Government of Northwest Territories | Gouvernement des Territoires du Nord-Ouest

FACT SHEET

NWT CIMP PROJECTS (2022-23)

Introduction:

The Northwest Territories Cumulative Impact Monitoring Program (NWT CIMP) currently supports 29 monitoring and research projects throughout the NWT that address key cumulative impact monitoring priorities of land and water use decision-makers. These decision-makers include co-management boards, federal, territorial, and Indigenous governments and Indigenous organizations.

Approximately $1.7 million is allocated in 2022/23 to support these projects. From this amount, roughly $500,000 is distributed towards new projects.

NWT CIMP is currently focused on cumulative impacts related to three priorities decision-makers agree are of critical importance:

- caribou;
- water; and
- fish.

Of these 29 funded projects,

- five are Indigenous Knowledge-focused;
- twenty-two are science-focused; and
- two combine Indigenous Knowledge and science.

The following table provides a brief description and intended outcome of NWT CIMP-funded projects for the 2022-23 fiscal year. Overall,

- eight projects are starting;
- eight projects are mid-term; and
- thirteen projects are in the final year.

Table 1. Purpose, status and intended outcomes of NWT CIMP funded projects

Purpose	Current Status	Intended Outcome
North/South Slave Regions		
1. **Investigating the seasonality of subarctic lakes in changing climate using satellite & field data (CIMP212)** To investigate the relationship of seasonal lake ice growth and melting/evaporation across a wide range of lake morphometry. • *Wilfrid Laurier University* *Homa Pour* *hpour@wlu.ca*	Year of Program – 3 of 3 Main Topic – Water Type – Science Decision-makers who may use results: GNWT, MVLWB	Project outputs include maps of lake ice thickness, optical properties, and water quality parameters. These outputs will contribute to recommendations regarding safe ice thickness conditions.
2. **Recovery of the mine-impacted landscape in the Yellowknife region (CIMP227)** To determine what processes control the recovery of the landscape contaminated by stack emissions from the Giant Mine roaster, and how recovery will be affected by climate change and unusual or severe weather events. • *Queens University* *Heather Jamieson* *jamieson@queensu.ca*	Year of Program – 1 of 3 Main Topic – Water Type – Science Decision-makers who may use results: CIRNAC, GNWT	This project will increase our understanding of the long-term stability of arsenic on the landscape, and the recovery time needed from contamination associated with mining and ore processing. Project results will help to directly inform future versions of water and soil management plans.
3. **Monitoring good water for First Nation water governance in Akaitcho (CIMP230)** To pilot a multiple knowledge system approach to water quality monitoring and to establish a baseline. • *Akaitcho Territory Government* *Diane Giroux* *Aarom.coordinator@akaitcho.ca*	Year of Program – 1 of 3 Main Topic – Water Type – Indigenous Knowledge Decision-makers who may use results: ATG	The results of this project will inform future priorities, strategies, research and communications for the Akaitcho Territory and enhance local awareness of water quality.

