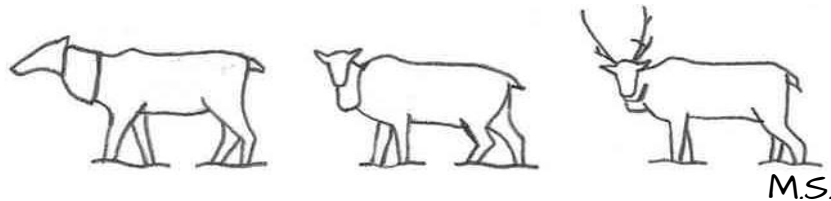


National Boreal Caribou Knowledge Consortium

Gathering Momentum in its 3rd Year
Chronic Wasting Disease Knowledge Network - February 2021



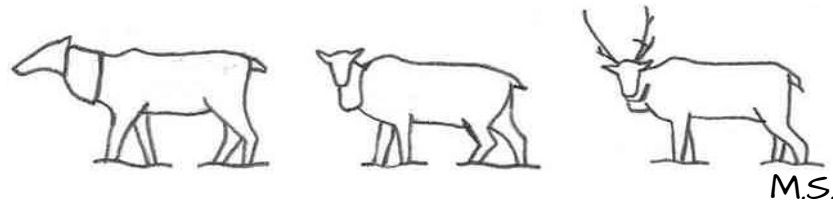
NBCKC: CWD Knowledge Network

- Welcome!
- Before we get started...
 - Is your name correct?
 - Is your camera on / microphone muted?
 - Are you seeing the chat screen?
 - Comments and questions are welcome in chat
- Outline for today
 - Overview of the NBCKC
 - What brings us here today
 - Getting to know one another
 - Wrap-up and next steps



National Boreal Caribou Knowledge Consortium

Gathering Momentum in its 3rd Year



Elements of the Federal Action Plan for Boreal Caribou

OBJECTIVE: Recovery of boreal caribou and compliance with the *Species at Risk Act* via collaboration with provinces, territories, Wildlife Management Boards, Indigenous peoples, and stakeholders

Pillar 1: Knowledge to Support Recovery

- Create National Boreal Caribou Knowledge Consortium
- Conduct research to:
 - Establish a network of designated adaptive management ranges and pilot areas
 - Enhance understanding of the cumulative effects of different types of disturbance on populations
 - Inform a national risk management approach to secure recovery objectives for boreal caribou ranges in Canada
 - Develop approaches and standards for identification of range boundaries
 - Increase understanding of climate change effects on populations and habitat
 - Develop landscape-scale approaches to multi-species recovery
 - Develop approaches for monitoring and assessment of habitat using new technology
 - Optimize habitat recovery through forest landscape restoration approaches and the development of tools and practices to support restoration success at the site level
- Host the 2018 North American Caribou Workshop
- Participate and provide scientific support to provincial / territorial processes

Pillar 2: Recovery and Protection

- Protection of boreal caribou and its critical habitat:
 - Protect critical habitat on federally-administered lands through section 58
 - Collaboratively develop a path forward for protection and recovery on *Indian Act* lands, lands held by Indigenous peoples under land claims agreements and devolved lands
 - Undertake protection assessments pursuant to sections 34, 35 and 61 of SARA
 - Explore the establishment of conservation agreements under SARA with provinces and territories to codify their measures to protect and recover boreal caribou and its critical habitat
- Identify critical habitat in northern Saskatchewan's Boreal Shield range
- Support and undertake stewardship actions, including providing funding to support recovery actions

Pillar 3: Reporting on Progress

- Habitat and population monitoring to inform progress:
 - Develop national standards for population monitoring
 - Update disturbance mapping for ranges (5-year update)
 - Update self-sustainability status of local populations and range boundaries, using new or more refined evidence from provinces and territories
- Publish first 5-Year Report on the Implementation of the Boreal Caribou Recovery Strategy
- If the Minister determines that any portion of boreal caribou critical habitat is unprotected, a report on steps being taken to protect critical habitat will be published by April 2018

Action Plan for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada

Federal Actions

Woodland Caribou, Boreal population



2018

Government of Canada / Gouvernement du Canada

Canada

NBCKC: What we Are

A forum for:

- Knowledge sharing (*What do we already know?*);
- Knowledge generation (*What do we need to know?*); and
- Knowledge mobilization (*How do we apply what we know?*).

