# Northwest Territories Cumulative Impact Monitoring Program

and

# Nunavut General Monitoring Plan:

## Highlights for 2011/2012

Aboriginal Affairs and Northern Development Canada
Affaires autochtones et Développement du Nord Canada
Canada

Information contained in this publication or product may be reproduced, in part or in whole, and by any means, for personal or public non-commercial purposes, without charge or further permission, unless otherwise specified.

You are asked to:

- Exercise due diligence in ensuring the accuracy of the materials reproduced;
- Indicate both the complete title of the materials reproduced, as well as the author organization; and
- Indicate that the reproduction is a copy of an official work that is published by the Government of Canada and that the reproduction has not been produced in affiliation with, or with the endorsement of the Government of Canada.

Commercial reproduction and distribution is prohibited except with written permission from the Government of Canada's copyright administrator, Public Works and Government Services of Canada (PWGSC). For more information, please contact PWGSC at: 613-996-6886 or at: droitdauteur.copyright@tpsgc-pwgsc.gc.ca.

www.aandc-aadnc.gc.ca
**1-800-567-9604**
**TTY only 1-866-553-0554**

English version: (Paper)
QS-XXXX-XXX-EE-XX
Catalog XX-X/XXXX-X
ISSN: XXXX-XXXX

© **Her Majesty the Queen in Right of Canada, represented by the *Minister of Aboriginal Affairs and Northern Development, 2013***

This Publication is also available in French under the title:
*Programme de surveillance des effets cumulatifs dans les Territoires du Nord-Ouest et Plan de surveillance générale du Nunavut : Faits saillants pour 2011-2012*

# Message from the Assistant Deputy Minister

I am pleased to present the first **Northern Environmental Monitoring Program Highlights** document by Aboriginal Affairs and Northern Development Canada (AANDC).

This annual report highlights the 2011/12 accomplishments for the Northwest Territories environmental Cumulative Impact Monitoring Program (CIMP), and the Nunavut ecosystemic and socio-economic General Monitoring Plan (NGMP), and also outlines several key directions for the programs in the future.

**Contents:**


Environmental Monitoring in the North .....3
CIMP and NGMP Accomplishments.....7
Program Development Progress .....23
Program Priorities for the Upcoming Year .....26
Getting involved in the Northern Monitoring Programs.....27
List of CIMP and NGMP Funded Projects .....28


Environmental and socio-economic monitoring are critical undertakings in an area of Canada that is destined to become a focus for natural resource development and increased economic activity.

NGMP and CIMP are independent but complementary programs. Both programs are overseen by separate governance structures comprised of Aboriginal, federal and territorial partners. Together, they support, facilitate, and coordinate the collection, analysis, management and dissemination of information regarding the long-term state and health of the environment. Monitoring products are shared with respective decision makers and help the federal and territorial governments, as well as Aboriginal organizations and other stakeholders to improve their understanding about the different valued ecosystem components and, in the case of NGMP, socio-economic components involved in different planning and assessment decisions. This improved understanding will ultimately contribute to more informed decisions about resource management, development activities, and sustainable development in the North.

NGMP and CIMP are “made in the North for the North” and place an emphasis on the integration of traditional knowledge, capacity building, and sharing of information to achieve the best results possible. As part of their work, the programs aim to provide long-term, stable funding to Aboriginal and northern organizations to monitor issues of particular interest that fill key knowledge gaps where they exist.

In 2011/12, CIMP and NGMP coordinated, supported and/or conducted over 60 monitoring related initiatives and allocated approximately $2.5 million in project funding. Monitoring projects included local, regional, national and international initiatives that were led by a range of organizations from local Aboriginal organizations, such as the Deline Renewable Resource Council, to academic institutions, such as York University, to territorial and federal governments.

This report features summaries of six CIMP and NGMP funded projects, each showcasing how the projects have advanced our collective knowledge of the northern environment and society and how they have contributed to more effectively inform key resource management decisions in the North. These multidisciplinary and collaborative monitoring projects have improved our understanding on an array of issues, including the effects of climate change on water quality and ecosystem health, the foraging habits of polar bears, and the post-education success of Nunavut students to showcase the human dimensions of NGMP's broad general monitoring mandate.

Through its regional offices, AANDC guides the delivery of CIMP and NGMP and is committed to working with its partners to improve monitoring to increase the level of understanding of environmental and socio-economic change in the North. An important direction and focus of both programs is how and where it can more effectively inform key resource development decisions in the North.

I trust this document will provide useful context about northern environmental monitoring.

Sincerely,

Janet King
Assistant Deputy Minister
Northern Affairs Organization
Aboriginal Affairs and Northern Development Canada

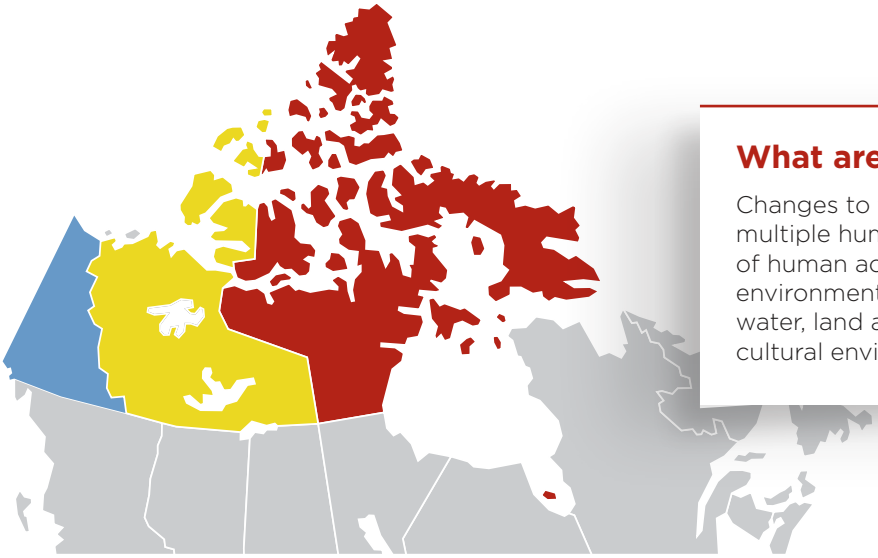
*(This publication is available on AANDC's website, found here:* insert link*)*

# Environmental Monitoring in the North

## CANADA'S RESPONSIBILITIES

Canada's northern socio-economic and environmental landscapes are constantly changing and being impacted by many different pressures and events. Watching over the land, water and air to see what changes are occurring and how these changes affect social, environmental and economic conditions is challenging. More importantly, understanding how all these changes combine in the environment to determine the 'bigger picture' of environmental impact is a complex and critical part of monitoring.

Monitoring of the environment is the shared responsibility of governments, industries and other third-party entities across Canada. In the North, environmental monitoring is both a constitutional obligation and statutory requirement of the Government of Canada.



### What are cumulative impacts?

Changes to the environment caused by multiple human actions or by the combination of human actions and natural factors. The environment includes the biophysical (air, water, land and wildlife), social, economic and cultural environments.

### Yukon

AANDC does not oversee environmental monitoring in the Yukon because the administration and control of lands and resources was transferred to the Government of Yukon on April 1, 2003, pursuant to the Yukon Northern Affairs Program Devolution Transfer Agreement.

### Northwest Territories

In the Northwest Territories, the *Mackenzie Valley Resource Management Act* (MVRMA) and comprehensive land claim agreements with the Sahtu, Gwich'in and Tlicho require monitoring of cumulative impacts on the environment. Monitoring is to be conducted in consultation with the Aboriginal governments.

### Nunavut

In Nunavut, the *Nunavut Land Claims Agreement* (NLCA) requires that government as well as the Nunavut Planning Commission cooperate to develop and implement a plan for monitoring the current and long-term state and health of the ecosystemic and socio-economic environment.

### Monitoring is more than a legal obligation

The need for long-term monitoring extends beyond constitutional and statutory requirements. Stakeholders have long expressed the need for improved effectiveness of monitoring impacts, better coordination among existing environmental research and monitoring programs, and the need for comparable and accessible data to make more informed resource management decisions. Robust environmental monitoring programs in the North will provide significant benefits to northern communities, industry, planners, governments and decision makers.

To support AANDC's mandate and responsibility for environmental monitoring in the Northwest Territories and Nunavut, the federal government announced a total of 5 million dollars per year in ongoing funding for monitoring programs in both territories in Budget 2010 under the Action Plan to Improve Northern Regulatory Regimes.

# CIMP AND NGMP

The Northwest Territories Cumulative Impact Monitoring Program (CIMP) and the Nunavut General Monitoring Plan (NGMP) are independent but complementary programs led by AANDC. CIMP and NGMP were established to meet the legal requirements for environmental monitoring and to improve the overall effectiveness and coordination of monitoring in the North. Their shared purpose is ***to support, facilitate and coordinate the collection, analysis, management and dissemination of information regarding the long-term state and health of the environment***, with the goal of supporting better resource management decision making and sustainable development in each territory.