Purpose	Current Status	Intended Outcome
Dehcho Region		
4. **Monitoring, modeling, and prediction of Great Slave Lake productivity and food-web dynamics (CIMP132)** To monitor fish populations and environmental variables in Great Slave Lake. • *Fisheries and Oceans Canada* *Xinhua Zhu* *Xinhua.zhu@dfo-mpo.gc.ca*	Year of Program – 12 of 12 Main Topic – Fish, Water Type – Science Decision-makers who may use results: DFO	This project will result in better understanding and ability to predict Great Slave Lake's productivity and food-web dynamics. Results will be used by DFO to inform management of the commercial fish stocks.
5. **Understanding and predicting spatial variability in fish mercury levels in the Dehcho region lakes (CIMP154)** To understand factors that affect the safety and quality of key subsistence food fish species, and contribute knowledge to predict effects of current and future environmental change on fish mercury concentrations and fish health. • *University of Waterloo* *Heidi Swanson* *heidi.swanson@uwaterloo.ca*	Year of Program – 10 of 12 Main Topic – Fish, Water Type – Science Decision-makers who may use results: DFN, GNWT	This project will help identify priority variables and systems for monitoring at multiple spatial scales and help identify systems most vulnerable to disturbance-induced increases in fish mercury concentrations. The results will contribute to identifying healthy sources of subsistence food fish for communities.
6. **Watching the land: Knowing the cumulative impacts of change (CIMP191)** To track environmental health and changes over time based on a set of pre-determined Indigenous Knowledge parameters through community-based monitoring. • *Kátł'odeeche First Nation* *Joseph Gormaly* *kfnenvironmental@katlodeeche.com*	Year of Program – 6 of 6 Main Topic – Caribou Type – Indigenous Knowledge Decision-makers who may use results: KFN, DFN, DFO, ECCC, GNWT, MVLWB	Through community led community-based monitoring results of this project will help develop an Indigenous Knowledge baseline.

Purpose	Current Status	Intended Outcome
7. **Cumulative effects of fire, permafrost, and human development on caribou habitat and recovery (CIMP219)** To quantify boreal and barren-ground caribou habitat quality and potential for recovery under the current and future cumulative impacts of permafrost thaw, fire history, and human development. • *Wilfrid Laurier University* *Jennifer Baltzer* *jbaltzer@wlu.ca*	Year of Program – 3 of 3 Main Topic – Caribou Type – Science Decision-makers who may use results: GNWT, MVEIRB, KFN, TG	Project results will be used to map caribou habitat quality under future scenarios of warming and human development. Project outputs can be used to inform co-management resource decisions.
Gwich'in Settlement Area		
8. **Impacts of permafrost thaw slump extent, severity and persistence on stream biotic health (CIMP211)** To investigate impacts of permafrost slumping on water quality, benthic macroinvertebrate communities, fish communities and ecosystem function. • *Wilfrid Laurier University* *Joseph Culp & Jordan Musetta-Lambert* *jculp@wlu.ca* *jordanmusetta@gmail.com*	Year of Program – 3 of 3 Main Topic – Water, Fish Type – Science Decision-makers who may use results: GLWB, GRRB, TGRRC, GNWT	Outputs from this project include identifying bio-indicators that can be used to detect impacts of permafrost disturbance on streams. This will assist in community-driven climate-change adaptation strategies and co-management resource decisions.
9. **Impacts of permafrost degradation on łuk dagaii habitat in the Peel River Watershed (CIMP217)** To study the cumulative impacts of permafrost thaw on critical łuk dagaii (broad whitefish) habitat in a portion of the Peel River Watershed, by compiling Indigenous Knowledge and scientific data.	Year of Program – 3 of 3 Main Topic – Fish Type – Indigenous Knowledge, Science Decision-makers who may use results: GRRB, GTC	Outputs include the modeling and mapping of potential impacts of permafrost thaw on critical łuk dagaii habitat, such as spawning, migration, and harvesting locations. Project results will help inform natural resource and cultural heritage management decisions.