How we are different:

- Fulsome collaboration and diverse representation;
- Passionate, creative, dialed-in members;
- Key partnerships and synergies;
- Ambitious targets and aggressive deadlines;
- United under common goal: caribou are conserved and recovered;
- A fast, flexible, focused, and highly skilled secretariat



NBCKC: Who we Are

A Diverse and Growing Network of Representatives

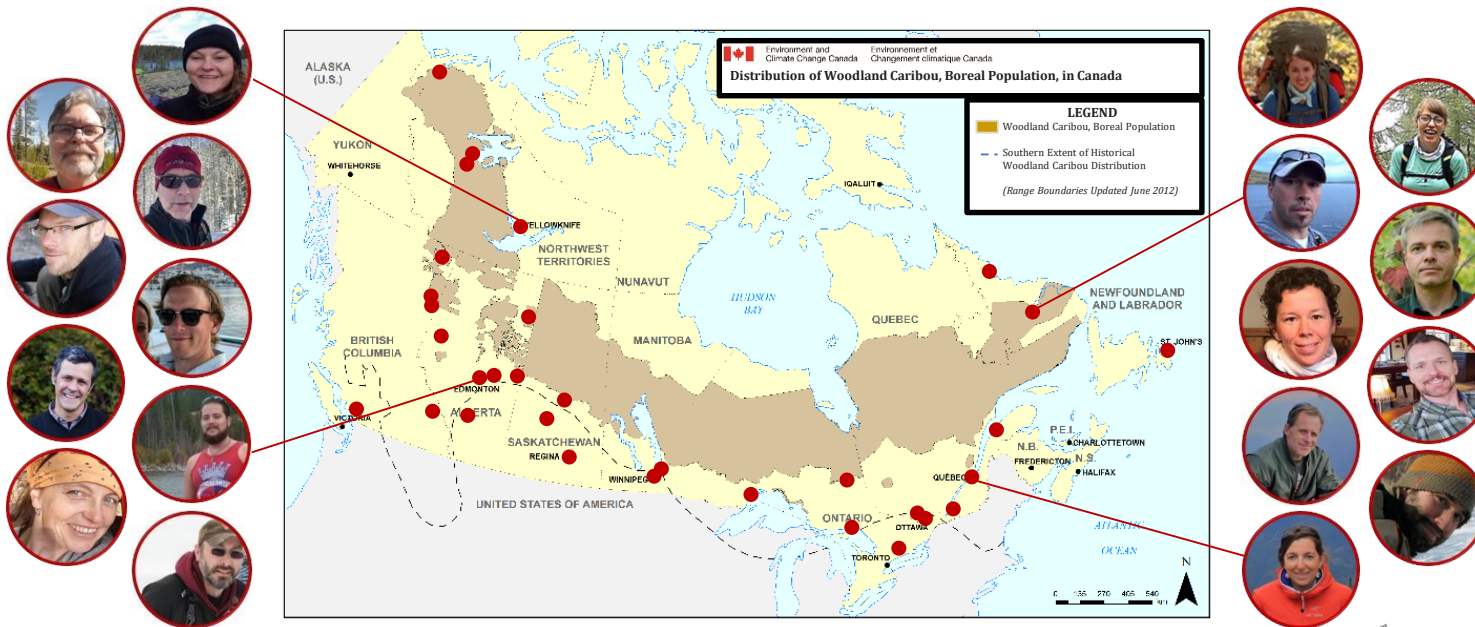
FEDERAL/PROVINCIAL/TERRITORIAL GOVERNMENTS | INDIGENOUS COMMUNITIES/ORGANIZATIONS
WILDLIFE CO-MANAGEMENT BOARDS | ACADEMIA | INDUSTRY | ENGOs