### Vision

CIMP's vision is *"to watch and understand the land and use it respectfully forever"*.

NGMP's vision is *"to support sustainable development in Nunavut through monitoring and reporting on the long-term state and health of the ecosystemic and socio-economic environment in Nunavut"*.

Both programs ultimately aim to contribute to sustainable development in the Northwest Territories and in Nunavut.

The Government of Canada, in partnership with its territorial partners, engaged in a number of activities to support the development of the NGMP beginning shortly after the establishment of Nunavut in 1993. A few years later, CIMP was established in 1999. As the need for monitoring and coordination has increased in complexity and scope overtime, so have the activities of CIMP and NGMP. Budget 2010 provided dedicated funding for both programs enabling them to evolve to address the growing demand for monitoring through the development of partnerships and funding for monitoring projects.

Both programs are 'made in the North', tailored to meet northern needs, and are overseen by separate governance structures comprised of regional Aboriginal, federal and territorial partners.

CIMP/NGMP governance structures include the following organizations:

*CIMP Working Group:*
- Gwich'in Tribal Council
- Tlicho Government
- Inuvialuit Game Council
- North Slave Métis Alliance
- Sahtu Secretariat Incorporated
- Dehcho First Nations
- Northwest Territory Métis Nation
- Government of the Northwest Territories
- AANDC

*CIMP Working Group Observers:*
- Akaitcho Territory Government
- Mackenzie Valley Environmental Impact Review Board
- Environment Canada
- Department of Fisheries and Oceans
- Parks Canada

*NGMP Steering Committee:*
- Nunavut Tunngavik Inc.
- Nunavut Planning Commission
- Government of Nunavut
- AANDC/Government of Canada

The role of CIMP and NGMP is to champion and facilitate environmental and, in the case of NGMP, ecosystemic and socio-economic monitoring activities in order to effectively provide information to communities, government, industry and regulators for better decision making.

AANDC provides a coordination role among existing environmental research and monitoring programs. Program management staff supports the organizational partners, engages with stakeholders, reports program information, manages other partnership structures and the allocation of funding. Additional AANDC staff provide technical support to help implement monitoring in the Northwest Territories and Nunavut.

## CIMP and NGMP Activities

### Facilitating Governance and Partnerships

Activities in this category focus on building partnerships in order to align, coordinate and integrate environmental monitoring (CIMP) and ecosystemic and socio-economic (NGMP) objectives and activities. These activities will establish standardized questions and priorities for monitoring in each of the valued components areas.

### Collect, Analyse and Synthesize Data

CIMP and NGMP work to establish baselines and adopt monitoring protocols for priority valued components. They also collect (or facilitate the collection of) information from various organizations and, where information gaps exist, provide funding for data collection and analysis.

### Develop and Maintain an Information Management System

Activities in this category concern the development and operation of an online information management system to consolidate monitoring information from different sources to facilitate data accessibility and analysis.

### Report and Communicate

Activities in this category focus on the development and distribution of communications and reports, including the comprehensive State of the Environment report every five years, and the Annual Summary of Knowledge report.

## Community-based Approach

All aspects of CIMP and NGMP, including the design and execution of monitoring work, the analysis of results, and the interpretation and sharing of what it all means for the 'bigger picture' of the northern environment, are informed by communities that are impacted by changes in the land, air and water. The community-based approach brings together local residents, co-management boards, government, industry, non-government organizations, and scientists to work together to collect, analyze, and communicate traditional knowledge and scientific monitoring information, on topics of high priority to the community.

Community-based monitoring helps to collectively improve our understanding of changes occurring in the environment and increase the ability of communities to identify, plan and adapt to these changes. At the same time, communities benefit from having community members trained in leading and carrying out monitoring activities. The CIMP and NGMP Accomplishments section includes examples of community-based monitoring in action in the Northwest Territories and Nunavut.

*Photo Credit: AANDC*

# CIMP and NGMP Accomplishments

## CIMP PROJECT

### Modeling Cumulative Effects on a Summer Range of the Bathurst Caribou Herd: a Demonstration Project

***The goal of this demonstration project was to evaluate the feasibility of using three existing cumulative effects models that have been used for caribou in an integrated manner– a step toward using these models as learning and decision support tools for governments, co-management boards and land use decision makers in the Northwest Territories.***

#### A species sensitive to change

Barren-ground caribou continue to be viewed by many communities as the most

#### Project Goals:

- Modify, apply and integrate existing datasets and link modeling approaches for barren-ground caribou to show how the models can be applied as learning and decision support tools in northern Canada.
- Develop a basis for collaborative learning about cumulative effects and barren-ground caribou with a broader group of people including representatives from governments, industry, and a co-management board.

*Photo Credit: Boyan Tracz, ENR GNWT*

important wildlife resource in the Northwest Territories, with relationships between caribou and humans that date back thousands of years. Caribou mean far more than just food to northern Aboriginal cultures, and the potential cumulative impacts of development (e.g., mines, pipelines, roads) on caribou are an ever-present concern in northern Canada. Further, there is concern that caribou herds are less resilient to disturbance as populations decline or are at low numbers, and that their recovery may be affected by development.

Assessing the cumulative impacts of land-use activities on barren-ground caribou is challenging because the effects of human activity and development must be assessed in the context of many other factors, natural and human, that continue to affect caribou with or without development. Development can affect caribou via multiple pathways; there are potential effects on behaviour, energetics, productivity and habitat use. At some level, these effects can translate into population-scale effects. This demonstration project was intended to advance our collective ability to model and understand the effects of development on barren-ground caribou using an integrated approach and building on previous efforts with the Bathurst, Porcupine and other caribou herds. The participants recognized the need for a collaborative approach that would evolve through two knowledge bases, one more technical and quantitative, and the other less technical and inclusive of the traditional knowledge of northern people.

## Benefits of a collaborative approach

Bringing together expertise from Traditional Knowledge holders with technical experts and academics, the pilot project was intended as a step toward a framework and methods for assessing the cumulative impacts of industrial development on the Bathurst herd, and

*Photo Credit: Boyan Tracz, ENR GNWT*

*Photo Credit: Boyan Tracz, ENR GNWT*

potentially on other herds. In the Northwest Territories, the development of new mines and roads are under consideration. This type of modeling may help guide decision making about an appropriate balance among development, the needs of sensitive wildlife, and more traditional human land uses.

CIMP contributed funding to this demonstration project, which was coordinated by the Government of the Northwest Territories (GNWT) Environment and Natural Resources (ENR) with the support of the Wek'èezhìi Renewable Resources Board and the University of Northern British Columbia. Technical expertise was provided by a number of individuals, many of whom have dedicated years to wildlife research in the Northwest Territories and Nunavut.

The project used three complementary models in an integrated approach to assess the cumulative impacts of land-use activities and natural factors (such as fires) on caribou and caribou habitat. These models were; (1) a spatial habitat model that assessed relative habitat quality for caribou and caribou responses to developed or disturbed areas, (2) a linked pair of energetics and population models that assess how female caribou condition and pregnancy rate is affected by nutrition and altered behaviour and energetics, and (3) a land use simulation model that has been used for boreal woodland caribou, adapted to barren-ground caribou, where multiple "futures" for caribou and other system components can be explored in simulations.

The demonstration project adapted the three models for assessing cumulative effects of development on the Bathurst caribou summer range. Tlicho Traditional Knowledge of caribou trails and water crossings used in the habitat selection model was found to have good predictive performance (e.g. caribou water crossings in the traditional knowledge dataset were robust predictors of caribou distribution). The project also demonstrated the limitations inherent in the datasets required to populate the models (i.e. land cover classifications and land use information), highlighting the need for rigorous standardized data collection.

## Balancing multiple concerns

Due to widespread declines in barren-ground caribou in the Northwest Territories, priority in 2009-2011 shifted from completion of the pilot project to addressing urgent wildlife management-related concerns. With the increasing numbers of proposed mines and roads in the Northwest Territories, there is an urgency to being able to assess cumulative effects of development on barren-ground caribou, and to make informed land-use decisions that appropriately consider the habitat needs of caribou and the needs of people who depend on them.

## A forum for applying results

The original intent of this demonstration project was to test whether an integrated modeling approach to cumulative effects with barren-ground caribou could be carried out and applied to the Bathurst herd's summer range. The primary results suggest that linking different modeling approaches is both feasible and practical (though additional work is still required), and that that there are advantages to collaboration on the consistent use of models and modeling approaches during environmental assessments. Monitoring data may be used to evaluate the direction, extent, and magnitude

of cumulative effects, and may also be used to inform scenario analyses with projected outcomes from scenario analyses tested to assess applicability of mitigation measures. The demonstration project has fine-turned approaches to cumulative effects that should improve the ability of resource agencies to work with the stakeholders, part of a vision for effectively linking cumulative effects assessment approaches to a regulatory framework as part of overall assessment and management.[1]

Recently, a draft report describing the demonstration project was provided to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) as response to an undertaking during an environmental impact review hearing for a proposed mine.[2] Further, lessons learned from the project continue to result in positive collaboration, such as a current joint initiative with the GNWT to determine if the complementary modeling approach can currently be used for future cumulative effects assessment, management, and mitigation. This joint initiative builds on the demonstration project, and will allow for broader assessment of tools best suited to assess, monitor, and manage the cumulative effects of human and natural disturbances on caribou in the North.

