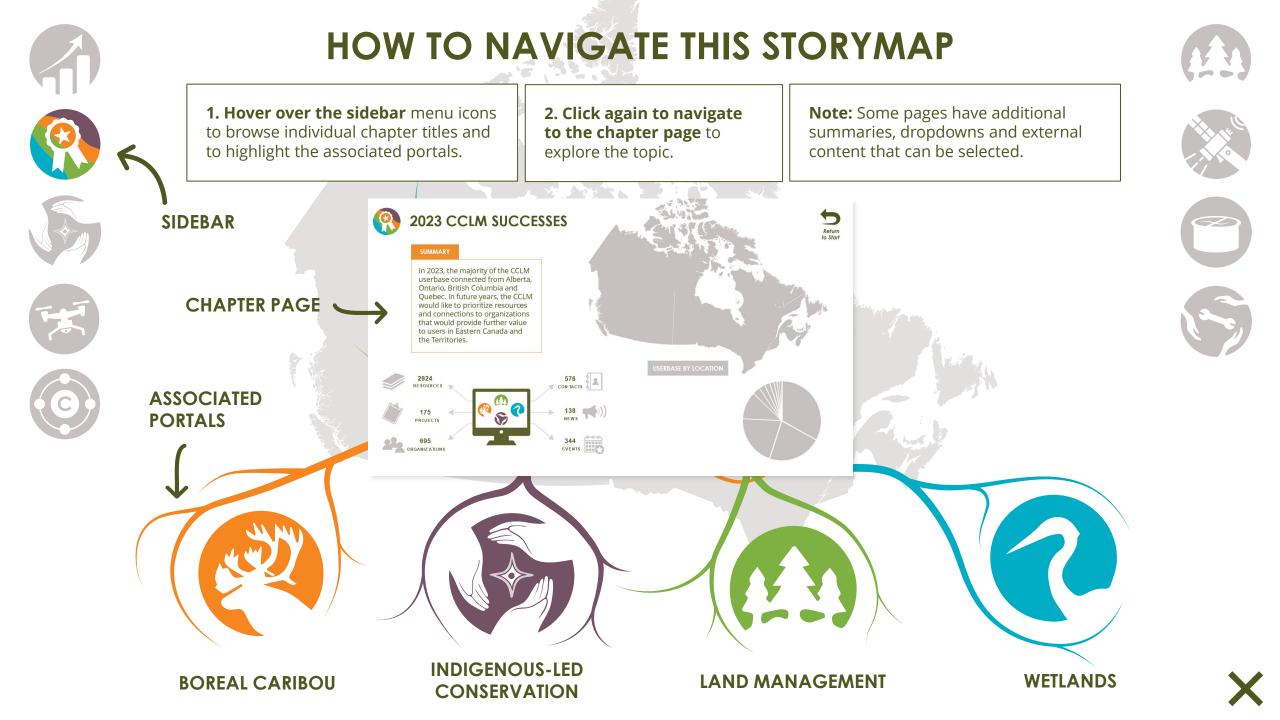
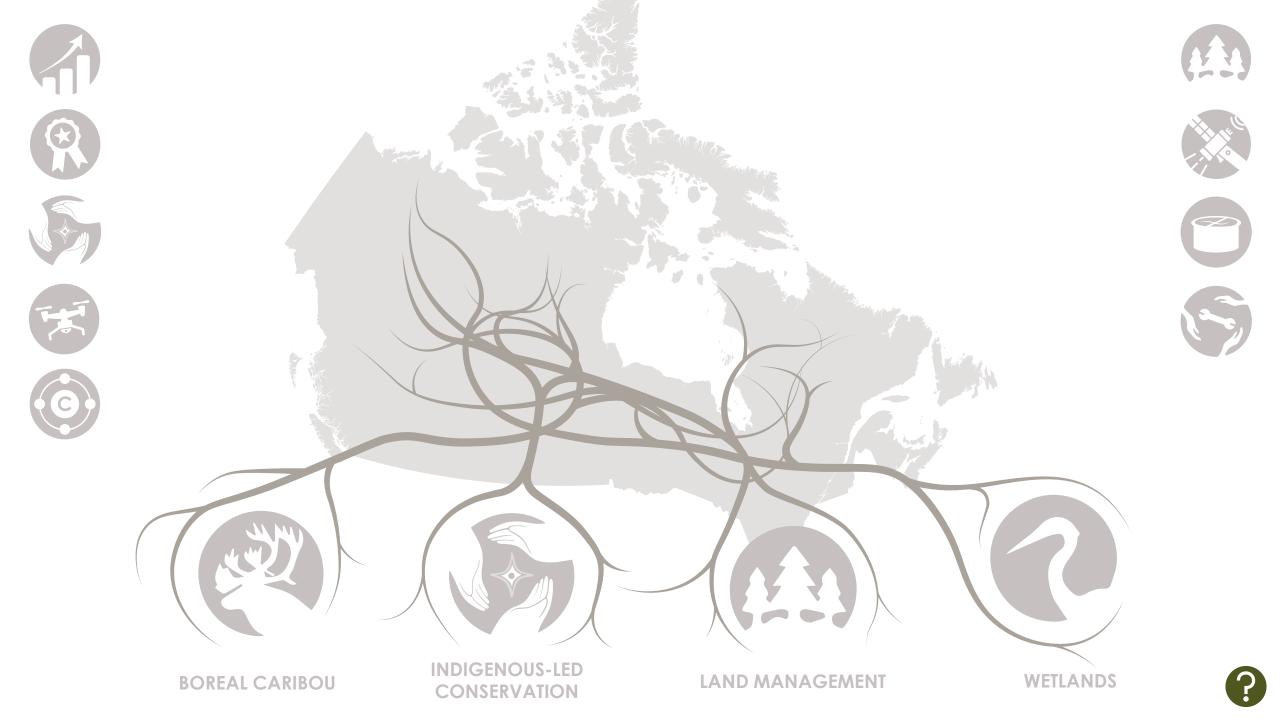