NBCKC: Who we Are

A Diverse and Growing Network with Over 75 Representatives

FEDERAL/PROVINCIAL/TERRITORIAL GOVERNMENTS | INDIGENOUS COMMUNITIES/ORGANIZATIONS
WILDLIFE CO-MANAGEMENT BOARDS | ACADEMIA | INDUSTRY | ENGOs



Representation

The grid contains the following labels and content:

- Top-left: NBCKC logo
- Row 1: Matthew Boeckner, Brady Balicki, Charlene Kippenhuck, Rob Serrouya, Kirsten Jensen - SRRB, Dennis Brannen
- Row 2: Brian Kopach, Abdullah Al Mamun, Mhi St-Louis, Leo Lepiano, Kate Lindsay, FPAC, Steve Morison (ECCC...), Katherine Mehl
- Row 3: Robin McLeod, Joelle Schack - BC Flu, Leon Andrew, David Henkel, Jamie Robinson, Kristy Burke, Kevin Green, Victoria Snable, Brandon Norman - M...
- Row 4: #NBCKC Lindsay C..., #NBCKC Oi Yin, Mary Jane Roberts, Tom Knight, Kaylin Cooper GR88, Joanne Tuckwell, Patrick Forest, Rachel Plotkin
- Row 5: Meredith Purcell (Torn..., #NBCKC Anna Gilbert, #NBCKC Tatyana Flick, Art Rodgers, Aimee Guile (WRRB), Adi Adiele, #NBCKC Melanie Mullin, Caroline Rochon
- Row 6: Ben G-S, Katalijn MacAfee, Lorne Gould, Jennifer Provencher L., Tara Shea (Mining Ass..., Connor Staub, Robert Charlie, Fred Bulold - MFEP /...
- Row 7: DiedrePark - Nunatuk..., Amanda Sheedy, #NBCKC - Kristin Clark, Joseph Townley, Franki Aho, Lillian Trapper, Melissa Vance, Peter Friedrichsen, PA...
- Row 8: Walter Andreeff, Sara McCarthy, Morgan Hrycak, Wendy Crosina, Haynes, Pamela Billey, Lori Neufeld, NBCKC logo

NBCKC: How we *Work*

NBCKC

(Bi-annual Meetings)

Indigenous Knowledge Circle

(Bi-Monthly Meetings)

Working Groups

(Monthly/Bi-Monthly Meetings)

Caribou Monitoring WG
Habitat Restoration WG
Population Management WG

CWD Knowledge Network *NEW*

(Bi-annual Meetings)

Building Relationships

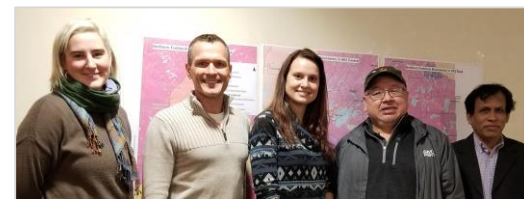
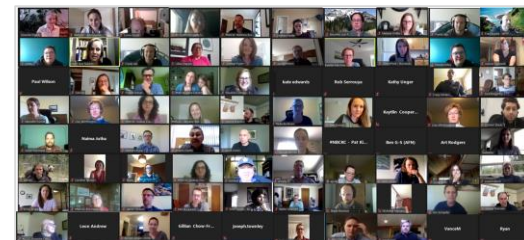
Leveraging Funding