***Location:***
Summer range of the Bathurst caribou herd

***Project Information:***
April 1, 2008 – March 31, 2009,
total project cost: $172,850,
CIMP contribution: $8,000

***Valued Component (VC):***
Caribou (barren-ground)

***Select Indicators:***
Spatial distribution of caribou (relative to habitat and human disturbance), variation in green plant biomass and phenology, body condition.[3]

***Partners:***
GNWT ENR, Wek'èezhìi Renewable Resources Board, technical experts

***Contact Information:***
Environment and Natural Resources
Government of the Northwest Territories
Box 1320
YELLOWKNIFE NT X1A 2L9
(867) 920-8046

1 Source: *Nishi and Gunn, 2012. Development of Modelling Tools to Address Cumulative Effects on Summer Range of the Bathurst Caribou Herd: A Demonstration Project, draft report;* accessible via the Mackenzie Valley Environmental Impact Review Board (MVEIRB) website. Please see the draft report for additional information on the demonstration project, including specific details regarding indicators and model inputs.

2, 3 *ibid*

# CIMP PROJECT

## Biological Monitoring and Assessment of Fish Populations With a Focus on Lake Trout in Great Bear Lake

***Understanding cumulative effects on fish in the Northwest Territories is critical due to the cultural significance and importance of fish as a year-round food. This multi-year project aims to gather information that will lead to a better understanding of habitat use by lake trout and their food web relationships with other species, while tracking the status of lake trout through a time-series study.***

*Photo Credit: Colin Gallagher, DFO*

### Project Goals:

- Extend the existing time-series baseline fisheries assessment by continuing environmental data collection and biological monitoring of larger-bodied fish species;
- Address knowledge gaps regarding the Great Bear Lake ecosystem and the relationships of different ecosystem components to fish production; and
- Supplement ecosystem level monitoring with research aimed at understanding variability in habitat use and food-web relationships of lake trout and cisco.

### Fish and cumulative effects

Fish have been identified by CIMP stakeholders as a priority for cumulative impact monitoring. Fish are of great cultural significance to residents in the Northwest Territories as they are an important year-round source of

food. They are susceptible to changes in the aquatic environment caused by natural and human-related activities including habitat loss or degradation, changing water conditions and increased harvesting due to better access to fishing areas.

Sustainability of this important resource depends on informed decision making that protects fish populations and ensures fish remain safe to eat. Informed decision making requires an understanding of baseline conditions of fish quantity, quality and habitat, including habitat characteristics, abundance and contaminant levels, in addition to how changes in the aquatic environment affect those factors.

## A synthesis of Traditional Knowledge and scientific findings

This project is led by Dr. Kimberly Howland, a fisheries biologist with Fisheries and Oceans Canada (DFO). Many partners support DFO's efforts to collect important biological and environmental information, including the Sahtu Renewable Resource Board, the Deline Renewable Resource Council, Deline community members and CIMP.

This multi-year project collects information from Great Bear Lake in the Sahtu Settlement Area near the community of Deline, as well as from the Smith Arm of Great Bear Lake. Science is combined with Traditional Knowledge to collect the required data.

*Photo Credit: Colin Gallagher, DFO*

## Dealing with data needs and sharing results

The challenges for CIMP in monitoring cumulative impacts in fish include amassing a large database of baseline conditions over a large geographic area to obtain a solid understanding of species' biology and habitat

*Photo Credit: Paul Vecsei, AANDC*

characteristics, in order to understand and predict the cumulative impact of changes in the environment. As the major top predator in Great Bear Lake, lake trout, together with its main prey species, cisco, is a key component in maintaining a balanced and healthy aquatic food web. Recent fish assessment studies have provided an excellent baseline from which to begin monitoring changes in lake trout and other large-bodied species, but detailed information on their biology is lacking. This study sampled the Keith Arm Area of Great Bear Lake for approximately four weeks during the open-water season. Preliminary data on current patterns of species composition, distribution and abundance of fish, zooplankton and benthos by depth for this area of the lake, was collected. The data from this study will feed into a larger scale model being developed called Ecopath, that will assist with fisheries management decision making through a better understanding of the significance of the relationships between species in Great Bear Lake and the overall ecosystem. This data can also be used to ensure that the lake trout sport fishery in Great Bear Lake remains sustainable, providing a long-term income source for the local communities. The data from this study will enable decision makers to better predict and understand cumulative impacts on fish populations. The project is rooted in rigorous study design and strong partnerships formed between project participants. The results from this study will benefit all of the project partners by providing an increased understanding of lake trout biology.

***Location:***
Great Bear Lake, Northwest Territories

***Project Information:***
April 1, 2011 – March 31, 2012,
total project cost 2011/12: $168,800,
CIMP contribution: $30,000

***Valued Component (VC):***
Fish quantity and fish quality, fish habitat

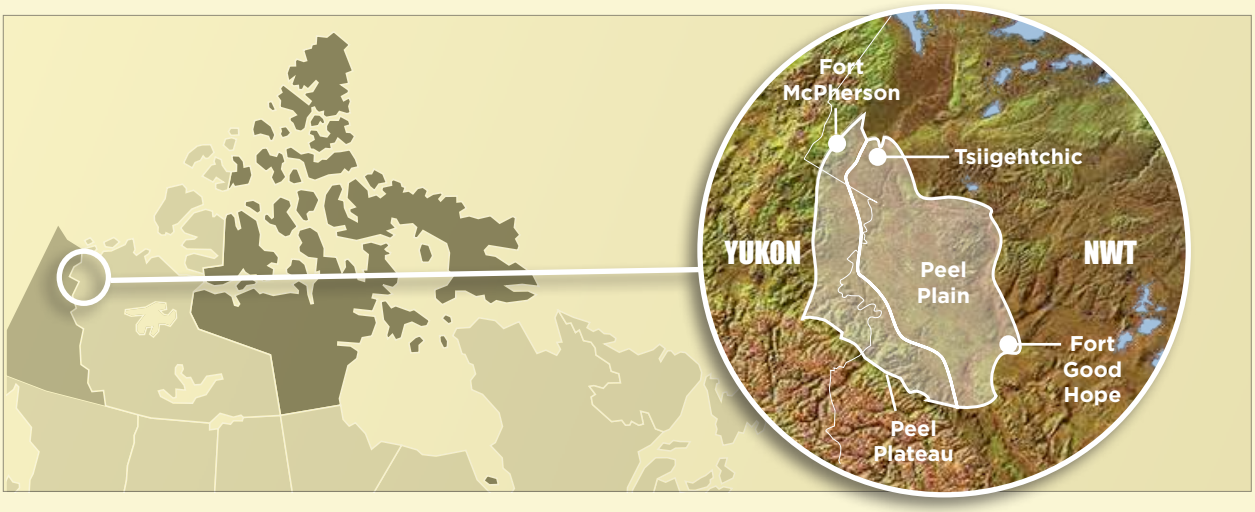
***Select Indicators:***
Fish abundance, size, distribution, habitat; Water quality, quantity

***Partners:***
Department of Fisheries and Oceans Canada, CIMP, Sahtu Renewable Resource Board, Deline Renewable Resource Council, Members of the Deline Community

***Contact Information:***
Dr. Kimberly Howland
Arctic Fish Stock Assessment Biologist
Fisheries and Oceans Canada
Arctic Aquatic Research Division
501 University Crescent
WINNIPEG MB R3T 2N6
204-984-4227

# CIMP PROJECT

## A Watershed Approach to Monitoring Cumulative Impacts of Landscape Change




***Thawing permafrost has emerged as a major stressor on northern freshwater ecosystems. CIMP works with communities to coordinate the work of scientists in order to address broad resource management and community concerns regarding the impacts of landscape change on the water quality of rivers and streams in the Peel Plateau, Northwestern Northwest Territories.***

### Addressing a very real northern issue

The Peel Plateau extends through three settlement regions and is one of the most dramatically changing landscapes in Canada. The streams and rivers in this part of the Northwest Territories are being impacted by widespread permafrost thawing and destabilization of slopes. This landscape contains hundreds of fish-bearing tributaries of the Peel and Mackenzie Rivers. It is an area of cultural and ecological significance and hosts important transportation infrastructure and significant oil and gas reserves.