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• *University of Victoria* *Trevor Lantz* *tlantz@uvic.ca*		
10. **Tracking environmental change in the Gwich'in Settlement Area: enhancing community-driven monitoring of lakes and rivers (CIMP225)** To expand community-based monitoring by launching a water quality and quantity pilot program in the Gwich'in Settlement Area. • *Wilfrid Laurier University* *Derek Gray* *dgray@wlu.ca*	Year of Program – 2 of 2 Main Topic – Water Type – Science Decision-makers who may use results: GRRB, GTC	The project will identify available water quality data and gaps, providing a baseline for evaluation of future change. Community-based monitoring efforts will enhance local capacity and act as a foundation for continued community-based monitoring in the region.
Sahtú Settlement Area		
11. **Monitoring for impacts of harvest and climate change on the Great Bear Lake aquatic system (CIMP127)** To provide a comprehensive synthesis of the effects of harvest and environmental change on lake trout fisheries in Great Bear Lake. • *Fisheries and Oceans Canada* *Kimberly Howland* *Kimberly.howland@mpo.gc.ca*	Year of Program – 11 of 12 Main Topic – Fish, Water Type – Science Decision-makers who may use results: DFO, DGG, DRRC, Délı̨nę Guardian Program, SERM, SRRB, TTBRS, GNWT	Project results will provide information on trends in water quality, invertebrate and fish assemblages, and biological traits of lake trout. These results will contribute to better understanding cumulative impacts of climate change and harvest. Results will assist decision-makers in managing the fish resources.
12. **Aquatic ecosystems in the Fort Good Hope area as indicators of environmental change (CIMP215)** To identify indicators of aquatic ecosystem health and to monitor and predict the response of aquatic ecosystems to environmental changes. • *Institut national de la recherche scientifique*	Year of Program – 3 of 3 Main Topic – Water Type – Science Decision-makers who may use results: FGHRRC, SLWB, GNWT	Project results will help anticipate cumulative impacts of climate warming and anthropogenic disturbances on aquatic health. Results will be provided for consideration in co-management resource decisions.

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Jerome Comte *Jerome.Comte@inrs.com*		
13. **Hydrocarbon-derived compounds (anthropogenic and natural) in water bodies in the Sahtú (CIMP216)** To evaluate levels and potential biological impacts of hydrocarbon-derived compounds in water bodies in the Sahtú and to help make data more accessible to communities and regulators. • *Environment and Climate Change Canada* *Kristy Gurney* *kirsty.gurney@canada.ca*	Year of Program – 3 of 3 Main Topic – Water Type – Science Decision-makers who may use results: KGCCC, SLWB, GNWT	This project will result in a better understanding of the relative contributions of anthropogenic and natural hydrocarbons and associated biological effects of polycyclic aromatic compounds (PACs). These results will facilitate oil and gas related co-management reviews.
14. **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 (CIMP222)** To investigate impacts of oil releases on the downstream Mackenzie River ecosystem in the Norman Wells area, focusing on fish. • *Environment and Climate Change Canada* *Marlene Evans* *marlene.evans@canada.ca*	Year of Program – 2 of 3 Main Topic – Fish, Water Type – Science Decision-makers who may use results: DFO, GNWT, MVLWB, MVRB, SLWB, SRRB	This project will develop a framework for a sentinel fish monitoring program that assesses fish exposure to PAHs, impacts on their health and concerns with fish consumption. A new molecular screening tool which diagnoses specific types of biological changes in fish will be developed. These results can be used by decision-makers to assess exposure and future impacts.
15. **A century of petroleum extraction at Tłegǫ̀hłı̨ (Norman Wells): Indigenous Knowledge for Indigenous guardianship (CIMP224)** To develop a documented history of the petroleum installation at Norman	Year of Program – 2 of 3 Main Topic – Fish, Water, Caribou Type – Indigenous Knowledge	This project addresses community concerns about cumulative impacts of petroleum extraction. Project outcomes will contribute to decisions about closure and reclamation, strengthening

