good’ in health and fat.
- Calf numbers were low in the Kokèti ekwò (Bathurst caribou herd).
- Wolves were consistently observed in the presence of the Kokèti ekwò.

- Impacts from climate change including:
  - o earlier spring melt
  - o permafrost melt causing collapsing eskers and sinkholes
  - o disappearance of summer snow causing changes in caribou behavior and migration patterns
  - o new species in the area including the bald-eagle and moose.

Results are provided directly to the T̨ı̨cho Government – ENR Joint Management Proposal on Bathurst ekwò and Bluenose east ekwò.

Credit: P. Jacobsen



*T̨ı̨cho monitors watching ekwò by Jericho mine, north of Kokèti (Contwoyto Lake).*

## Recovery of Boreal Caribou habitat after forest fires (CIMP194)

Richard Simon, Deninu Kų́ First Nation ([mdentremont@lgl.com](mailto:mdentremont@lgl.com))

Deninu Kų́ First Nation Elders and harvesters recognize forest fires as a major threat to the local boreal caribou population. Boreal caribou rely on lichen as a food source during winter. These lichens are vulnerable to high burn severity. This study examined the impacts of forest fires on the recovery of boreal caribou habitat.

Credit: M. d'Entremont



*The height of lichen was measured by lowering a clear plastic ruler to the ground at each intersection where lichen occurred.*

As climate change continues, forest fire frequency and severity are expected to increase. By looking at impacts of recent and historic forest fires on lichen abundance, individuals can predict when habitat disturbed by forest fires can again be used by boreal caribou.

The project found that:

- Lichen abundance was higher in open habitats with average to dry soil conditions.
- The abundance of lichens present was influenced by the severity of the fire that had occurred.
- Small amounts of lichens were present within 1-5 years post fire, with certain species recolonizing quickly.
- After 10 years post fire, there was a decline in lichen coverage, likely due to the increase in the naturally regenerating forest cover.
- At 20 years post fire, an increase in lichen growth occurred again.
- Some lichen species reach their maximum coverage 20 years post fire, while others continued to increase over the next 40-100 years.

This research adds to the growing amount of knowledge on caribou habitat recovery post fire and will be used to inform boreal caribou range planning and management.

## WATER FOCUSED PROJECTS

### How will fish communities in Gwich'in and Inuvialuit lakes respond to climate change? (CIMP197)

Derek Gray, Wilfrid Laurier University ([dgray@wlu.ca](mailto:dgray@wlu.ca))

Gravel roads can be significant sources of dust to surrounding habitats. Changes in water quality may affect the small animals, such as waterfleas, living in these lakes. Zooplankton living in the open water, are sensitive to changes in pH, conductivity, and calcium levels. Zooplankton are important source of food for fish, so changes in these small animals could impact fish communities.

This project had two main objectives: 1) To determine if changes in water chemistry caused by road dust affects invertebrate communities in roadside lakes; and 2) To examine if the type of roadside vegetation influences the transport of road dust to lakes. To achieve these objectives, researchers collected invertebrates and water quality data from 18 lakes at a range of distances from the road (30-1000 m). The transport of dust from the highways to lakes surrounded by either boreal or tundra vegetation was measured.

Results showed that:

- Surprisingly, the water quality of the lakes visited did not differ depending on how far they were located from the road.
- The waterfleas in the lakes also did not differ based on how far the lakes were from the road.
- Our study suggests that there were no detectable effects of road dust for the 18 lakes visited.

Credit: D. Gray



*Research team hiking to a lake from the highway.*



## Nutrient and contaminant status in the wetlands of the Slave River Delta (CIMP209)

*Lorne Doig, University of Saskatchewan (lorne.doig@usask.ca)*

There are ongoing concerns from communities along the Slave River about the cumulative impacts from historical, current and planned upstream industrial activities and climate change. This study looked at addressing knowledge gaps about the influence of water source on nutrient and contaminant levels in the interior wetlands of the Delta.

Across the broad expanse of the Delta, some wetlands are mostly refilled with river water, while others are resupplied largely from snowmelt and rain. To assess the influence of water source on levels of nutrients and trace elements in wetlands and trace metal movements in food webs, water, sediment, algae, zooplankton, benthic macroinvertebrates, and small-bodied fish were collected.