This study addresses community and land management concerns relating to the impacts of widespread land disturbance on water quality and fisheries. Also being developed is an innovative watershed framework

### Project Goals:

- Inventory and track broad scale changes in landscape disturbances;
- Determine the impacts of natural and anthropogenic disturbances on the physical, chemical and biological characteristics and ecology of streams and rivers;
- Establish disturbance thresholds relevant to the health of streams, rivers and fish;
- Compile geospatial disturbance layers and portray this information as a platform for evaluating cumulative impacts to aquatic systems; and
- Design a Gwich'in based monitoring program utilizing Traditional Knowledge to describe environmental conditions and change in the Peel Plateau.

for tracking the cumulative impacts of disturbance on northern water resources. Field studies are complemented with Traditional Knowledge perspectives. Remote sensing approaches will be used to monitor, synthesize and model watershed impacts over broad areas. These approaches and tools may be applied to monitor cumulative impacts on aquatic environments in other parts of the Northwest Territories.

## Filling an information gap

The information generated by this work is critical to understanding changes in the health of northern aquatic ecosystems and to providing the context needed to assess and monitor potential development impacts. Understanding the impacts of climate change and development on water quality and ecosystem health in northern Canada is fundamental to planning and managing northern development and to monitoring cumulative effects.

## A multidisciplinary approach to cumulative impacts investigation

By bringing together community, research and land management partners, this multidisciplinary study is taking a holistic approach to understanding cumulative impacts. A key contribution of CIMP is its capacity to provide leadership and guidance to project partners that may not otherwise work together in a collaborative process.

This project's bottom-up approach makes it both flexible and regionally relevant. Meetings and processes are not duplicated – CIMP and the project partners support existing co-management related activities (i.e. the development of regional research priorities). Community and co-management boards are key partners and help to guide the work.

## A champion for information sharing

It is a constant challenge to ensure that monitoring and research results are being communicated in a way that is relevant and understandable to the community, and that local priorities result in the right type of monitoring. The project team is working with Gwich'in co-management agencies to communicate results to the appropriate audiences and to ensure regional monitoring priorities are being addressed. Anticipated results for 2013 include mapping products that show the disturbance sensitivity of watersheds throughout the Gwich'in Settlement Area, and establishment of water quality thresholds associated with degradation of aquatic health in the Peel Plateau. This information can provide a basis for developing fisheries and wildlife management plans, and for assessing the relative impacts of human activities on regional water quality conditions. The flow of information between partners and stakeholders requires data management and reporting frameworks. Ongoing engagement of multiple partners and building multidisciplinary initiatives requires an

*Photo Credit: Ed Struzik, AANDC*

understanding of northern needs, developing study designs that can satisfy information gaps and supporting and sustaining the partnerships that will meet these objectives.

CIMP is in a unique and increasingly critical position with the mandate and capacity to play that role and champion this approach.

***Location:***
Peel Plateau, Northwest Territories

***Project Information:***
April 1, 2010 – March 31, 2014,
total project cost $540,700,
CIMP contribution $131,700

***Valued Component (VC):***
Water, snow, ice and permafrost, fish, vegetation

***Select Indicators:***
Water quality – geochemistry, suspended sediment, benthic invertebrates; Permafrost – ground temperatures, landscape disturbance; Fish – physiology, habitat; Vegetation – community composition, berries, soil chemistry

***Partners:***
AANDC; University of Ottawa; Gwich'in Renewable Resources Board; Fisheries and Oceans Canada; University of Victoria; Carleton University; University of New Brunswick; Environment Canada; Wilfrid Laurier University; Gwich'in Tribal Council; Tetlit Gwich'in Renewable Resources Council; Canadian Centre for Remote Sensing

***Contact Information:***
Dr. Steve Kokelj
Aboriginal Affairs and Northern Development Canada
YELLOWKNIFE NT X1A 2R3
867-669-2886
Steve.Kokelj@aadnc-aandc.gc.ca

# NGMP PROJECT

## Community-Based Monitoring of Ice-Breeding Seals and Polar Bear Feeding in the Gulf of Boothia

***Hunters and scientists cooperate in the collection of seal data to obtain a better understanding of the foraging habits of polar bears. Training and skills gained by community members will contribute to the long-term monitoring of the state and health of seal and polar bear populations to inform future conservation decisions in the community of Kugaaruk, Nunavut.***

### Establishing an important scientific baseline

Biologists from York University and Fisheries and Oceans Canada are partnering with the community of Kugaaruk to collect samples from ringed and bearded seals harvested in the Gulf of Boothia. The community-based program will help researchers monitor the foraging habits of polar bears, which rely on seals as prey.

"We know very little about seal ecology in this part of the Arctic," explains project leader Dr. Greg Thiemann. "Given the ongoing changes to sea ice and the onset of development, we need this information quickly in order to establish a baseline for comparison."

### Project Goals:

- Collect samples, biological information and investigate the health and ecology of seals harvested in the Gulf of Boothia;
- Monitor the foraging habits of polar bears, which rely on these seal populations as prey; and
- Work in collaboration with the community of Kugaaruk through the Kurtairojuark Hunters and Trappers Organization.

### Building community capacity and partnerships

Using a kit and checklist provided by the study, the community's subsistence hunters collect data, including measurements and tissue samples, from harvested animals. Much can be understood about the condition of the animal from physical examination of the tissue: its size, reproductive status, nutrition, and ultimately, its environment. Chemical analysis produces even more data about nutrition and food sources.

"In addition to collecting samples, the hunters are sharing Traditional Knowledge to help us understand where the seals are, how many there are, and how that varies with the season," says Thiemann. "They are very adept, and the Kurtairojuark Hunters and Trappers Organization is enthusiastic and cooperative. It's an agreeable and effective strategy for collecting this important information."

This community-based research project will aim to determine through Traditional Knowledge and science, how climate change and increased development (i.e. mining, shipping, and other human activities) may affect ringed seals, bearded seals and polar bears, with the goal of assisting in conservation and maintaining healthy, abundant populations capable of sustaining harvesting needs of communities around the Gulf of Boothia. At the same time, this project will provide training and skills to the community of Kugaaruk to carry out a community-based monitoring program to collect biological information and samples from seals harvested in the Gulf of Boothia. By providing this training and knowledge, the community will be able to continue to monitor the state and health of the seals and polar bears to support the community's future conservation decisions.

*Photo Credit: AANDC*

***Location:***
Community of Kugaaruk and the Gulf of Boothia, Nunavut

***Project Information:***
April 1, 2011 – March 31, 2012,
total project cost 2011/12: $66,700,
NGMP contribution: $29,700

***Valued Component (VC):***
Marine ecosystem, sea ice, seals (ringed and bearded), polar bear, health and well-being/food security, traditional activities and skills, and economic activity

***Indicators:***
Relative abundance, distribution and body condition

***Partners:***
York University, Fisheries and Oceans Canada, Kurtairojuark Hunters and Trappers Organization board members, community of Kugaaruk

***Contact Information:***
Dr. Gregory Thiemann
Assistant Professor, Faculty of Environmental Studies
York University
4700 Keele Street
TORONTO ON M3J 1P3
416-736-2100, x22621
thiemann@yorku.ca

# NGMP PROJECT

## Enhanced Health Information Collection and Health Monitoring

***The mandate of NGMP expands beyond ecosystemic monitoring and also encompasses the monitoring of the state and health of the socio-economic environment in Nunavut. The human dimensions of NGMP are featured in this initiative launched by the Government of Nunavut that will improve the territory's ability to measure human health status and collect critical health-indicator information.***

The Government of Nunavut's Department of Health and Social Services (DHSS) is committed to implementing evidence based programs and policies. One key objective of this project funded by NGMP is to enhance the surveillance of communicable diseases.

### Staying ahead of the curve

"While the physician handles diagnosis and prescribes treatment, the role of Public Health is broader", explains project leader and Acting Chief Medical Officer Dr. Maureen Baikie. That role includes determining the source of infection, following up on similar cases, maintaining a case count, and trying to identify outbreaks.

### Project Goals:

- Enhance communicable disease monitoring and surveillance;
- Identify gaps and needs in health indicator monitoring within the Government of Nunavut's Department of Health and Social Services (DHSS); and
- Support the implementation of the Nutaqqavut "Our Children" Health Information System.

### Empowering northern health care professionals

To give public health professionals better access to information that will facilitate this role, funding will support the production

of a communicable diseases manual for Nunavut. Each of the major diseases will be described and detailed, with information on epidemiology, transmission pathways, and follow-up procedures and protocols.

The initiative will also include a compilation of the Chief Medical Officer's reports into a database which will greatly simplify the work of tracking case numbers and identifying outbreaks.

"It's about empowering public health practitioners," says Dr. Baikie. "We need good information in order to plan programs and modify our interventions. The manual will help us to gather the right information and the database will make that information more accessible."

While a variety of health indicators are collected by the DHSS, these indicators are in no way comprehensive leaving data gaps which result in an inability to effectively monitor how many policies and programs impact on health. Improving health indicator data collection will provide the DHSS with better baseline data against which future initiatives can be evaluated through continued collection of this data. This in turn will facilitate governance by providing hard evidence regarding what is effective and what is not. This evidence can then be used to inform funding, programming and policy decisions within the Health and Social Services department and within the Government of Nunavut as a whole.