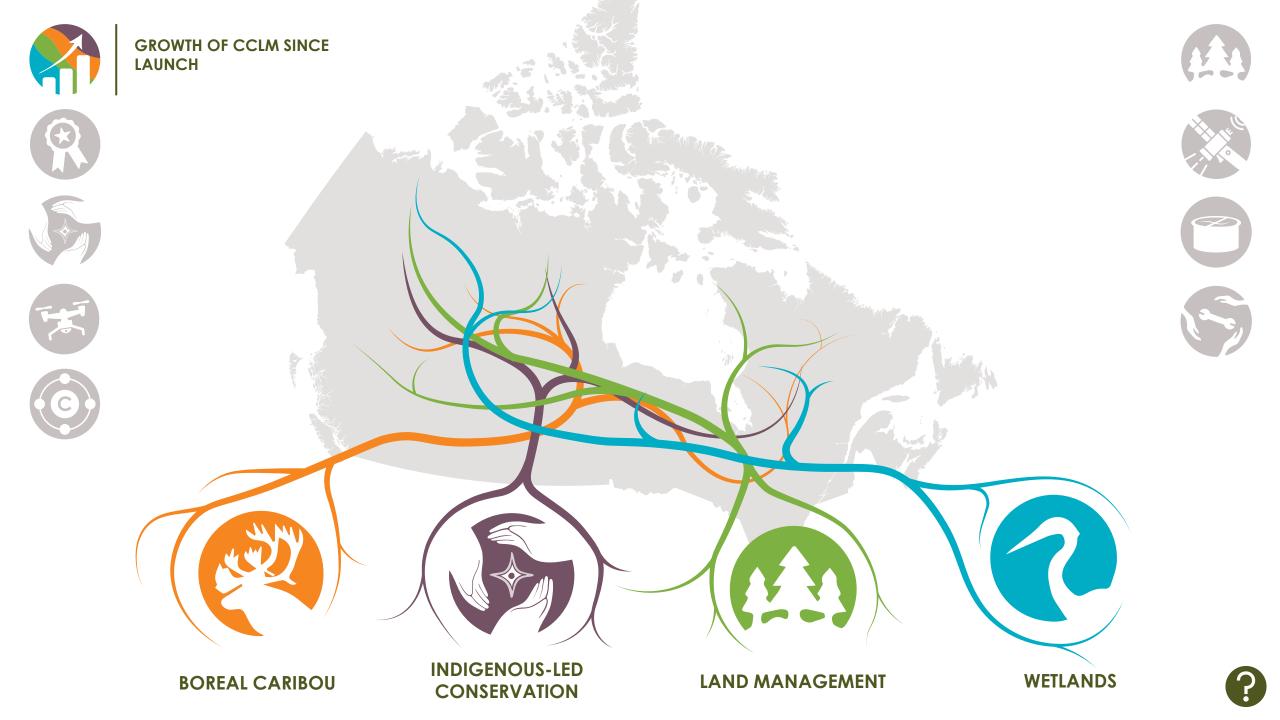
Canadian and Land Management

2023 YEAR IN REVIEW STORYMAP

ENTER











SUMMARY AND HIGHLIGHTS

COLLABORATORS AND HISTORY



SUMMARY AND HIGHLIGHTS

COLLABORATORS AND HISTORY

The Canadian Conservation and Land Management (CCLM) Knowledge Network is a collaborative group of organizations committed to creating a forum for sharing information and lessons learned about boreal caribou conservation, wetland best practices, land restoration and land reclamation.

Over 4 years, the CCLM has developed an accessible online platform, the <u>CCLM Knowledge Portal</u> to share resources and to connect practitioners across Canada.





Return to Start





X

PROGRAM LAUNCH

SUMMARY AND HIGHLIGHTS



INDIGENOUS-LED CONSERVATION HUB



Renewable Resources Board

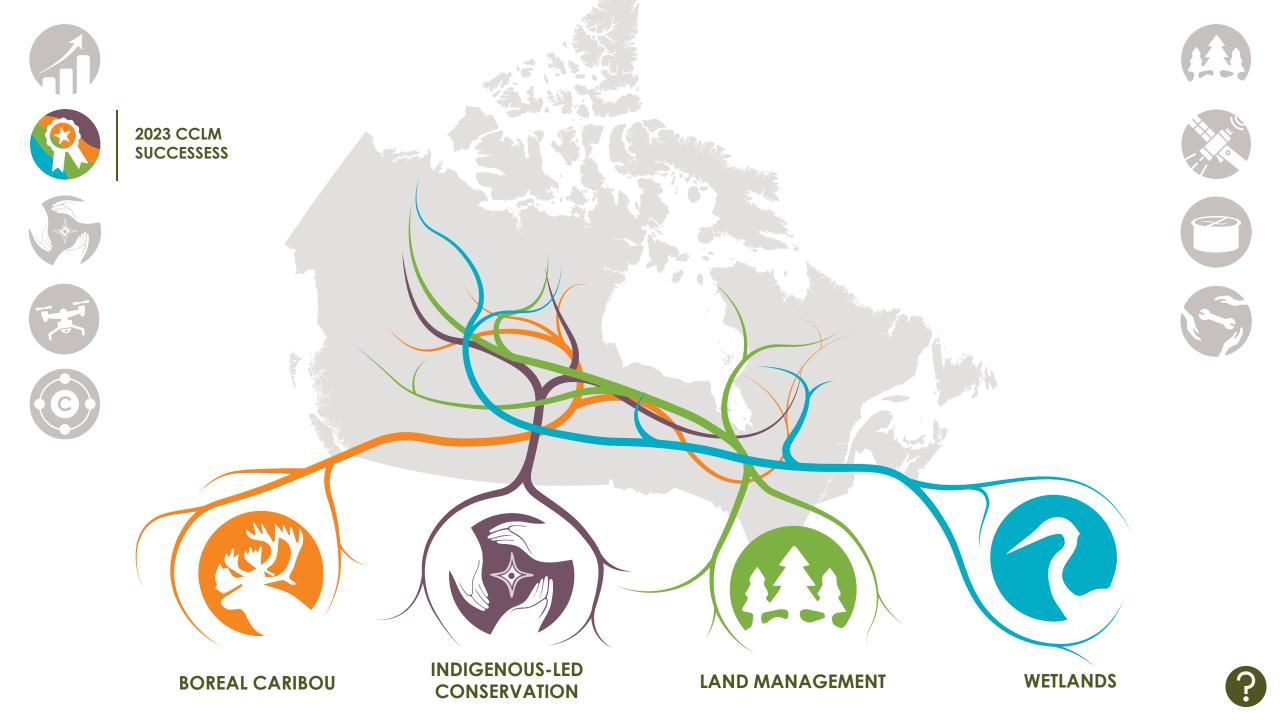
FOUNDING COLLABORATORS

PROUD SUPPORTERS

COLLABORATORS AND HISTORY

FOUNDING COLLABORATORS

INDIGENOUS **CLIMATE HUB**



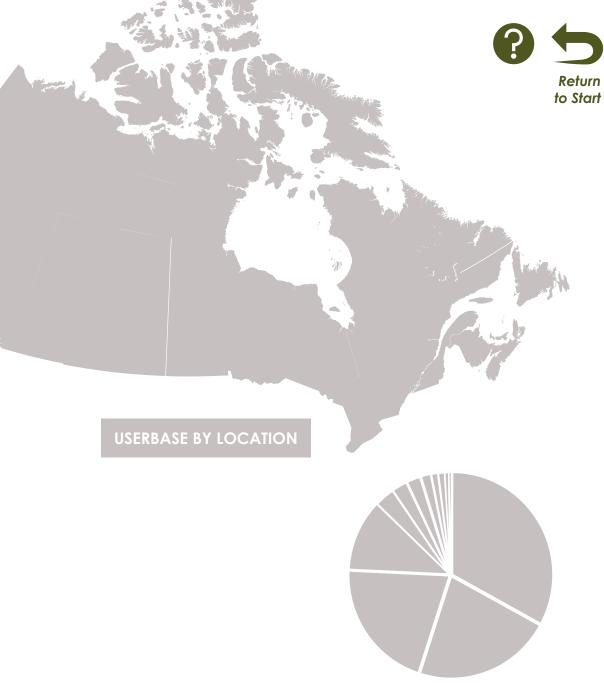


SUMMARY

In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada, the Prairies, and the Territories.