The project found that:

- Water source affects Slave River wetland water quality, sediment geochemistry, and mercury (Hg) concentrations in plant and animal life.
- Total mercury levels are low in all biota collected, with Hg concentrations increasing in higher trophic levels and in invertebrates in wetlands having greater connectivity to the Slave River.
- Trace metals concentrations, released from sediment or groundwater, were low within the waterbodies investigated.

These findings continue to inform decision-makers regarding the sensitivity of Slave River Delta.

## FISH FOCUSED PROJECTS

### Understanding fish mercury concentrations in Dehcho lakes (CIMP154)

Heidi Swanson, University of Waterloo ([hswanson@uwaterloo.ca](mailto:hswanson@uwaterloo.ca))

In 2012, Dehcho communities approached researchers with several questions regarding fish mercury levels. People wanted to know why fish mercury levels were high enough in some lakes to warrant site-specific consumption advisories, whereas in nearby lakes the fish mercury levels were quite low.

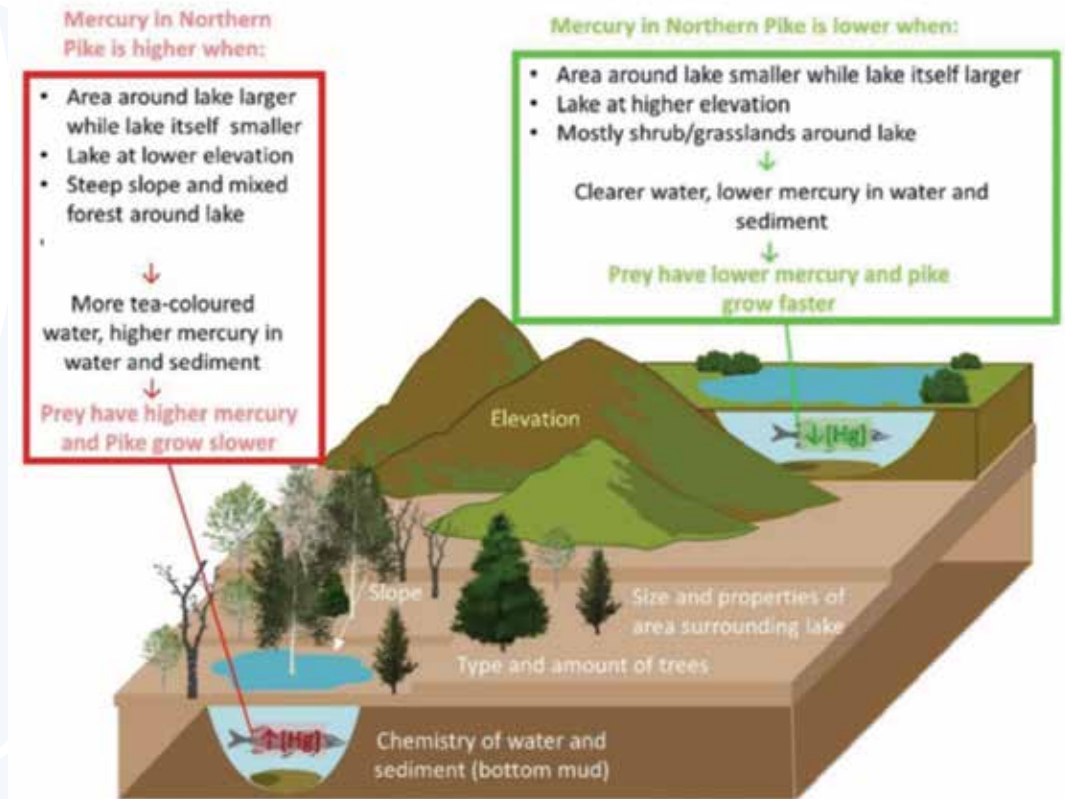
Over the last decade, this project looked at the drivers of variability among lakes in fish mercury levels. Working with Dehcho Guardians, fish, water, sediment, invertebrates, and zooplankton were collected. Researchers also characterized the land that water flows over to get to the lakes (i.e., catchments) using images from satellites.

The project found that:

- Among-lake variability in mercury levels in Northern Pike is driven by growth rate and levels of mercury lower in the food chain.
- These two variables are in turn driven by the amount of dissolved organic carbon (i.e., a lake with high dissolved organic carbon has a tea colour) in lakes and the amount of mercury in water and sediment.
- These water chemistry factors were ultimately driven by catchment characteristics that included the relative size of the catchment, the steepness of the catchment, and the amount of forest cover in the catchment.