*Photo Credit: AANDC*

Ultimately, enhancing Nunavut's ability to measure human health status and collect critical health-indicator information is essential not only to link policy to action, but also to influence enhanced and positive health outcomes for Northerners.

***Location:***
Distribution of the manual will be to each community in Nunavut

***Project Information:***
April 1, 2011 – March 31, 2012,
total project cost 2011/12: $430,300,
NGMP contribution: $23,000

***Valued Component (VC):***
Demographics, Health and Well-Being, Food Security, Housing

***Indicators:***
Blood borne pathogens and sexually transmitted infections

***Partners:***
Government of Nunavut, Department of Health and Social Services

***Contact Information:***
Maureen Baikie, MD
Acting Chief Medical Officer of Health
Government of Nunavut, Department of Health and Social Services
Box 1000 Stn 1000
IQALUIT NU X0A 0H0
867-975-5743
mbaikie@gov.nu.ca

# NGMP PROJECT

## Monitoring Educational and Professional Success Amongst Inuit of Nunavut Who Have Registered in a Post-Secondary Program

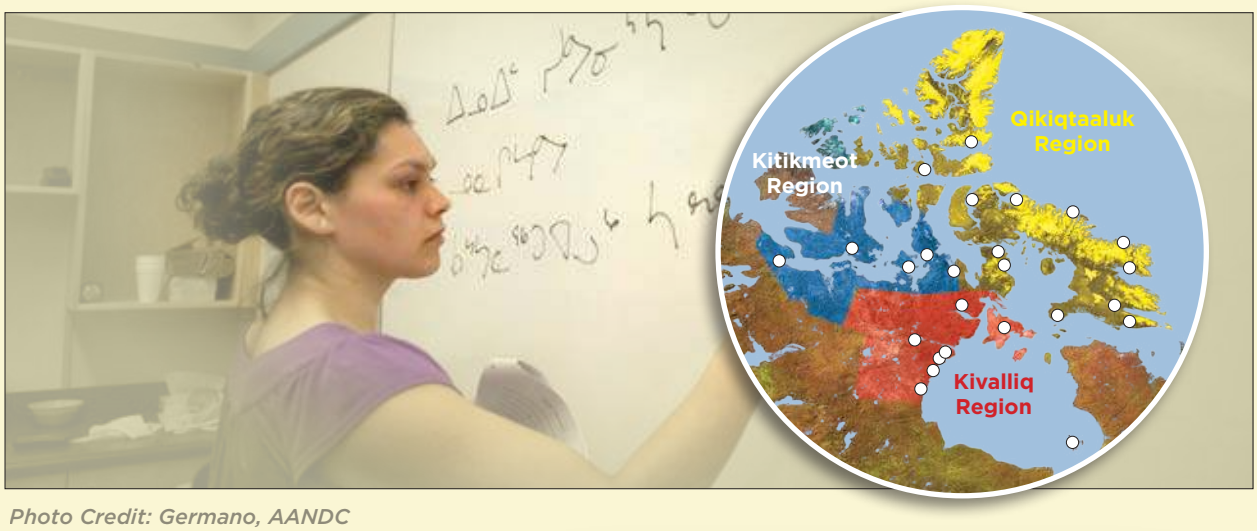



*Photo Credit: Germano, AANDC*

***Understanding the success of Nunavut's students after completing their education is important information for decision makers tasked with the design, delivery and monitoring of educational programs and their resulting outcomes. This project will collect data on post-secondary and professional success among Inuit students from Nunavut who have completed their post-secondary education within and outside the territory. As a key determinant of well-being, monitoring of educational outcomes in Nunavut will continue to be an important socio-economic priority for Nunavut general monitoring.***

### Advanced education challenges

As access to post-secondary education is mainly limited in Nunavut to the Nunavut Arctic College, many students must travel to southern Canada in pursuit of further studies. While studying educational trends among Inuit students, Professor Thierry

### Project Goals:

- Collect data on post-secondary educational success among Inuit students within and outside Nunavut (as measured by graduation rate, academic program, and number of years in a postsecondary program);
- Collect data on professional success among Inuit with postgraduate education (as measured by job satisfaction and relatedness of educational background to employment); and
- Collect data on the financial assistance programs and compare their effectiveness in terms of post-secondary success and graduation (as measured by source of financial assistance and appropriateness for student needs).

Rodon of Laval University realized that no work was being done to track the success of these students once they had completed their studies.

"Because so much takes place outside, we have no overall view of post-secondary education in Nunavut, and no idea how these students fare when they return home," he explains.

The Nunavut General Monitoring Plan, on behalf of the Government of Canada, the Government of Nunavut, the Nunavut Planning Commission and Nunavut Tunngavik Incorporated (NTI), is helping to fund a project that will bridge that gap by collecting data on post-secondary success amongst Inuit students within and outside Nunavut, as well as data on professional success amongst graduates and non-graduates. In addition, the project will examine funding programs available to students who leave the territory to pursue post-secondary education opportunities and examine the respective influence in terms of post-secondary success and graduation outcomes. Of the estimated 2,500 former Inuit students spread across the territory, Professor Rodon hopes to elicit information from up to 20 per cent of the former students in about 15 communities.

## Going beyond creating jobs

"Though employment remains the benchmark, as always, we will try to work with a definition of success that goes beyond jobs and includes elements of personal development and well-being, as well."

A better understanding of the impact of post-secondary education on young Inuit, professor Rodon explains, could help education decision makers with educational program design and help funding agencies to adapt funding to student needs.

Post-secondary education is a priority of the Government of Nunavut recognizing young people are the key to building Nunavut's future. The government of Nunavut wants to help students develop the skills and abilities needed to take on leadership roles in the territory by identifying gaps in access to secondary education and working to eliminate them.

***Location:***
Qikiqtaaluk, Kivalliq and Kitikmeot Regions of Nunavut

***Project Information:***
April 1, 2011 – March 31, 2012,
total project cost 2011/12: $6,894,
NGMP contribution: $6,594

***Valued Component (VC):***
Education and training, employment, economic activity

***Indicators:***
Graduation rate, field of study, number of years in a post-secondary program, job satisfaction, relationship between education and employment, level of financial assistance

***Partners:***
Laval University, Nunavut Department of Education, Financial Assistance for Nunavut Students (FANS), and Kakivak, Training and Employment

***Contact Information:***
Dr. Thierry Rodon
Northern Sustainable Development Chair,
Department of Political Science
Université Laval
1030 Avenue des Sciences-Humaines,
QUÉBEC QC G1V 0A6
418-656-2131 ext. 5244
thierry.rodon@pol.ulaval.ca

# Program Development Progress

Progress was made by both CIMP and NGMP during the 2011/12 reporting year. In terms of numbers, CIMP funded 44 projects, over double the number of projects funded from the previous year, and allocated approximately $1.3 million towards projects and initiatives. 2011/12 was the second round of project funding for the NGMP. The program funded 19 projects and allocated $1.165 million during the reporting year.

## Table 1: Program Projects and Spending

| | CIMP | | NGMP | |
|---|---|---|---|---|
| | **2010-11** | **2011-12** | **2010-11** | **2011-12** |
| **Total Number of Funded Projects** | 20 | 44 | 4 | 19 |
| **Total Amount of Allocated Funds** | $525,000 | $1.3 million | $200,000 | $1.165 million |

For a complete listing of all monitoring projects funded by CIMP and NGMP for the reporting year see the Appendix at the end of this report.

Table 2 provides a summary of the progress made in 2011/12 as well as the priority next steps for both CIMP and NGMP for 2012/13 and 2013/14.

## Table 2: Performance "Report Card" for 2011/12

| Activity Areas and Associated Goals | Progress | Next steps for 2012/13 and 2013/14 |
|---|---|---|
| **Facilitate governance and partnerships** | | |
| Governance and management structures are established and functioning effectively. | • Governance bodies (NGMP Steering Committee; CIMP Working Group) met quarterly to provide direction (monitoring priorities and investments). The Federal Advisory Committee was also initiated.<br>• CIMP now has its full staff contingent (management and technical staff); NGMP Secretariat was established, but staffing did not proceed as quickly as planned. | • *CIMP*: Update membership and Terms of Reference of CIMP governance structure to better represent partners, co-management boards and industry. Begin consultation on next Five-Year Strategic Plan with partners.<br>• *NGMP*: Meet with Steering Committee to determine monitoring priorities and create a targeted monitoring investment plan. Hire one more staff to meet hiring plan for the Secretariat. |