Sharing Lessons Learned

Developing Tools for Knowledge Mobilization

Pooling Capacity

Knowledge Generation Through Collaboration



NBCKC: How we *Work*

- Knowledge sharing and generation through key networks



▶ INDIGENOUS KNOWLEDGE CIRCLE



▶ CARIBOU MONITORING WORKING GROUP



▶ HABITAT RESTORATION WORKING GROUP



▶ POPULATION MANAGEMENT WORKING GROUP



▶ CHRONIC WASTING DISEASE KNOWLEDGE NETWORK

(+) future groups



NBCKC: How we *Inform Action*

- Knowledge mobilization through key tool development



▶ CARIBOU MONITORING TOOLKIT



▶ BOREAL CARIBOU CONCEPTUAL ECOLOGICAL MODEL



▶ INTERACTIVE MAP OF CARIBOU PROJECTS & CONTACTS



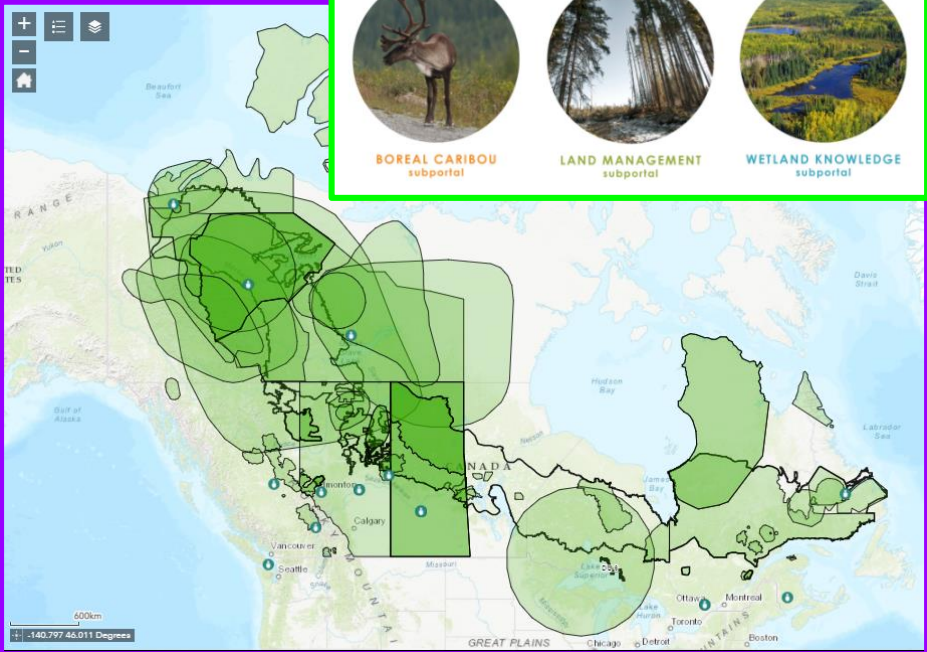
▶ KNOWLEDGE SHARING PORTAL with RESOURCES, NEWS & EVENTS

(+) future tools



A forum for sharing information and lessons learned about boreal caribou conservation, wetland best practices, land restoration and land reclamation. Start your search here or visit one of our three subportals.

What can we help you find?



Boreal Caribou

Land Management

Wetland Knowledge

NBCKC: How we *Connect*



- ▶ VIRTUAL & IN-PERSON MEETINGS / SECRETARIAT TRAVEL



- ▶ KNOWLEDGE SHARING PORTAL



- ▶ CARIBOU ECOLOGY & RECOVERY WEBINAR SERIES



- ▶ NBCKC BI-MONTHLY NEWSLETTERS, TWITTER



NBCKC: How we *Succeed*

Partnerships and Synergies

- *CCLM Portal - NRCan, DUC, NAIT, Innotech Alberta*
- *Caribou Range Planning Project - SRRB and GNWT*
- *23+ Indigenous-led Caribou Projects*
- *Caribou Ecology and Recovery Webinar Series*
- *Knowing the Herd - Nature United*



NBCKC: How we Succeed

Informing Practice

- *Boreal Caribou Monitoring in Canada Part I: PERSPECTIVES report*
- *Boreal Caribou Monitoring toolkit: fact sheets, detailed reviews, decision making tables*
- *Practical guidelines for reconciling Indigenous and non-Indigenous ways of knowing*
- *Boreal Caribou Conceptual Ecological Model and associated communication tools*
- **AND MORE...**

NBCKC Monitoring Practices for Boreal Caribou
INDIRECT METHODS
FECAL SAMPLING

HOW DOES IT WORK?