This research not only helps community members identify and understand the safest, healthiest sources of fish in the region, but also helps to understand how continuing environmental change could affect fish mercury levels through land-water-fish interactions and connections.

Credit: Bronte McPheeran and Mehdi Moslemi-Aqdam



Representation of linkages among catchment characteristics, lake characteristics, and fish mercury levels.

## Community-based monitoring of whitefish in the lower Mackenzie River watershed (CIMP195)

Rachel Hovel, Simon Fraser University ([rachel.hovel@maine.edu](mailto:rachel.hovel@maine.edu))

The lower Mackenzie River basin is experiencing environmental change and is home to multiple fish species that migrate, including whitefish. Migrations may make this species susceptible to landscape changes (e.g. thaw-slumping and lower water levels), but more information is needed.

This project established a community-based data collection program in the lower Mackenzie River watershed focused on broad whitefish. Working with Gwich'in harvesters, we developed community sampling capacity, created protocols and collected a time series on broad whitefish migration timing, body condition, relative abundance, and other attributes.

The project found that:

- Water samples revealed very high variability in strontium isotope signatures throughout the watershed. This allowed for the identification of fish habitat use within freshwaters.
- About 20% of whitefish migrated to the ocean at some point in their life, and a majority of individuals used three or more rivers.
- Climate change-related impacts to whitefish are likely to accumulate as long-lived fish (age range in our dataset: 4-28 years) move across habitats.
- There is potential of analyzing standardized photographs as a low-effort means of data collection for remote fisheries monitoring.

The *Lower Mackenzie Watershed Whitefish Monitoring Program* collected a 5-year dataset that creates a baseline and informs whitefish ecology and habitat use. A co-authored paper on observations and the importance of traditional knowledge in the context of climate change was developed and can be used for decision-making.

Credit: Derek Gray



*Rainbow at Gwich'in Lake, NWT.*



## Clues in the water: Detecting populations and spawning migration of Inconnu (*Stenodus leucichthys*) in river systems around Great Slave Lake (CIMP218)

Lauren Wiens, Department of Fisheries and Oceans (Lauren.Wiens@dfo-mpo.gc.ca)

Environmental DNA (eDNA) is an effective non-invasive detection tool used to determine species in aquatic environments. In this study, eDNA methods were used to increase our understanding of the distribution and movement of Inconnu in tributaries around Great Slave Lake. Detection of new areas used by Inconnu may reveal previously unsampled or poorly characterized populations that may contribute to the commercial fishery.

The project found that:

- Inconnu eDNA was detected in the Marian, Yellowknife, Hay, Buffalo, Yates, Whitesand, Salt and Slave Rivers.
- Inconnu eDNA was not detected in the Taltson and Little Buffalo Rivers, although it had been during an earlier pilot project.
- The rate of detection differed between seasons, with a higher rate being found in the fall.

Project results will help inform future management strategies for Great Slave Lake, providing information about critical river systems and areas important to Inconnu spawning migrations.

Credit: Kevin Antoniak (Nivek Ltd, Forth Smith)



Miles Barry (Forth Smith) collecting eDNA samples in Slave River.

## 6. LIST OF 2021/22 NWT CIMP FUNDED PROJECTS

CIMP#	Project Type	VC	Project Title	Lead Organization	Funding Year
CIMP94	TK	Caribou	Tłıchq̄ Ekwò Nàxoèhdee K'e: "Boots on the Ground" Bathurst Caribou monitoring program	Tłıchq̄ Government	13 of 13
CIMP127	Science	Fish	Monitoring for impacts of harvest and climate change on Great Bear Lake aquatic system	Department of Fisheries and Oceans	10 of 12
CIMP132	Science	Fish and Water	Integrated Eco-monitoring and assessment of cumulative impacts of Great Slave Lake fisheries	Department of Fisheries and Oceans	11 of 12



Credit:GNWT

Lorraine Brekke sampling water depth in a lake in the Yamba Lake basin.