SUMMARY

In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada and the Territories.

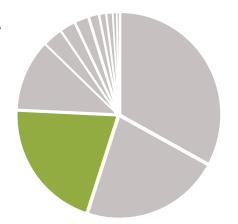


TOTAL METRICS SINCE LAUNCH



USERBASE BY LOCATION

BRITISH COLUMBIA 20.7%





SUMMARY

In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada and the Territories.



2924 576 RESOURCES CONTACTS بيتكي 138 175 NEWS PROJECTS 695 344 ORGANIZATIONS **EVENTS**

USERBASE BY LOCATION

ALBERTA 32.9%



TOTAL METRICS SINCE LAUNCH



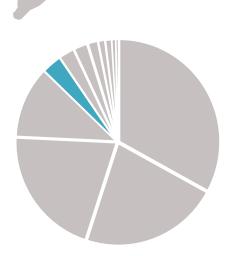
SUMMARY

In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada and the Territories.



USERBASE BY LOCATION

SASKACHEWAN 3.2%



Return to Start



SUMMARY

In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada and the Territories.

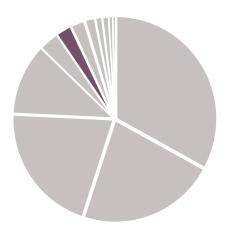


2924



USERBASE BY LOCATION

MANITOBA 2.5%





SUMMARY

In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada and the Territories.



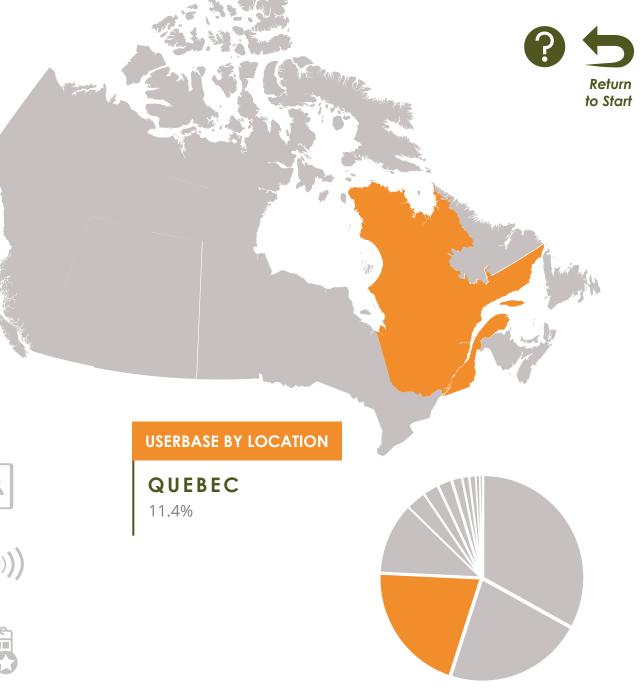
Return to Start **USERBASE BY LOCATION** ONTARIO 22%



SUMMARY

In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada and the Territories.







SUMMARY

In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada and the Territories.

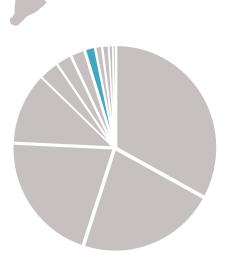




USERBASE BY LOCATION

NEWFOUNDLAND & LABRADOR

1.6%





SUMMARY

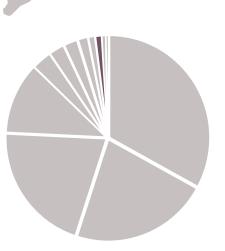
In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada and the Territories.



USERBASE BY LOCATION

NEW BRUNSWICK

1.1%





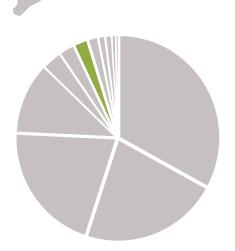
SUMMARY

In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada and the Territories.



USERBASE BY LOCATION

NOVA SCOTIA 2.2%



Return to Start



SUMMARY

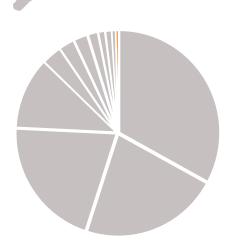
In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada and the Territories.





USERBASE BY LOCATION

PRINCE EDWARD ISLAND 0.2%



Return to Start



SUMMARY

In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada and the Territories.



Return to Start **USERBASE BY LOCATION** YUKON 0.8%



SUMMARY

In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada and the Territories.





Return to Start **USERBASE BY LOCATION NORTHWEST TERRITORIES** 1.1%



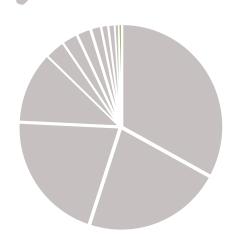
SUMMARY

In 2023, the majority of the CCLM userbase connected from Alberta, Ontario, British Columbia and Quebec. In future years, the CCLM would like to prioritize resources and connections to organizations that would provide further value to users in Eastern Canada and the Territories.