| Activity Areas and Associated Goals | Progress | Next steps for 2012/13 and 2013/14 |
|---|---|---|
| | • Separate regional Five-Year Strategic Plans were developed for CIMP and NGMP.<br>• Discussions are underway to establish key advisory groups to support program planning, funding allocations, monitoring design and reporting (CIMP). | |
| Monitoring networks are formally established and functioning effectively. | • CIMP has entered into discussions with key Northwest Territories monitoring partners on the establishment of collaborative arrangements formalized through a Memorandum of Understanding (MOU). An MOU template is under development in conjunction with NGMP.<br>• Outreach events grew the network of NGMP partners and expert advisors. NGMP funded projects have brought together new partnerships. | • *CIMP*: Continue discussions with key Northwest Territories monitoring partners with the goal of establishing MOUs to facilitate the development of monitoring protocols, monitoring priorities, and data sharing.<br>• *NGMP*: Continue to expand and grow partnerships through outreach and engagement. |
| Key monitoring questions and priorities are identified and adopted. | • A decision-maker survey and workshop were delivered to establish CIMP's broad monitoring priorities for the current five-year cycle.<br>• NGMP issued a broad call for proposals, which determined the appetite and need for NGMP funding. | • *CIMP*: Develop monitoring blueprint for priority VCs (fish, caribou and water) in conjunction with co-management boards. Assess decision-maker needs annually to refine monitoring priorities.<br>• *NGMP*: Steering Committee to provide direction on monitoring priorities for the next call for proposals. |
| **Support the collection, analysis and synthesis of information** | | |
| Protocols for monitoring and analyzing data have been developed and tested for key priorities, questions and Valued Component (VC) areas. | • CIMP continued discussions with key Northwest Territories monitoring partners on the need for development of common monitoring protocols. Developed Pathways Approach, a protocol for planning and implementing effective biophysical monitoring programs. The RFP process funded six projects focusing on the development of protocols for priority VCs.<br>• NGMP developed a standardized reporting and uptake form for VCs. Supported specific sub-projects that examined how to optimize monitoring protocols. Developed a socio-economic monitoring framework. | • *CIMP*: RFP process will continue to fund projects (9) focusing on the development of protocols for priority VCs. CIMP will facilitate a process to assess existing protocols for priority VCs, evaluate their utility in the Northwest Territories, and establish agreement for their use amongst the CIMP partners.<br>• *NGMP*: Continue to use the uptake form for VCs and implement the socio-economic monitoring framework. In partnership, develop a water quality monitoring framework for Nunavut that will serve as a monitoring and management tool. |

| Activity Areas and Associated Goals | Progress | Next steps for 2012/13 and 2013/14 |
|---|---|---|
| Baseline information has been established for all priority Valued Component areas. | • A CIMP results workshop was delivered and the results of funded research are available on the Northwest Territories Discovery Portal. Baseline environmental information continues to be collected for priority VCs and regions.<br>• NGMP prepared Summary of Knowledge reports for all VCs, available through the NGMP Secretariat. | • *CIMP*: Continue to host an annual CIMP results workshop in conjunction with Northwest Territories research partners. Post results to the Northwest Territories Discovery Portal. Engage partners to design monitoring plan once monitoring priorities are refined.<br>• *NGMP*: Update Summary of Knowledge reports and disseminate reports. |
| Funding is distributed annually to priority monitoring initiatives that build community capacity and fill key knowledge gaps. | • CIMP delivered a decision-maker survey and workshop to establish CIMP's broad monitoring priorities for current five-year cycle. $1.3 million in funding was distributed to 44 projects in a competitive RFP process.<br>• NGMP distributed $1.165 million in funding to 19 projects. | • Fund projects through a competitive RFP process based on established priorities and monitoring protocols. |
| **Develop and maintain an information management system** | | |
| Environmental monitoring information is centrally accessible online through an information management system. | • CIMP populated and managed the Northwest Territories Discovery Portal and website as a repository of Northwest Territories environmental monitoring information.<br>• NGMP implemented an information management (IM) framework, developed an inventory of monitoring initiatives and has a centralized repository for monitoring information. | • *CIMP*: Survey Northwest Territories data users and providers on IM needs.<br>• Develop IM System business case for CIMP and NGMP, including concept, structure, methodology and migration plan for existing systems. |
| **Report and communicate** | | |
| Key information on environmental monitoring is reported annually and contributes to the quality and timeliness of management decisions. | • Produced annual Summary of Knowledge reports (both CIMP and NGMP).<br>• CIMP developed and presented responses to recommendations from the Northwest Territories Audit at a workshop with directly-affected parties. | • *CIMP:* Produce annual CIMP report. Plan for and consult on the State of Environment Report on CIMP's priority VCs. Produce summary of CIMP-funded research from annual results workshop.<br>• *NGMP*: Continue to investigate how information is used in policy and programming decision-making. Continue to update Summary of Knowledge reports and release the Five-Year Strategic Plan. Continue outreach and engagement. |

# Program Priorities for the Upcoming Year

While CIMP and NGMP have made considerable advancements over the past few years, there are several areas that require particular focus going forward. Focus areas for 2012/13 - 2013/14 are outlined below.

## CIMP

CIMP is updating the membership and Terms of Reference of the CIMP governance structure to better represent partners, co-management boards and industry. The program has initiated discussions with key monitoring partners from the Northwest Territories to establish formalized agreements such as Memorandums of Understanding (MOUs) to facilitate data sharing and the development of monitoring protocols and priorities. CIMP will continue to hold these discussions with its partners and it will survey data users and providers within the territory on their information management (IM) needs. The program will begin consultation on its next Five-Year Strategic Plan.

CIMP will continue to host an annual CIMP results workshop in conjunction with Northwest Territories research partners, out of which CIMP will develop a summary report of CIMP-funded research.

CIMP will assess decision-maker needs on an annual basis to refine the monitoring Valued Component (VC) priorities. Once the monitoring priorities are refined, CIMP will engage with its partners to design a monitoring plan as well as monitoring blueprints for the priority VCs selected. Currently, water, fish and caribou are CIMP's priority VCs. CIMP will fund projects based on the established priorities, focusing on the development of monitoring protocols for priority VCs. The program will continue to post monitoring results to the Northwest Territories Discovery Portal (http://nwtdiscoveryportal.enr.gov.nt.ca).

CIMP will produce an annual CIMP report, and it will plan for and consult on the State of Environment Report on CIMP's priority VCs.

## NGMP

The NGMP Secretariat, comprised of AANDC staff, supports the NGMP Steering Committee, manages the governance and partnership structures, data collection and reporting functions. The Secretariat has been established, but is not currently at its full contingent of five staff, therefore staffing will be a priority for the coming year.

Additionally, the NGMP Secretariat will work with the NGMP Steering Committee to further develop monitoring priorities, which will inform a targeted monitoring investment plan and the next Call for Proposals. NGMP will also release the program's first Five-Year Strategic Plan and will continue to update the Region's Summary of Knowledge reports.

# Getting Involved in the Northern Monitoring Programs

CIMP and NGMP fund projects that align with their stakeholder's monitoring priorities.

The monitoring priorities of CIMP are organized into three priority themes: water, fish and caribou. Monitoring gaps in each of these areas are identified in the CIMP proposal guide. The proposal submission guide further contains information on the overall proposal process, including the criteria that are used to select the projects to be funded. Information on the CIMP proposal process, including a copy of the CIMP Proposal Guide, can be found on CIMP's website (www.nwtcimp.ca).

NGMP is currently working with the Steering Committee to determine the monitoring priorities for the 2013/14 year. The Call for Proposals, to be released in February 2013, will reflect these priorities. Information on the NGMP proposal process can be requested from NGMP at ngmp.psgn@aadnc-aandc.gc.ca.

For specific questions or comments please contact:

**CIMP**

NWT CIMP Secretariat
Aboriginal Affairs and Northern Development Canada
Environment & Conservation Division
P.O. Box 1500
Yellowknife, NT X1A 2R3
Phone: (867) 669-2673
Fax: (867) 669-2701
Email:nwtcimp@aandc-aadnc.gc.ca

www.nwtcimp.ca

**NGMP**

NGMP Secretariat
Aboriginal Affairs and Northern Development Canada
Nunavut General Monitoring Plan
Inuksugait Plaza II, 1104B, 1st Floor
P.O. Box 2200
Iqaluit, NU X0A 0H0
Toll-free: 1-855-897-6988
Phone: (867) 975-4654
Fax: (867) 975-4736
Email: ngmp.psgn@aadnc-aandc.gc.ca

www.ngmp.ca

# Appendix: List of CIMP and NGMP Funded Projects

Table 3 provides a listing of all monitoring and capacity-building projects funded by CIMP and NGMP in 2010/11, 2011/12 and 2012/13[4]. It should be noted that 2010/11 was the first year that NGMP funded projects as reflected by initial investment allocations.