CIMP#	Project Type	VC	Project Title	Lead Organization	Funding Year
CIMP154	Science	Fish and Water	Understanding fish mercury concentrations in Dehcho lakes	University of Waterloo	3 of 3
CIMP186	Science	Other	NWT Permafrost Mapping Collective	NWT Geological Survey	2 of 3
CIMP187	Science	Caribou	Vegetation productivity and phenology across the Bathurst caribou range	Queen's University	5 of 6
CIMP191	TK	Other	Watching the land: Knowing the cumulative impacts of change	Kát'odeeche First Nation	4 of 6
CIMP194	Science	Caribou	Recovery of boreal caribou habitat after forest fires	Deninu Kųę First Nation	3 of 3
CIMP195	Science	Fish	Community-based monitoring of whitefish in the lower Mackenzie River watershed	Simon Fraser University	5 of 5
CIMP197	Science	Fish and Water	How will fish communities in Gwich'in and Inuvialuit lakes respond to climate change?	Wilfrid Laurier University	4 of 4
CIMP205	Science	Caribou	Identifying habitats that influence body condition and fitness of adult female boreal caribou in the southern Northwest Territories	GNWT - ENR	3 of 3
CIMP207	Science	Caribou	Cumulative Effects Assessment of Four Barren-ground Caribou Herds in the NWT	Wek'eezhi Renewable Resource Board	2 of 3
CIMP209	Science	Water	Nutrient and contaminant status in the wetlands of the Slave River Delta	University of Saskatchewan	3 of 3

CIMP#	Project Type	VC	Project Title	Lead Organization	Funding Year
CIMP210	Science	Water	Development of a Biological Monitoring Program to Detect Change in Stream Health Along the Dempster-Inuvik-Tuktoyaktuk-Corridor	Wilfrid Laurier University	3 of 3
CIMP211	Science	Fish and Water	Impacts of Permafrost Thaw Slump Extent, Severity and Persistence on Stream Biotic Health	Wilfrid Laurier University	2 of 2
CIMP212	Science	Water	Investigating the seasonality of subarctic lakes in changing climate using satellite & field data	Wilfrid Laurier University	2 of 3
CIMP214	Science and TK	Caribou	Bridging Traditional and scientific knowledge through a novel predictive approach to understanding the role of pathogens in the decline of a key Arctic species	University of Calgary	1 of 2
CIMP215	Science	Water	Aquatic ecosystems in the Fort Good Hope area as indicators of environmental change	Institut national de la recherche scientifique	2 of 3
CIMP216	Science	Water	Hydrocarbon-derived compounds (anthropogenic and natural) in water bodies in the Sahtú	Environment and Climate Change Canada (ECCC)	2 of 3
CIMP217	Science and TK	Fish	Impacts of permafrost degradation on łuk dagaii habitat in the Peel River Watershed	University of Victoria	2 of 3
CIMP218	Science	Fish	Clues in the water: Detecting populations and spawning migration of Inconnu ( <i>Stenodus leucichthys</i> ) in river systems around Great Slave Lake	Department of Fisheries and Oceans	2 of 2

CIMP#	Project Type	VC	Project Title	Lead Organization	Funding Year
CIMP219	Science	Caribou	Cumulative effects of fire, permafrost, and human development on caribou habitat and recovery	Wilfrid Laurier University	2 of 3
CIMP220	Science	Caribou	Can caribou coexist with human development in Northern Canada? Forecasting land use changes using resource development potential mapping to improve caribou future forecasts	University of British Columbia	1 of 3
CIMP221	Science	Fish	Arctic Salmon – Building Capacity and Assessing Interactions Among Salmon and Arctic Fishes in the Mackenzie River, NT	Department of Fisheries and Oceans	1 of 3
CIMP222	Science	Fish and Water	Contaminants (PAHs, mercury) in the Mackenzie River and fish health assessments: implementation of classic and new molecular screening tools for environmental monitoring and stressor assessment	Environment and Climate Change Canada (ECCC)	1 of 3
CIMP223	Science	Fish and Water	Murky Waters: Impacts of Disturbances on the Mobilization and Downstream Delivery of Mercury and Methylmercury	University of Alberta	1 of 3
CIMP224	TK	Other	A Century of Petroleum Extraction at Tłegòhł (Norman Wells): Indigenous Knowledge for Indigenous Guardianship	Sahtú Renewable Resources Board	1 of 3
CIMP225	Science	Water	Tracking environmental change in the Gwich'in Settlement Area: enhancing community-driven monitoring of lakes and rivers	Wilfrid Laurier University	1 of 2



*Barren-ground Caribou*

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