- Study sites are selected (usually stratified) in winter by field staff to match local population structure. Surveys are conducted sequentially for each population site and trends, but may also be conducted experimentally for other purposes.
- Genetic tags (single DNA sequences) are extracted from the fecal pellets to identify individual animals.
- Proportions from fecal pellets are used to assess whether both individuals and populations are being sampled.

WHAT CAN BE MEASURED?

- Genetic tags, in combination with capture-recapture (CR) analyses, can be used to assess population size, trend and demographic rates.
- Fecal-DNA can also be used to estimate additional population parameters and processes such as diet, sex, dispersal and population connectivity.

WHAT (AND WHO) IS REQUIRED?

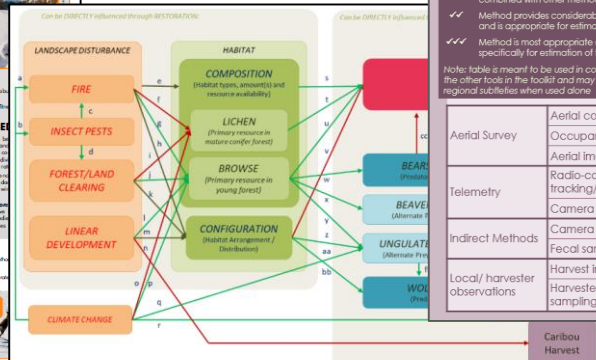
- Costs include sampling kits and coolers for specimen collection, special field and lab, as well as associated expenses for laboratory-based genetic analyses.
- Regional regional wildlife agencies involved in caribou age, distribution, field crew trained in fecal pellet collection, laboratory technicians trained in DNA extraction and genotyping protocols.
- Sampling can be led by non-scientists and informed by Indigenous knowledge.

KEY CONSIDERATIONS

- Timeline of animal capture/training is important; capture/training should occur before the start of the monitoring period.
- Fecal-DNA based CR (capture-recapture) or SC (spatial capture-recapture) analyses generate abundance and demographic estimates. Fecal-DNA based CR (capture-recapture) analyses generate abundance, sex, and trend estimates. Fecal-DNA based CR (capture-recapture) analyses generate abundance, sex, and trend estimates.

Cost: \$-\$\$\$ | **Logistics of Complexity: SIMPLE-COMPLEX*** | **Open Hours/Staffing: NO**

*Simple: Minimal field, lab, and office space; minimal staff; minimal equipment. Complex: Significant field, lab, and office space; significant staff; significant equipment.



Method appropriateness for estimating parameters:

- x Method is not appropriate for estimating this parameter
- ✓ Method provides some information or can be combined with other methods for inference
- ✓✓ Method provides considerable information and is appropriate for estimation
- ✓✓✓ Method is most appropriate and/or intended specifically for estimation of this parameter

Note: table is meant to be used in combination with the other tools in the toolkit and may not reflect regional subtleties when used alone

	Distribution			Abundance	Demography	Health
	Distribution/Occupancy	Dispersal/Movement	Habitat Use			
Aerial Survey	✓✓✓	x	✓			
Telemetry	✓✓✓	✓	✓✓✓			
Indirect Methods	✓✓✓	x	✓			
Local/harvester observations	✓✓✓	✓✓	✓✓			