## Table 3: Monitoring and Capacity-Building Projects Supported by CIMP and NGMP

| Project Lead | Title | Fiscal Year | | |
|---|---|---|---|---|
| | | 2010/11 | 2011/12 | 2012/13 |
| **CIMP** | | | | |
| **PRIORITY PROGRAM VALUED COMPONENT MONITORING** | | | | |
| **Caribou Monitoring** | | | | |
| GNWT – ENR | Monitoring the Dehcho Boreal Caribou Population | | ● | ● |
| GNWT – ENR | Wolf Abundance and Predation on Caribou Winter Range | | ● | ● |
| Tlicho Government | Tlicho Community-Based Monitoring of the Bathurst and Bluenose East Caribou | | | ● |
| Tlicho Government | Using Tlicho Knowledge to Monitor Barren Ground Caribou | | | ● |
| University of Calgary | Moose and Caribou Health: Monitoring the Emergence and Impacts of Winter Tick in the Sahtu Settlement Region | ● | ● | |
| **Fish Monitoring** | | | | |
| DFO | Assessment of Critical Bull Trout Habitat in the South Nahanni Watershed | ● | | |
| DFO | Biological Monitoring and Assessment of Fish Populations, With a Focus on Lake Trout Biology in Great Bear Lake | | ● | |
| DFO | Community-Based Monitoring of Coastal Fish Ecology Using Biomarkers | | ● | |
| DFO | Comparison and Calibration of Broad Scale Monitoring and NORDIC Community Index Gill Net Protocols for NWT Lakes | | ● | |
| DFO | Environmental Baseline Conditions of Habitat and Fish Tissue at a Proposed Effluent Discharge Site, Yellowknife Bay, NWT | | ● | |
| DFO | Harvest-Based Monitoring of Western Beaufort Sea Coastal Fisheries | | ● | |

[4] The 2012/13 fiscal year was the first year that CIMP began accepting proposals for multi-year projects (i.e., one application for funding over 2 or more years). Previously, project applicants had to apply for funding each year for the same projects.

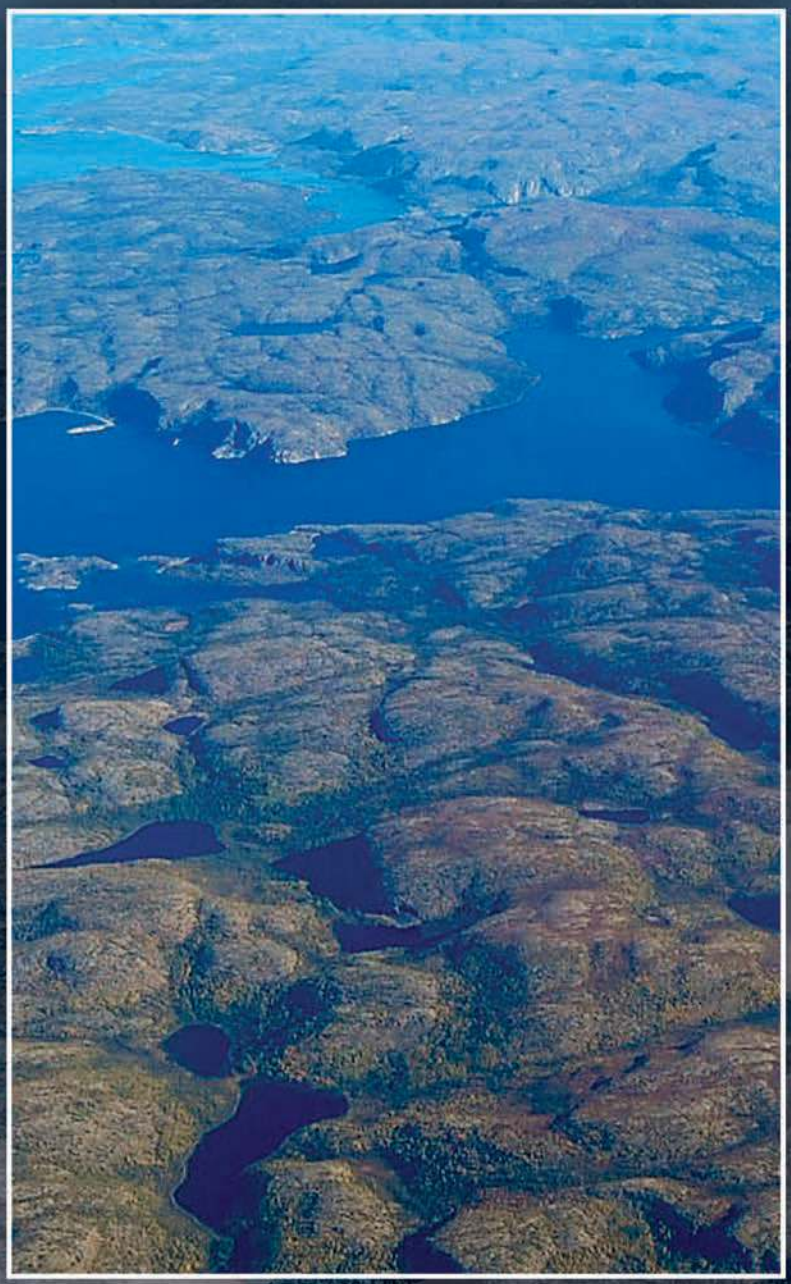
| Project Lead | Title | Fiscal Year | | |
|---|---|---|---|---|
| | | 2010/11 | 2011/12 | 2012/13 |
| DFO | Long-Term Monitoring of Great Bear Lake Fisheries and the Aquatic Ecosystem | | | ● |
| DFO | Monitoring and Assessing the Cumulative Impacts on Important Fish Population Productivity and Community Diversity in Great Slave Lake | | ● | |
| DFO | Monitoring Pacific Salmon to Understand Cumulative Impacts of Climate Change in the Arctic | | | ● |
| DFO | Understanding Adaptive Mechanisms of Fishery Production and Community Diversity Corresponding to Environmental and Cumulative Impacts in Great Slave Lake Systems | | | ● |
| DFO | Winter Ecosystem and Fish Habitat in the Nearshore Beaufort Sea | | | ● |
| Parks Canada | Quantifying the Cumulative Effects of Industrial Activities on the Health of Fish in Rivers in the Northwest Territories | | | ● |
| Trent University | Understanding Impacts of Environmental Change on Char in the Inuvialuit Settlement Region: Science and Inuit Knowledge for Community Monitoring | ● | ● | ● |
| **Water / Aquatic Monitoring** | | | | |
| AANDC | Changing Hydrology in the Taiga Shield: Geochemical and Resource Management Implications | | | ● |
| AANDC | Hay River Water and Suspended Sediment Quality: Community Sampling Program | | ● | |
| Dehcho First Nations | Canadian Aquatic Biomonitoring Network (CABIN) Protocol Training and Stream Assessment Project | ● | ● | |
| Dehcho First Nations | Developing a Community Based Aquatic Research and Monitoring Program | ● | | |
| Deline Renewable Resources Council | Community-Based Water Quality Monitoring in Great Bear Lake | | ● | |
| DFO | Impacts of Climate Change on Contaminants in Consumed Fish | | ● | ● |
| DFO | The Road to Ecosystem Redemption: Comparative Study of Degraded and Pristine Giant Lakes of North America Using Ecopath | | ● | ● |
| Ecology North | Water Monitoring Capacity Building | | ● | |
| Environment Canada | Community Monitoring of the Great Slave Lake Ecosystem: Second Steps | ● | ● | ● |
| GNWT – ENR | Implementing an NWT Approach to Collaborative Monitoring That Addresses the Needs of Water Partners, Including Community Concerns and Cumulative Impacts | | | ● |
| GNWT – ENR | Landscape Scale Flooding in the Great Slave Lake Plain: Expansion of Lakes, Flooding of Wetlands and Implications to Bison Habitat | | ● | ● |
| GNWT – ENR | Vulnerability Assessment for the Slave River and Slave River Delta and Sediment Core Sampling to Assess Contaminant Deposition to the Slave River Delta Over Time | | ● | |
| GNWT – Health and Social Services | Visual Analysis of Predictors for Increased Mercury Levels in Predatory Fish in NWT Lakes | | | ● |