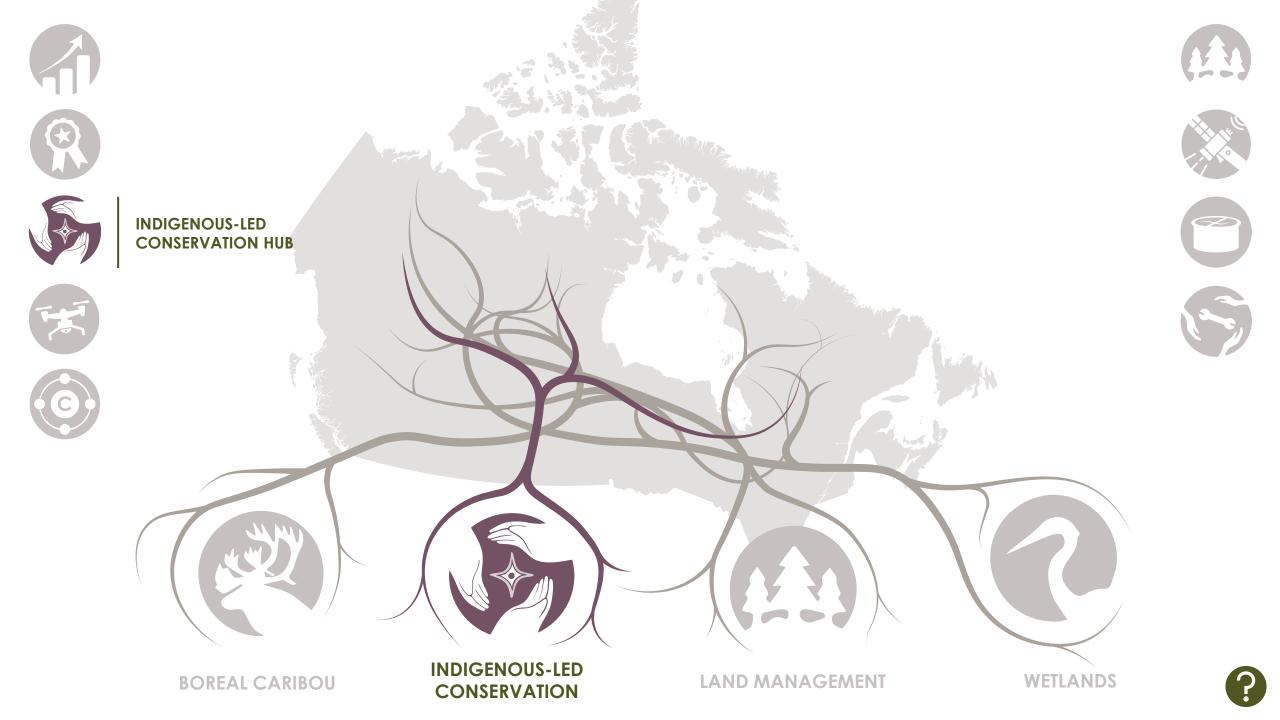


USERBASE BY LOCATION

NUNAVUT 0.1%



Return to Start







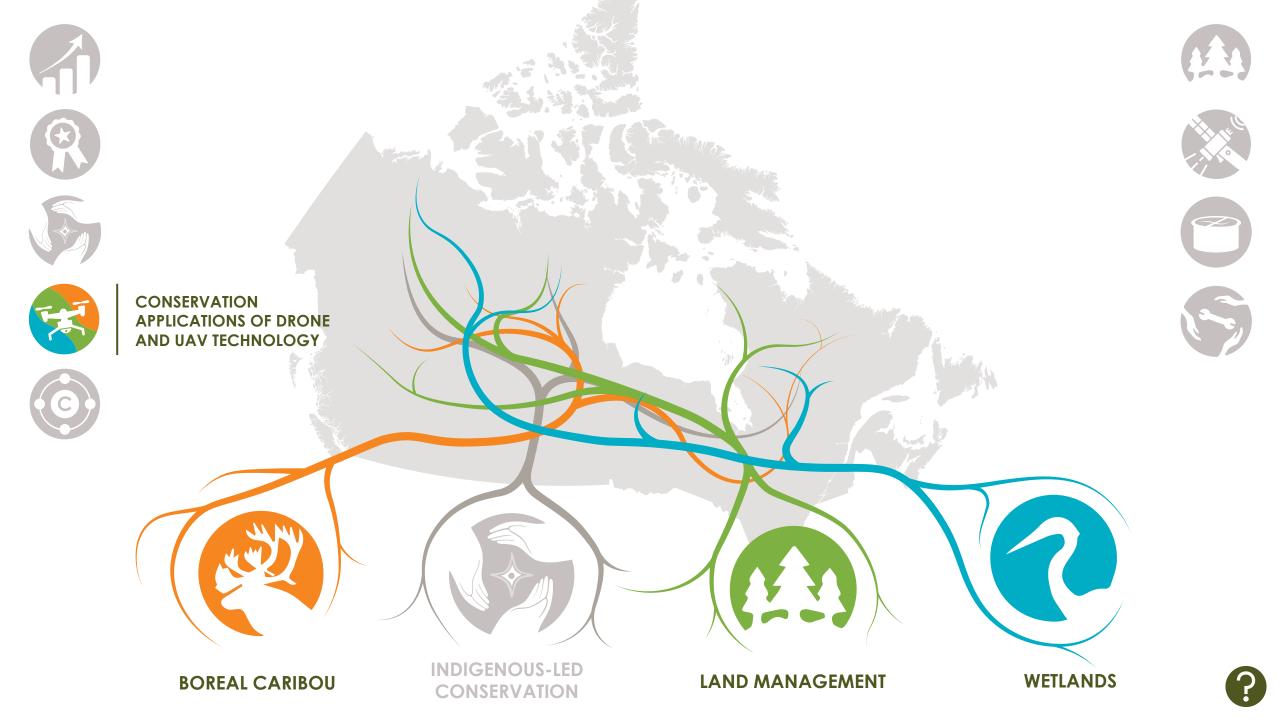


SUMMARY

The Indigenous-Led Conservation Hub is the newest sub-portal on the CCLM, launched in October of 2023. It functions as a landing page to direct users to six exceptional online platforms of Indigenousled conservation and stewardship organizations, including the Centre for Indigenous Environmental Resources, the IPCA Knowledge Basket, the Conservation through Reconciliation Partnership, the Sahtú Renewable Resources Board, the Indigenous Climate Hub, and the First Nations Land Management Resource Centre.

The purpose of the Indigenous-led Conservation Hub is to connect users to the diversity of conservation and stewardship work being done by Indigenous people across Canada, and to connect Indigenous communities to resources and information that support their work. In addition to the six collaborators, the Hub also highlights other Indigenous-led organizations and resources hosted on the CCLM.







CONSERVATION APPLICATIONS OF DRONE AND UNOCCUPIED AERIAL VEHICLE (UAV) TECHNOLOGY



WEBINAR February 2023

WATCH

SUMMARY

Unoccupied aerial vehicles (UAVs) are a low disturbance method for monitoring wildlife and can provide access to environments that are difficult to reach. Combining UAV monitoring with Al image detection is contributing to more accurate population records.

As technology quickly improves, assisted image capture is helping scientists detect and address reclamation challenges such as microtopography, seedling regrowth and biodiversity.

Although UAVs have become more accessible and positioned as acute sensory tools, regulations, data management and analysis can still be common challenges. It is a quickly changing field of science and adopting new technologies after a few generations is generally recommended.