BOREAL CARIBOU MONITORING IN CANADA

PART I: PERSPECTIVES
 from the NBCKC Monitoring Working Group 2019

NATIONAL BOREAL CARIBOU KNOWLEDGE CONSORTIUM

NBCKC Newsletter

Working together to support boreal caribou recovery

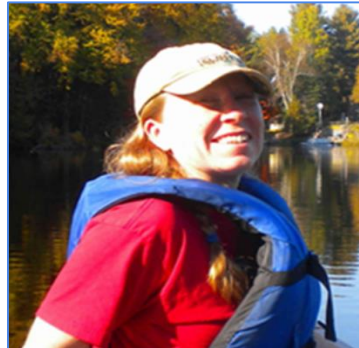
Webinar Series news

15

NATIONAL BOREAL CARIBOU KNOWLEDGE CONSORTIUM

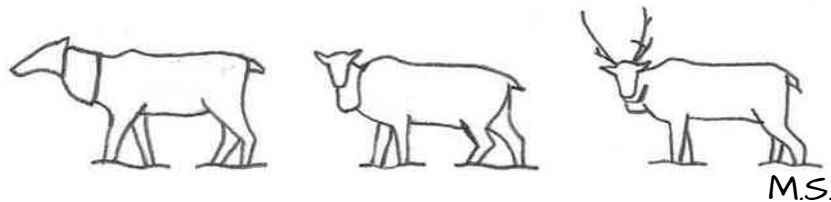
NBCKC: What brings us here today?

- What led to the formation of this Knowledge Network?
 - Need for coordination and knowledge sharing
 - Opportunity to learn from one another
- Why a *Knowledge Network*?
- Who are your leads?

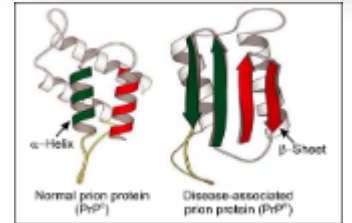


NBCKC Chronic Wasting Disease Knowledge Network

Update and proposed path forward



Chronic wasting disease



- **Chronic wasting disease (CWD)**

- is a fatal neurological illness occurring in North American cervids (members of the deer family: deer, elk, moose etc.).
- is in the same family of diseases that includes bovine spongiform encephalopathy (BSE, i.e., mad-cow disease) in cattle and Creutzfeldt-Jakob disease (CJD) in humans.

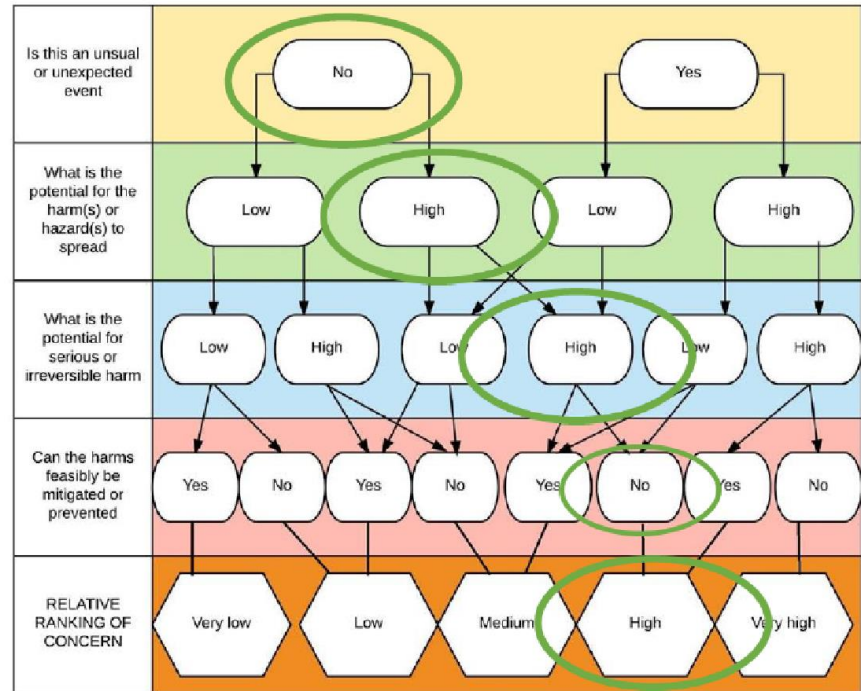
- **What causes CWD?**

- CWD is caused by a misfolded protein called a prion.
- All mammals produce normal prions that are used by cells
- When disease-associated prions contact normal prions, they cause them to refold into the abnormal shape.
- Disease-associated prions are not readily broken down and accumulate in lymphatic and neural tissues.