Purpose	Current Status	Intended Outcome
Wells and associated cumulative impacts. • *Sahtú Renewable Resources Board* *Deborah Simmons* *director@srrb.nt.ca*	Decision-makers who may use results: RRCs, SLWB, SRRB	Indigenous stewardship roles, and providing education and training for youth.
16. **Updated assessments and investigations of mercury in Sahtú lakes food webs with a changing environment (CIMP228)** To determine fish mercury concentrations, investigate factors influencing variability in mercury concentrations, and assess temporal trends. • *Environment and Climate Change Canada* *Marlene Evans* *Marlene.evans@ec.gc.ca*	Year of Program – 1 of 3 Main Topic – Fish, Type – Science Decision-makers who may use results: DFO, ECCC, GNWT	This project will result in updated information of fish mercury concentrations, addressing consumption concerns. Project results will also provide some predictive capacity to identify those lakes most likely to have fish with higher mercury concentrations.
17. **Social-ecological change in the Sahtú (Great Bear Lake) watershed: Cumulative impacts on Dene ts'ı̨lı̨ (knowledge and cultural identity) and relationships to fish (CIMP229)** To document Dene ts'ı̨lı̨ of social-ecological change from natural and human-induced disturbances in the Sahtú (Great Bear Lake) watershed. • *Délı̨nę Got'ine Government* *Walter Bezha* *Drrc_manager@gov.deline.ca*	Year of Program – 1 of 3 Main Topic – Fish, people Type – Indigenous Knowledge Decision-makers who may use results: DRRC	This project will contribute to bringing together Dene ts'ı̨lı̨ with existing scientific data and decision-making models. The results of this project can contribute to local, regional and territorial policy design and decision-making in the Sahtú Watershed.
Wek'èezhìi Region		
18. **Ekwǫ̀ Nàxoèhdee K'è – Boots on the Ground (CIMP94)** To document observations by Tłı̨chǫ community members and harvesters	Year of Program – 14 of 16 Main Topic – Caribou	This project continues to provide results directly to decision-making processes regarding the Bathurst caribou herd and their

Purpose	Current Status	Intended Outcome
about Bathurst caribou while following them on the land through their summer range. • *Tłı̨chǫ Government* *Petter Jacobsen* *petterfjacobsen@gmail.com*	Type – Indigenous Knowledge Decision-makers who may use results: TG, WRRB, GNWT	habitat, through a number of caribou management initiatives.
19. **Changes in vegetation productivity and phenology across the Bathurst caribou range (CIMP187)** To map and analyze changes in vegetation across the entire range of the Bathurst caribou herd and to identify links between these changes and shifts in herd distribution and habitat use. • *Queen's University* *Ryan Danby* *Ryan.danby@queensu.ca*	Year of Program – 6 of 7 Main Topic – Caribou Type – Science Decision-makers who may use results: GNWT, TG, WRRB	Project results will help to determine the extent to which the changing climate is affecting caribou habitat. Results will help inform the Bathurst Caribou Range Plan and other co-management resource decisions.
20. **Bridging traditional and scientific knowledge through a novel predictive approach to understanding the role of pathogens in the decline of a key Arctic species (CIMP214)** To understand and quantify the potential role of parasites and pathogens in population dynamics and declines of the Bathurst caribou herd. • *University of Calgary* *Susan Kutz & O. Alejandro Aleuy* *skutz@ucalgary.ca* *oaleuy@ucalgary.ca*	Year of Program – 2 of 2 Main Topic – Caribou Type – Science, Indigenous Knowledge Decision-makers who may use results: TG, WRRB, GNWT	This project will provide a predictive framework (Integral Projection Model) to understand and quantify the role of disease in caribou population dynamics and declines. Project results will help identify knowledge gaps and options for future monitoring and management regarding the health of the Bathurst herd.
Inuvialuit Settlement Region		
21. **Development of a biological monitoring program to detect change in stream health along the Dempster-Inuvik-**	Year of Program – 4 of 4 Main Topic – Water,	Project results will produce important information on the severity of ecological impacts in streams