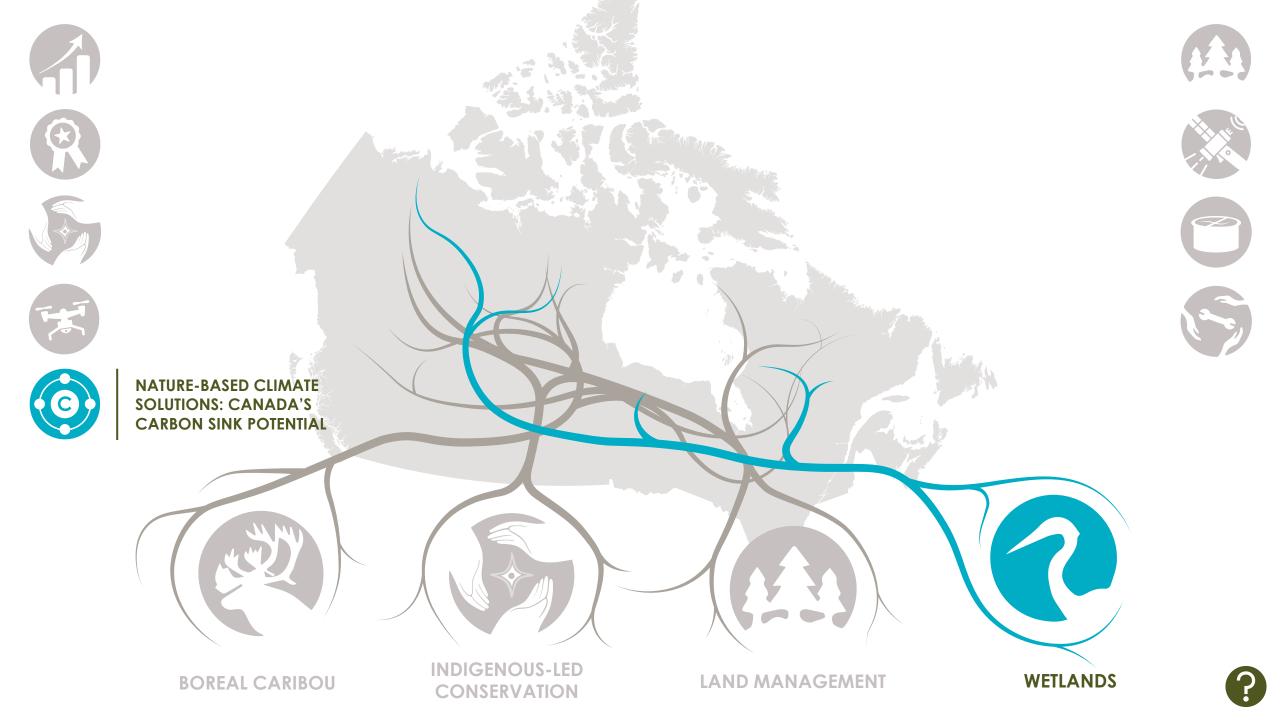
This webinar enaaaed four experts from across Canada:

Professor

DANI DEGENHARDT Research Scientist NRCAN, Northern Forestry Centre GREG MCDERMID **MORGAN HYRNYK Physical Scientist** Applied Geospatial Research Group Environment and Climate Change Canada

> TRAVIS KREBS Co-CEO Superwake

This was one of three webinars hosted by the CCLM Knowledge Exchange program in 2023.



NATURE-BASED CLIMATE SOLUTIONS: CANADA'S CARBON SINK POTENTIAL

WEBINAR May 2023

WATCH

This webinar engaged four experts from across Canada:

SUMMARY

By the definition of the report, Nature Based Climates Solutions (NBCS) are "actions for protection, management and restoration of managed and unmanaged ecosystems that provide additional climate change mitigation by way of carbon sequestration or reduced Green House Gas (GHG) emissions, relative to a defined baseline."

Strong reduction policies are still needed across all sectors to reach Greenhouse Gas targets in Canada, and NBCSs can only support these efforts and lessen the risks of carbon stocks becoming a climate change liability.

The NBCSs with highest potential for CO2 sequestration are peatlands, agricultural lands and grasslands, where crop management, forest management and restoration can provide the most impact and opportunity. These areas are well understood scientifically, affect large areas of the landscape, and the majority of challenges to implementation are related to current policies.

DAVID OLEFELDT

CCA Expert Panel Member Nature-Based Climate Solutions

MELISSA ARCAND

CCA Expert Panel Member Nature-Based Climate Solutions

TIJS CREUTZBERG

SUSAN ZIEGLER

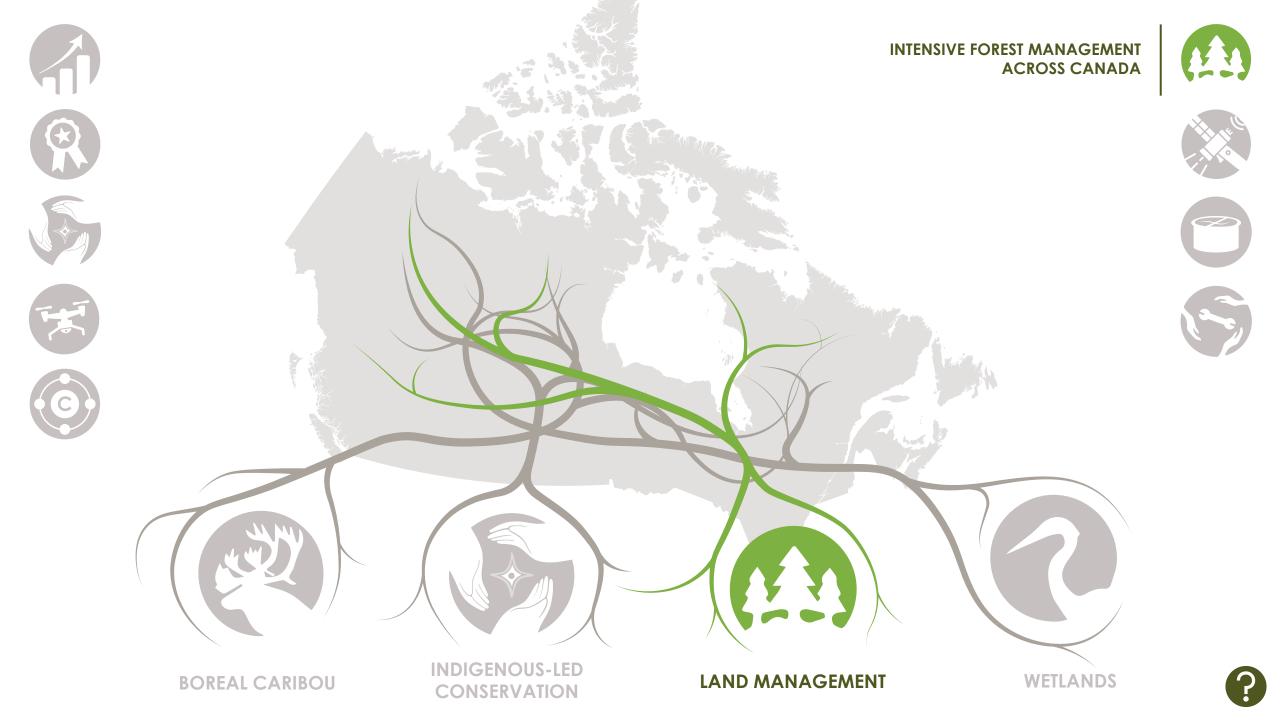
CCA Expert Panel Member

Nature-Based Climate Solutions

Director of Assessments Council of Canadian Academies

Return to Start

This was one of three webinars hosted by the CCLM Knowledge Exchange program in 2023.