| Project Lead | Title | Fiscal Year | | |
|---|---|---|---|---|
| | | 2010/11 | 2011/12 | 2012/13 |
| K'agee Tu First Nation | Investigating the Cumulative Effects of Environmental Change and Human Activity in the Tathlina Watershed | | | ● |
| Northwest Territory Metis Nation | Slave River Water and Suspended Sediment Quality Community Sampling Program | ● | | |
| University of Victoria | Evaluation of Hydro-Climatic Drivers of Contaminant Transfer in Aquatic Food Webs in the Husky Lakes Watershed | | ● | |
| Wek'eezhii Renewable Resources Board | Aquatic Ecosystem Monitoring Project | | ● | ● |
| Yellowknives Dene First Nation | Establishing a Water Quality Dataset for Cumulative Effects Assessment in the North Slave | | | ● |
| **OTHER VALUED COMPONENT, CUMULATIVE IMPACT AND COMMUNITY-BASED MONITORING** | | | | |
| AANDC | A Multi-Scale Assessment of Cumulative Impacts in the Northern Mackenzie Basin | | | ● |
| AANDC | A Watershed Approach to Monitoring Cumulative Impacts of Landscape Change | | | ● |
| AANDC | Community-Based Environmental Monitoring in the NWT | | ● | |
| AANDC | Establishing Standard Monitoring Stations in the North Slave | | ● | |
| AANDC | Investigating the Effects of Northern Overland Transportation Infrastructure | | ● | |
| AANDC | Investigating the Effects of Overland Winter Access in the Outer Mackenzie Delta | ● | | |
| AANDC | The Cumulative Impacts of Rapid Environmental Change in the Northwestern NWT: Investigating the Impacts of Mega-Slump Disturbances on Terrestrial and Aquatic Ecosystems in the Lower Peel Watershed, NWT | | ● | |
| Arctic Borderlands Ecological Knowledge Co-Op | Arctic Borderlands Co-Op Community-Based Monitoring Program | ● | ● | ● |
| Aurora Research Institute | Monitoring Permafrost for Cumulative Impact Assessment in the Inuvialuit Settlement Region | | ● | |
| Canadian Centre for Remote Sensing | Baseline Monitoring of Arctic Vegetation and Snow Changes Over the Bathurst Caribou Habitat Using Satellite Remote Sensing and Community-Based Field Observations | | | ● |
| Canadian Forest Service | Ecological Monitoring in the Northwest Territories: a Collaborative Approach | | ● | |
| Canadian Wildlife Service | Population Trends of Songbirds in the Fort Liard Area | | ● | |
| Canadian Wildlife Service & Environment Canada | Bird Monitoring in the Mackenzie Delta (Arctic Program for Regional and International Shorebird Monitoring (PRISM) Tier II Site) | ● | ● | |
| Dehcho First Nations | Developing a "Pathways" Model for the Dehcho Community-Based Research and Monitoring Program | | ● | |

| Project Lead | Title | Fiscal Year | | |
|---|---|---|---|---|
| | | 2010/11 | 2011/12 | 2012/13 |
| DFO | Community Coastal Based Monitoring: A Regional Approach for the Inuvialuit Settlement Region | | | ● |
| DFO | Community-Based Coastal Arctic Monitoring | ● | | |
| DFO | Environmental Conditions and Beluga Whale Entrapment Events in the Husky Lakes | | ● | |
| DFO | Hendrickson Island Beluga Research Program | ● | | |
| Environment Canada | Integrated Vegetation Monitoring Protocol | | ● | |
| GNWT – ENR | Furbearer Contaminants, Population and Harvest on the Slave River and Slave River Delta: Historical and Current Conditions | | | ● |
| GNWT – ENR | Hunting, Trapping and Fire Ecology Program | ● | ● | ● |
| GNWT – ENR | Moose Population Monitoring in the Dehcho | ● | ● | |
| GNWT – ENR | Succession and Regeneration Response on Seismic Lines With Respect to Ecology, Disturbance Factors and Time | | | ● |
| Gwich'in Renewable Resources Board | Gwich'in Harvest Study | | ● | |
| Gwich'in Renewable Resources Board | Moose Abundance and Composition in the Gwich'in Settlement Area and Inuvialuit Settlement Region | ● | | |
| Gwich'in Social & Cultural Institute | Phase II Gwich'in Traditional Knowledge Monitoring: Stewardship of Gwich'in Lands Through Management of Oral History/Traditional Knowledge Data | | ● | |
| Gwich'in Tribal Council | Traditional Knowledge Workshops to Discuss and Gather Information With Regard to Permafrost Disturbances and Its Effects on the Land and Water Systems in the Richardson Mountains, NWT | ● | | |
| Inuvialuit Joint Secretariat | Community Monitoring of Vegetation and Permafrost in the Mackenzie Delta Region | ● | | |
| K'agee Tu First Nation | Coordinated Environmental Monitoring Program (CEMP) Baseline Study | | ● | |
| Lutselk'e Dene First Nation | Cumulative Impact Monitoring in Thaidene Nene: Ni Hat'ni Dene Program | | ● | ● |
| Natural Resources Canada | Characterization of Variability in Permafrost Thermal State, Mackenzie Corridor NWT | | ● | |
| Tlicho Government | Capacity Building for the Kwe Beh Working Group | | ● | |
| Tlicho Government | Tlicho Knowledge Research and Monitoring Program: Baseline Data and Protocol Development | | ● | |

| Project Lead | Title | Fiscal Year | | |
|---|---|---|---|---|
| | | 2010/11 | 2011/12 | 2012/13 |
| University of Ottawa | Evaluating Catchment Scale Cumulative Impacts: Mega-Scale Permafrost Disturbances and Their Effects on Terrestrial and Aquatic Systems in the Richardson Mountains, NWT | ● | | |
| University of Victoria | Using Inuvialuit Observations and Remote Sensing to Monitor Environmental Change in the Mackenzie Delta Region | ● | ● | ● |
| Wek'eezhii Renewable Resources Board | Pilot Project: Using Tlicho Knowledge to Monitor Cumulative Impacts | ● | | |
| Wilfred Laurier University | Evolution of the Snowpack and Snowmelt Chemistry in the Boreal Forest and Tundra Ecosystem | | ● | |
| Wilfred Laurier University | Snowpack Accumulation: Influence on Caribou Distribution, Surface Water Chemistry and Lake Productivity | | | ● |

**NGMP**

| VALUED COMPONENT MONITORING | | | | |
|---|---|---|---|---|
| **Fish Monitoring** | | | | |
| Cambridge Bay Hunters and Trappers Association | Establishing a Long-Term, River-Based Monitoring System for Arctic Char in the Cambridge Bay Area, Nunavut | | ● | ● |
| Pangnirtung Hunters and Trappers Association | Development and Implementation of a Community-Based Fishery Monitoring Programme and Adaptive Co-Management Plan for Arctic Char in Baffin Region, Nunavut | | ● | ● |
| **Water / Aquatic Monitoring** | | | | |
| Acadia University | Small Polynyas in Nunavut: Targets for Biodiversity, Climate Change and Contamination | | ● | ● |
| Dalhousie University | Nunavut Drinking Water Quality: Source to Tap Monitoring | | ● | ● |
| Government of Nunavut - Department of Environment | Establishing an Aquatic Monitoring Program for Nunavut | | ● | ● |
| University of Manitoba | Spatial and Temporal Variations of Petroleum Hydrocarbons in Marine Sediments of Baffin Bay, Eastern Canadian Arctic | | ● | ● |
| **Wildlife Monitoring** | | | | |
| Beverly and Qamanirjuaq Caribou Management Board | Fuel Cacheing to Support Caribou Monitoring and Survey | ● | | |
| Carleton University | Hudson-Strait, Fox Basin Marine Bird Coastal Monitoring Survey: Assessing the Impacts of Declining Summer Sea Ice and Northern Development | | ● | ● |
| Government of Nunavut - Department of Environment | An Estimate of Breeding Females in the Beverly herd of Taiga Wintering Barren-Ground Caribou, *Rangifer Trandus Groenlandicus* | | ● | |

| Project Lead | Title | Fiscal Year | | |
|---|---|---|---|---|
| | | 2010/11 | 2011/12 | 2012/13 |
| Government of Nunavut - Department of Environment | Fuel Cacheing for Polar Bear Monitoring Project | ● | | |
| Government of Nunavut - Department of Environment | Kitikmeot Muskox Disease Monitoring Program/Project | ● | ● | |
| Queens University | Toward the Optimization of an Inuit Non-Invasive Polar Bear Survey: Completing the Evaluation of Non-Invasively Collected Polar Bear Tissue | | ● | ● |
| Université du Québec à Rimouski | Monitoring of Nunavut Large Terrestrial Carnivores: Wolverine, Wolves, Grizzly Bear | | ● | ● |
| York University | Community-Based Monitoring of Ice-Breading Seals and Polar Bear Feeding in the Gulf of Boothia | | ● | ● |
| Yukon College | Making More Use of What We Know: The CircumArctic Rangifer Monitoring and Assessment Network (CARMA) Approach to Building Capacity for Monitoring to Describe Cumulative Effects and Development on Nunavut's Caribou | | ● | ● |
| **SOCIO-ECONOMIC MONITORING** | | | | |
| Government of Nunavut - Health and Social Services | Enhanced Health Information Collection and Health Monitoring | | ● | ● |
| Kitikmeot Inuit Association | KIA Rotational Shift Work Monitoring Project (Phase 1) | | ● | |
| University of Laval | Monitoring Educational and Professional Success Amongst Inuit of Nunavut Who Have Registered in a Post-Secondary Program | | ● | ● |
| **GENERAL MONITORING** | | | | |
| Kitikmeot Inuit Association | Kitikmeot Inuit Traditional Land Use and Occupancy Baseline Data Integration Project | | ● | ● |
| Kivalliq Inuit Association | Restructure KIA Database Web Mapping Application and Environmental Management Application for Management and Monitoring Land Use and Water on Inuit-Owned Lands | | ● | |
| Nunavut Impact Review Board | Past, Present, and Reasonably Foreseeable Project Mapping Initiative | | ● | ● |
| Nunavut Planning Commission | Use & Occupancy Mapping | ● | | |