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Tuktoyaktuk corridor (CIMP210) To establish a stream bio-monitoring program along the Inuvik-Tuktoyaktuk highway to understand the current environmental conditions associated with past and newly developed road infrastructure. • *Wilfrid Laurier University* *Joseph Culp* *jculp@wlu.ca*	Fish Type – Science Decision-makers who may use results: GRRB, IRC, GNWT, ARI	associated with road development. The results can contribute to co-management resource decisions.
22. **Understanding the cumulative impacts of beaver activity on stream health in the Inuvialuit Settlement Region (CIMP231)** To investigate the spatial scale and magnitude of beaver activity on key food web processes that support fish in streams along the Inuvik-Tuktoyaktuk corridor. • *Wilfrid Laurier University* *Jordan Musetta-Lambert* *Jordan.musetta@ec.gc.ca*	Year of Program – 1 of 3 Main Topic – Water, Fish Type – Science Decision-makers who may use results: ECCC, FJMC, IHTC, IJC, THTC, GNWT	This project will help to understand how beaver activity in the tundra may impact aquatic ecosystems, including potential to increase permafrost thaw, barriers to fish passage, and potential for mercury bioaccumulation in aquatic food webs, while addressing a community concern.
Multiple Regions		
23. **NWT Permafrost Mapping Collective (CIMP186)** To develop and implement a method to assess and map sensitive permafrost terrain around 33 NWT communities. • *GNWT - NWT Geological Survey* *Steve Kokelj* *Steve.kokelj@gov.nt.ca*	Year of Program – 3 of 3 Main Topic – Permafrost Type – Science Decision-makers who may use results: ERRC, ILA, IWB, LKFN, NWTAC, TRRC, GNWT	Project results will assist in determining future impacts to water quality, the environment, and assessing risks to existing or planned infrastructure. Project outputs include permafrost sensitivity maps. These outputs will provide information relevant to all NWT regions and will inform cumulative impact monitoring, land use planning and support community climate change adaptation.

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24. **Identifying habitats that influence body condition and fitness of adult female boreal caribou in the southern NWT (CIMP205)** To identify what nutritional and environmental factors contribute to variation in boreal caribou body condition and develop maps that incorporate nutritional value of different areas. • *GNWT, ENR, South Slave Region* *Allicia Kelly* *Allicia_kelly@gov.nt.ca*	Year of Program – 3 of 3 Main Topic – Caribou Type – Science Decision-makers who may use results: GNWT	Project results will inform the Boreal Caribou Range Planning process and other boreal caribou management decisions. These results will be shared with Indigenous Governments and Indigenous Organizations for consideration in land and wildlife decisions.
25. **Cumulative effects assessment of four barren-ground caribou herds in the NWT (CIMP207)** To develop a decision-support tool (ALCES Online) to simulate the cumulative effects of landscape changes and subsequent risks to barren-ground caribou herds. • *Wek'eezhi Renewable Resource Board* *Jody Pellissey* *jpellissey@wrrb.ca*	Year of Program – 3 of 3 Main Topic – Caribou Type – Science Decision-makers who may use results: GNWT, GRRB, SRRB, WMAC, WRRB	Project results will influence decision-making through the integrated assessment of the effects of land use, management practices and natural and climate change on caribou herd dynamics.
26. **Can caribou co-exist with human development in northern Canada? Forecasting anthropogenic disturbance and land use changes using resource potential mapping to improve caribou future forecasts (CIMP220)** To develop and integrate resource development potential (RDP) mapping through time to determine resource development, vegetation, wildlife and	Year of Program – 2 of 3 Main Topic – Caribou Type – Science Decision-makers who may use results: KFN, MVLWB, MVRB, NSMA, SRRB, TG, YKDFN	This project will help to understand regional current and future cumulative impacts on boreal caribou habitat availability and population size. Outputs include resource development potential maps and modelling and simulation forecasting, for use in resource decision-making.