INTENSIVE FOREST MANAGEMENT ACROSS CANADA



WEBINAR

November 2023

WATCH

SUMMARY

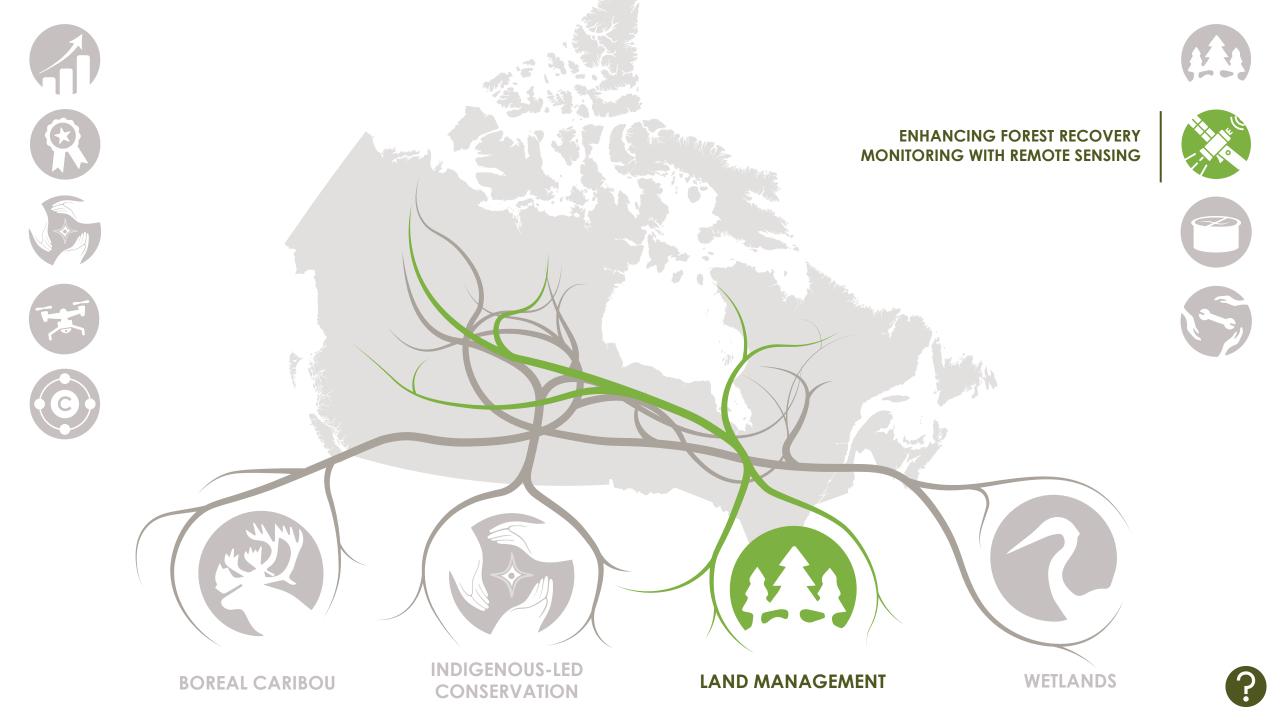
Intensive Forest Management (IFM) involves four key areas of planning, silviculture, protection and monitoring. The goal is to maximize the values (such as resource harvest, wildlife habitat and recreation potential), provided by Canada's forest in a sustainable, ecologically suitable and timely manner.

Emerging technologies such as drone monitoring and aerial survey are helping project and detect more accurate forest regrowth, allowing for improved management and longterm planning throughout growth and harvest cycles.

Principals of IFM can help meet multiple industry, environmental and socio-economic objectives at once, such as faster harvest for forestry, climate change protection through drought resiliency, and community protection through wildfire hazard reduction. This webinar engaged four experts from across Canada:



This was one of three webinars hosted by the CCLM Knowledge Exchange program in 2023.





ENHANCING FOREST RECOVERY MONITORING WITH REMOTE SENSING



INFOGRAPHIC Iune 2023

PREVIEW DOWNLOAD

SUMMARY

Remote sensing is an effective tool that can be leveraged to map and monitor forest recovery dynamics, when accurately and effectively monitoring forest recovery after a disturbance or over a large area is challenging or access is limited.

Data generated from remote sensing provides key baseline information on forest disturbance recovery trends, which can be combined alongside existing data to capture a more complete picture of forest dynamics over time and space.

For large-scale programs, like Two Billion Trees (2BT), accurate, up-to-date and nationally consistent data regarding forest dynamics is important for guiding future tree planting and forest management activities. Science and monitoring are key components of the program, and multiple remotely sensed data sources can be leveraged such as open-source information products derived from Landsat data on Canada's National Forest Information System.



ENHANCING FO

Forest Information Syste

ENHANCING FOREST RECOVERY MONITORING WITH REMOTE SENSING

MONITORING FOREST RECOVERY FOLLOWING DISTURBANCE IS IMPORTANT FOR UNDERSTANDING FOREST DYNAMICS AND INFORMING FOREST MANAGEMENT, RESTORATION AND CLIMATE MITIGATION.

However, accurately and effectively monitoring forest recovery after a disturbance - and over a large area - is challenging, especially in areas that are difficult to access. Remote sensing is an effective tool that can be leveraged to map and monitor forest recovery dynamics, supplementing other monitoring approaches, such as field plots.

REMOTE SENSING HAS COME A LONG WAY IN RECENT YEARS. AND SOME KEY TOOLS INCLUDE:

AIRBORNE LIDAR (or airborne laser scanning)



 Can map a range of forest attributes (i.e., forest canopy cover and height). Can help confirm spectral observations of recovery derived from Landsat.

LEVERAGING EXISTING DATASETS

For large-scale programs, like Two Billion Trees (2BT), accurate, up-to-date and nationally consistent data regarding forest dynamics is important for guiding future tree planting and forest management activities.