Risk of Spread to Caribou – Threat Assessment

- The threat assessment was completed in March 2019.
- Based on the dynamics of the disease, the susceptibility of caribou to CWD, and the preventative measures that are in place, CWD was ranked as High in this threat assessment by the Canadian Wildlife Health Cooperative (CWHC)



The NBCKC CWD Knowledge Network

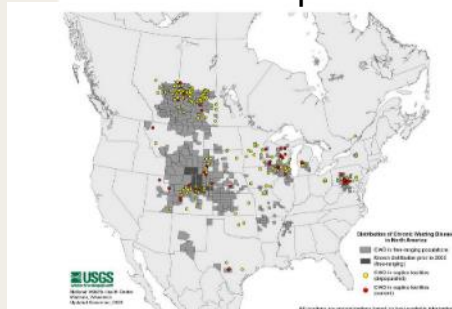
- Purpose of the Network – to provide a space/platform to provide key updates and discuss CWD in the context of caribou conservation and planning
- Proposed meeting format
 - Key updates - By submission or invitation
 - Break-out room round table - updates / knowledge sharing / networking
 - Meeting summary
- Proposed frequency



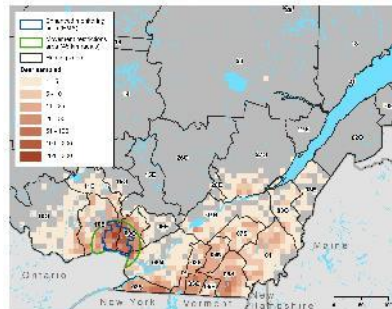
Example: Key Update: ECCC and AFN

- ECCC supporting the AFN (Assembly of First Nations) CWD working group – focus on developing questions that will increase our understanding of CWD in relation to caribou populations.
- ECCC working with partners to develop a presence/absence map of CWD in cervids in relation to caribou populations

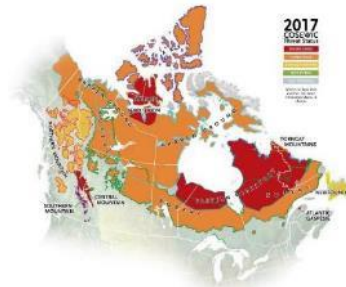
Presence maps



Surveillance maps



Caribou range maps



The NBCKC CWD Knowledge Network

Stay engaged between meetings

- The Canadian Conservation and Land Management Knowledge Portal (www.cclmportal.ca)
- Add your projects / resources to the interactive map of caribou projects (spatially referenced) or contact the Secretariat for help (aspatial resources) cnsccb-nbckc@cclmportal.ca
- Participate in the caribou seminar series (more info at cclm portal and <https://cmu.abmi.ca/about/caribou-ecology-and-webinar-series/>)
- NBCKC bi-monthly newsletters

COMMENTS AND QUESTIONS FROM THE CHAT LOG?



Knowing your network / tell us about yourself

- Who are you and are you representing an organization?
- What brings you here today / How are you involved in the field of CWD?
- What do you hope to achieve by being part of this network?
- What do you think about the proposed purpose and meeting format?



Conclusion and Next Steps

- Meeting summary will be prepared and sent to the network
- *Optional:* Add your contact/resources/projects to the cclm portal
- Seeking presenters for next meeting
- Next meeting: July 2021



Thank You