Purpose	Current Status	Intended Outcome
climate impacts on boreal caribou. • *University of British Columbia* *Eliot McIntire* *eliot.mcintire@ubc.ca*		
27. **Arctic Salmon - Building capacity and assessing interactions among salmon and Arctic fishes in the Mackenzie River (CIMP221)** To document changes in baseline distribution and abundance in colonizing Pacific salmon and their potential interaction with northern freshwater fishes. • *Fisheries and Oceans Canada* *Karen Dunmall & Darcy McNicholl* *Karen.dunmall@dfo-mpo.gc.ca* *darcy.mcnicholl@dfo-mpo.gc.ca*	Year of Program – 2 of 3 Main Topic – Fish Type – Science Decision-makers who may use results: DFN, FGHRRC, FJMC, GRRB, SRRB, GNWT	Using a community-based approach, this project enhances local capacity while collecting monitoring information. Project results will inform fisheries management decisions about a potentially emerging fishery, assessing and monitoring biodiversity change, and potential for interactions among native fish species.
28. **Murky waters: Impacts of disturbances on the mobilization and downstream delivery of mercury and methylmercury (CIMP223)** To investigate which watersheds may be vulnerable to increased production and mobilization of mercury and methylmercury into downstream lakes and their food webs. • *University of Alberta* *David Olefeldt* *olefeldt@ualberta.ca*	Year of Program – 2 of 3 Main Topic – Water, Fish Type – Science Decision-makers who may use results: DFN, ECCC, GNWT, MVLWB, NRCan, PKFN	Project results will contribute to understanding how disturbances may alter biogeochemistry in peatlands, potentially enhancing the delivery of mercury and methylmercury to streams, rivers, and lakes. This information can contribute to environmental impact assessments.
29. **NWT Streams and Rivers of the future: How permafrost thaw and groundwater activation are changing water resources (CIMP226)** To understand how permafrost thaw is changing landscape runoff and	Year of Program – 1 of 3 Main Topic – Water, Permafrost Type – Science	The results of this project will improve understanding and prediction of streamflows at the catchment scale, contributing to flood mapping and water management.

Purpose	Current Status	Intended Outcome
groundwater interactions with streamflow at the catchment scale in discontinuous permafrost regions. • *Wilfrid Laurier University* *William Quinton* *wquinton@wlu.ca*	Decision-makers who may use results: DFN, ECCC, GNWT, LKFN, MVLWB, NWTCG, NRCan, SKFN, TG, WRRB	

List of Decision maker acronyms:

ARI	Aurora Research Institute
ATG	Akaitcho Territory Government
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
DGG	Délı̨nę Got'ine Government
DRRC	Délı̨nę Renewable Resources Council
DFN	Dehcho First Nations
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
ERRC	Ehdiitat Renewable Resource Council
FGHRRC	Fort Good Hope Renewable Resources Council
FJMC	Fisheries Joint Management Committee
GLWB	Gwich'in Land and Water Board
GNWT	Government of the Northwest Territories
GRRB	Gwich'in Renewable Resources Board
GTC	Gwich'in Tribal Council
IHTC	Inuvik Hunters and Trappers Committee
IJC	Inuvialuit Joint Secretariat
ILA	Inuvialuit Land Administration
IRC	Inuvialuit Regional Corporation
IWB	Inuvialuit Water Board
KFN	Kátł'odeeche First Nation
KGCCC	K'asho Got'ine Charter Community Council
LKFN	Łíídlı̨ Kų́ę́ First Nation
MVLWB	Mackenzie Valley Land and Water Board
MVRB	Mackenzie Valley Environmental Impact Review Board
NRC	Natural Resources Canada
NRCan	Natural Resources Canada
NSMA	North Slave Métis Alliance
NWTAC	Northwest Territories Association of Communities
NWTCG	Northwest Territories Centre for Geomatics
PKFN	Pehdzeh Ki First Nation
RRCs	Renewable Resource Councils
SERM	Sahtú Environmental Research and Monitoring Forum
SKFN	Sambaa K'e First Nation

SLWB	Sahtú Land and Water Board
SRRB	Sahtú Renewable Resources Board
TG	Tłı̨chǫ Government
TGRRC	Tetlit Gwich'in Renewable Resource Council
THTC	Tuktoyaktuk Hunter and Trappers Committee
TRRC	Tulita Renewable Resources Council
TTBRS	Tsa Tue Biosphere Reserve Stewardship Council
WMAC	Wildlife Management Advisory Council
WRRB	Wek’éezhìi Renewable Resources Board
YKDFN	Yellowknives Dene First Nation