The 2BT program plans to integrate remotely sensed data to support monitoring its mass plantation sites. There are multiple remotely sensed data sources that can be leveraged for monitoring, and there are open-source information products derived from Landsat data that are available on Canada's National Forest Information System:

- 1. opendata.nfis.org/downloads/forest_change /CA_forest_fire_recovery_rate.zip;
- 2. opendata.nfis.org/downloads/forest change /CA_forest_harvest_recovery_rate.zip;
- 3. opendata.nfis.org/downloads/forest_change /CA_forest_fire_years2recovery.zip;
- opendata.nfis.org/downloads/forest_change 4. /CA_forest_harvest_years2recovery.zip

In less remote areas that are easier to access, field visits will continue to be an important component of the 2BT monitoring strategy.



LANDSAT

- Freely available satellite data.
- 30m spatial resolution.
- Helps characterize forest change over time, such as post-disturbance forest recovery.

The data generated from remote sensing provide key baseline information on forest disturbance recovery trends, which can be combined alongside existing data to capture a more complete picture of forest dynamics over time and space.

2BILLION

The 2BT program, led by the funding to organizations to plant help Canada meet its climate change and biodiversity goals. Science and monitoring are key components of the program.

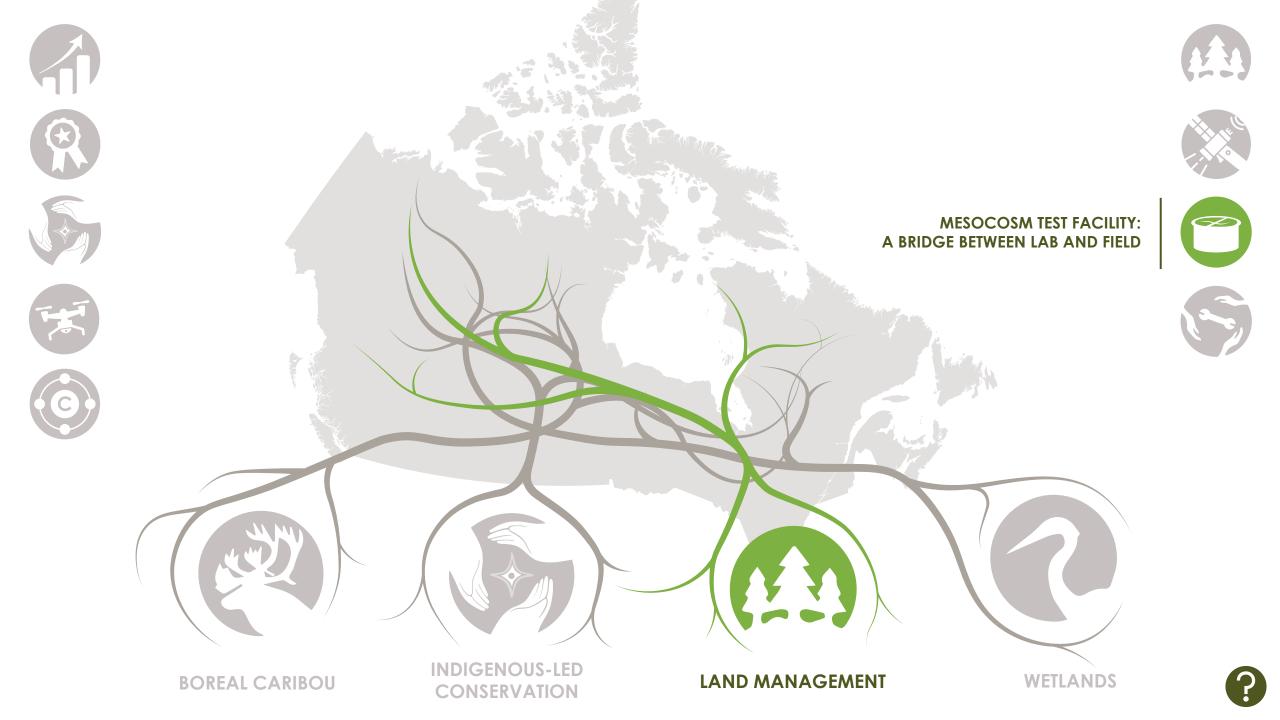


Canadian Conservation and Land Management

TO LEARN MORE ABOUT REMOTE SENSING, VISIT WWW.CCLMPORTAL.CA

Reference: White, J.C., Hermosilla, T., Wulder, M.A.,





MESOCOSM TEST FACILITY: A BRIDGE BETWEEN LAB AND FIELD

INFOGRAPHIC December 2023

PREVIEW DOWNLOAD

SUMMARY

Mesocosms are a way for scientists to run experimental trials under conditions that are similar to natural ecological environments, while still being able to control variables and collect precise data.

The InnoTech Alberta Mesocosm Facility can conduct multi-year studies, can support on-site plan propagation and laboratory analysis, and is the only mesocosm facility in North America to support research in freezing temperatures.

The Mesocosm Facility currently contains 30 14,000L below-ground mesocosm tanks inside a 23,000L containment tank, and 16 4,750L above-ground mesocosm tanks on a containment pad.





MESOCOSM TES

MESOCOSM TEST FACILITY: A BRIDGE BETWEEN LAB AND FIELD STUDIES

MESOCOSMS ARE LARGE, UNIFORM CONTAINERS USED TO EMULATE NATURAL SYSTEMS FOR EXPERIMENTAL STUDIES. THEY PROVIDE THE UNIQUE OPPORTUNITY TO CONDUCT SEMI-CONTROLLED AND REPLICATED EXPERIMENTS UNDER 'REAL-WORLD' CONDITIONS, SUCH AS DAILY AND SEASONAL CYCLES, WEATHER PATTERNS AND INCORPORATION OF **RELEVANT LIVING ORGANISMS.**

The InnoTech Alberta Mesocosm Facility, located in Vegreville, Alberta, was built in 2015-2016 and currently contains 30 below-ground and 16 above-ground mesocosms.





The only mesocosm facility of its type in North America

14,000 L TANKS EACH NESTED INSIDE A 23,000 L CONTAINMENT TANK EMBEDDED IN THE GROUND.

Plants and animals can survive over winter in these mesocosms because they do not freeze to the bottom.

KEY BENEFITS OF THE FACILITY:



multi-vear. customized



Mesocosms are multipurpose and can be adapted for a range of studies. To date, most studies at the facility have focused on materials, like soils and water, that contain industrial byproducts or other contaminants. Other possible studies could include detecting and/or testing how to control invasive species, examining the toxicity of materials over multiple years and many more!



ABOVE-GROUND:

POSITIONED ON TOP OF

A CONTAINMENT PAD.

4,750 L TANKS

ED

Canadian Conservation and Land Management

TO LEARN MORE ABOUT THE AQUATIC MESOCOSM FACILITY CHECK OUT THESE **RESOURCES FROM INNOTECH ALBERTA AND** MORE AT WWW.CCLMPORTAL.CA

Mesocosm Test Facilities - October 2023

Using Aquatic Mesocosms to Assess the Effects of Soil and Vegetation for Informing Environmental Research -July 2023

InnoTech Alberta Aquatic Mesocosms (Video) - 2023

State-Of-The-Art Above Ground Mesocosm Facility - 2020









WETLANDS



?





BOREAL CARIBOU

LAND MANAGEMENT

INDIGENOUS-LED CONSERVATION

BEYOND CONSERVATION: A TOOLKIT FOR RESPECTFUL COLLABORATION WITH INDIGENOUS PEOPLES





BEYOND CONSERVATION: A TOOLKIT FOR RESPECTFUL COLLABORATION WITH INDIGENOUS PEOPLES

DOWNLOAD



BRIEFING NOTE May 2023

PREVIEW

SUMMARY GUIDING PRINCIPLES

X

The Beyond Conservation Toolkit was developed by the Indigenous Knowledge Circle (IKC) of the NBCKC, a group of ~40 Inuit, First Nations, and Métis organizations, communities, regional governments, and co-management boards who are actively involved in the conservation, recovery, and management of caribou. The Toolkit is for government agencies and organizations, ENGOs, private sector or industry organizations, academics and researchers, consultants and all others in the stewardship and conservation field seeking to collaborate or improve their relationships with Indigenous Peoples.

Embedding reconciliation into conservation and stewardship is an ongoing process and must come from a place of ongoing respect, humility, and openness to learn. Through thoughtfulness and meaningful collaboration, we can avoid past mistakes and work towards mutual conservation goals.

BEYOND CONSERVATION: A TOOLKIT FOR RESPECTFUL COLLABORATION WITH INDIGENOUS PEOPLES

DOWNLOAD





Х

BRIEFING NOTE May 2023

PREVIEW

GUIDING PRINCIPLES SUMMARY

Ten guiding principles help direct learnings in the Beyond Conservation Toolkit, and are available in English, French, Inuttitut, Michif and Woods Cree. They are:

- Recognition of relationships with caribou
- Respect for land claims, treaties and recognition of the self-determination of Indigenous nations
- Relationships built on trust 3.
- Collaboration and shared decision-making 4.
- Transparency and accountability 5.
- Open Communication 6.
- Reciprocity and shared benefits 7.
- Shared interest 8.
- Adherence to the First Nations principles of Ownership, Control, Access, and Possession (OCAP®) for 9. Indigenous data
- 10. Respect for and openness to Indigenous Knowledge, culture and perspectives

BEYOND CONSERVATION: A TOOLKIT FOR RESPECTFUL COLLABORATION WITH INDIGENOUS PEOPLES

In seeking reconciliation with Canada's Indigenous Peoples, it is important to acknowledge the damage that has been done through colonial conservation methods. For example, in some cases Indigenous nations were forcibly removed from their territories or denied their traditional harvesting rights in an effort to protect and conserve lands and species. It is necessary to learn from these past mistakes and to advance stewardship and conservation in ways that include meaningful collaboration with Indigenous communities and consider Indigenous Knowledge, perspectives and practices.

While it can be challenging to know where to start, the **Beyond Conservation Toolkit** is a user-friendly online resource created to support individuals or organizations in the environmental field seeking to collaborate or improve their relationships with Indigenous Peoples.

Launched in 2023 by the Indigenous Knowledge Circle (IKC) of the National Boreal Caribou Knowledge Consortium (NBCKC).





Sparked by the rapid decline of caribou in boreal Canada, the toolkit arew to be broadly applicable to any stewardship or conservation



Contains links to hundreds of practical tools and resources to help quide collaboration between non-Indigenous and Indigenous people.

Who is it for?

• Government agencies and organizations

- ENGOs • Private sector/industry
- Academics/researchers
- Consultants
- Anyone in the stewardship and conservation field

A FOUNDATION FOR **RECONCILIATION IN CONSERVATION AND STEWARDSHIP**

A foundational aspect of the toolkit is the **Ten Guiding Principles for Cross-Cultural Collaboration**. These principles were developed by the IKC to help embed reconciliation, healing and collaboration into stewardship and conservation work. The Guiding Principles aim to:

PROMOTE RECIPROCITY AND RESPECT

ENSURE A ROLE FOR INDIGENOUS PEOPLES AND THEIR KNOWLEDGE IN STEWARDSHIP AND CONSERVATION WORK

CREATE STRONGER CONSERVATION OUTCOMES

THE GUIDING PRINCIPLES INCLUDE:

accountability

benefits

8 Shared interest

Reciprocity and shared

- 1 Recognition of relationships 5 Transparency and with caribou
- 2 Respect for and openness to **6** Open communication Indigenous Knowledge, culture, and perspectives
- 3 Relationships built on trust
- Collaboration and shared decision making

4

NAVIGATING THE TOOLKIT

The Practical Steps and Resources section of the toolkit supports the implementation of the Ten Guiding Principles of Cross-Cultural Collaboration. This section is organized into three overarching categories:

BEFORE YOU GET STARTED:

Sets the stage for learning about the current context of Indigenous and non-Indigenous relationships in **Canada**, including the history of colonization and residential schools. This section contains resources to learn about Indigenous rights, treaties and land claims, cultural awareness, the legacy of colonialism and opportunities to explore Indigenous media.

WORKING RESPECTFULLY WITH INDIGENOUS PEOPLES AND THEIR **KNOWLEDGE SYSTEMS:**

Contains resources to learn about what Indigenous Knowledge and Indigenous Knowledge Systems are, how to work with multiple knowledge systems, methods for gathering Indigenous Knowledge, and agreements or protocols to ensure knowledge is shared respectfully and appropriately. While the toolkit highlights three well-known frameworks for working with Indigenous Knowledge Systems, each nation, community, or organization may have a different preferred approach.

EMBEDDING RECONCILIATION INTO CONSERVATION AND STEWARDSHIP IS AN ONGOING PROCESS AND SHOULD COME FROM A PLACE OF RESPECT, HUMILITY, AND A WILLINGNESS TO LEARN. THROUGH THOUGHTFUL AND MEANINGFUL COLLABORATION WE CAN AVOID PAST MISTAKES AND WORK TOWARDS OUR MUTUAL CONSERVATION GOALS.

- **9** Adherence to the First Nations principles of Ownership, Control Access, and Possession (OCAP®) for Indigenous data
 - 10 Respect for land claims, treaties, and recognition of the self-determination of Indigenous nations



The guiding

principles are available

in five languages:

English, French,

Inuttitut. Michif and

Woods Cree.



Provides high-level guidance and tools to help users learn about the Indigenous community they would like to work with and resources to help integrate equity and reconciliation into collaborations. Also includes information to help users understand and share capacity, plan meetings and engagement activities, and build and maintain trust and communication.



Canadian Conservation and Land Management

TO LEARN MORE ABOUT THE TOOLKIT AND OTHER RESOURCES ON THE CCLM, VIST CCLMPORTAL.CA

Toolkit artwork was developed by Design de