Monitoring and Research Results 2016-2020

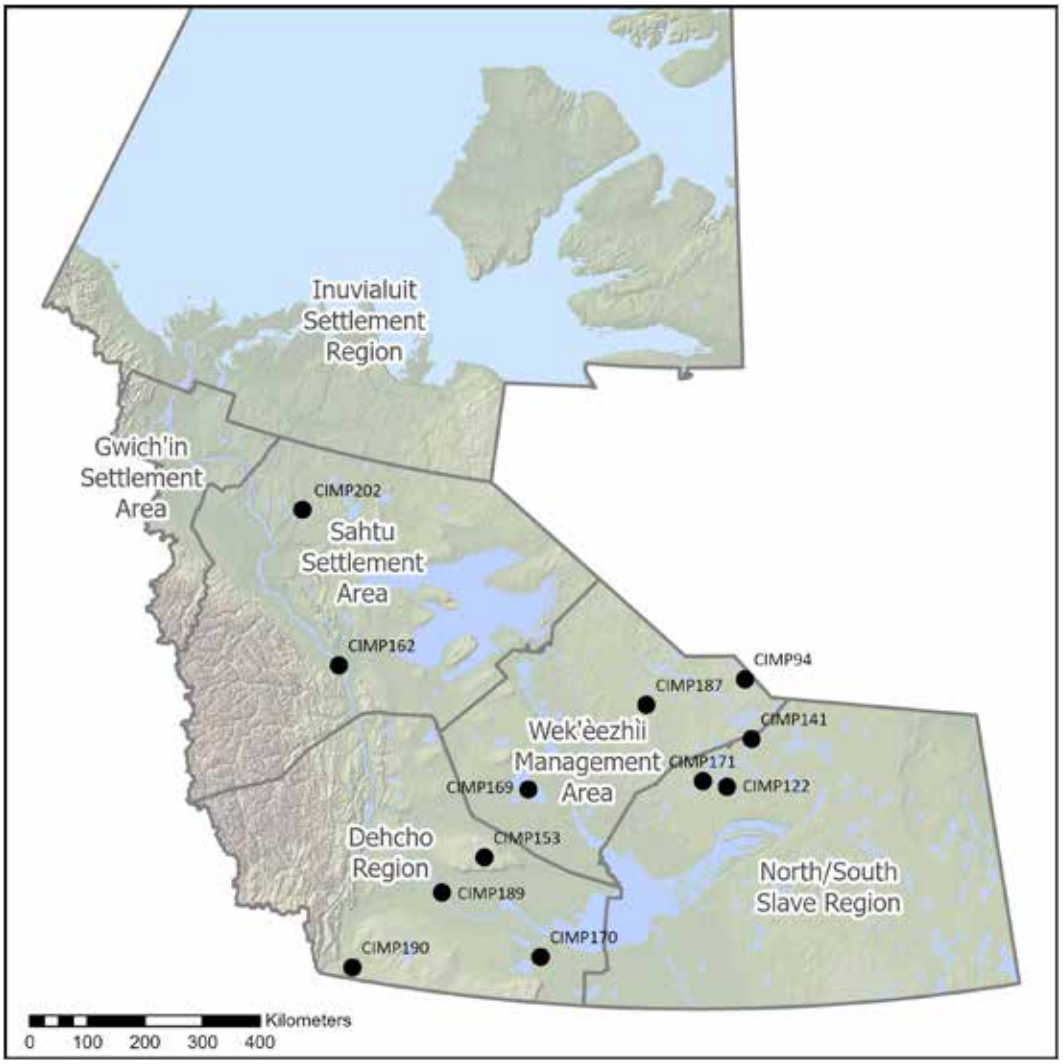
(Released December 2022)

NWT Cumulative Impact Monitoring Program (NWT CIMP)

CARIBOU

Government of
Northwest Territories

NWT CIMP-funded caribou projects in the NWT



Cover Photo: Caribou near Paulatuk, GNWT

ISBN: 978-0-7708-0286-8

Recommended Citation:
Department of Environment and Natural Resources. Northwest Territories Cumulative Impact Monitoring Program (NWT CIMP). Monitoring and Research Results 2016-2020 Caribou. ISBN: 978-0-7708-0286-8. Yellowknife, NT: Northwest Territories Cumulative Impact Monitoring Program, Department of Environment and Natural Resources, Government of the Northwest Territories, 2022.

December 2022

About the Northwest Territories Cumulative Impact Monitoring Program (NWT CIMP)

The Northwest Territories Cumulative Impact Monitoring Program (NWT CIMP) is a source of environmental monitoring and research in the NWT. The program coordinates, conducts and funds the collection, analysis and reporting of information related to environmental conditions. Its main purpose is to better support resource management decision-making and the wise use of our resources by furthering our understanding of cumulative impacts and environmental trends. Based on the priorities of environmental regulators, co-management boards, and Indigenous governments and Indigenous organizations, the program has focused on caribou, water, and fish since 2011.

NWT CIMP strives to place research and monitoring results in the hands of those who need it to make decisions. As such, we are focused on reporting back to communities and to environmental regulators who can use the information to manage the land and water. This booklet of caribou monitoring, and research is one way in which the program shares results. Other means include community presentations by researchers, regional results workshops, peer-reviewed publications, and online through the NWT Discovery Portal.

NWT CIMP annually funds approximately 30 projects, providing $1.7 million to research and monitoring of cumulative impacts in the Northwest Territories. This publication provides high level summaries of the results from the boreal and barren ground caribou research and monitoring projects that were funded in 2016-2020 (see map on facing page).

For more information on the program, visit **www.nwtcimp.ca**. For NWT CIMP project results, visit **nwtdiscoveryportal.enr.gov.nt.ca** or email the principal investigator directly.

Contents

CIMP162

Years funded: 3

Principal investigator:
James Hodson[1]
james_hodson@gov.nt.ca

Co-investigators:
D. Simmons[2]
J. Hanlon[2]
H. Sayine-Crawford[1]
S. Behrens[1]
J. Tigner[3]

[1] Government of the Northwest Territories, Department of Environment and Natural Resources
[2] Sahtú Renewable Resources Board
[3] Explore

Recommended Reading:
For additional information on this project please visit nwtdiscoveryportal.enr.gov.nt.ca and search "CIMP162" or read the 15th issue of the NWT Environmental Research Bulletin (NERB), available online at www.nwtcimp.ca.

Multi-species monitoring using winter track surveys in the Sahtú Settlement Region

Purpose

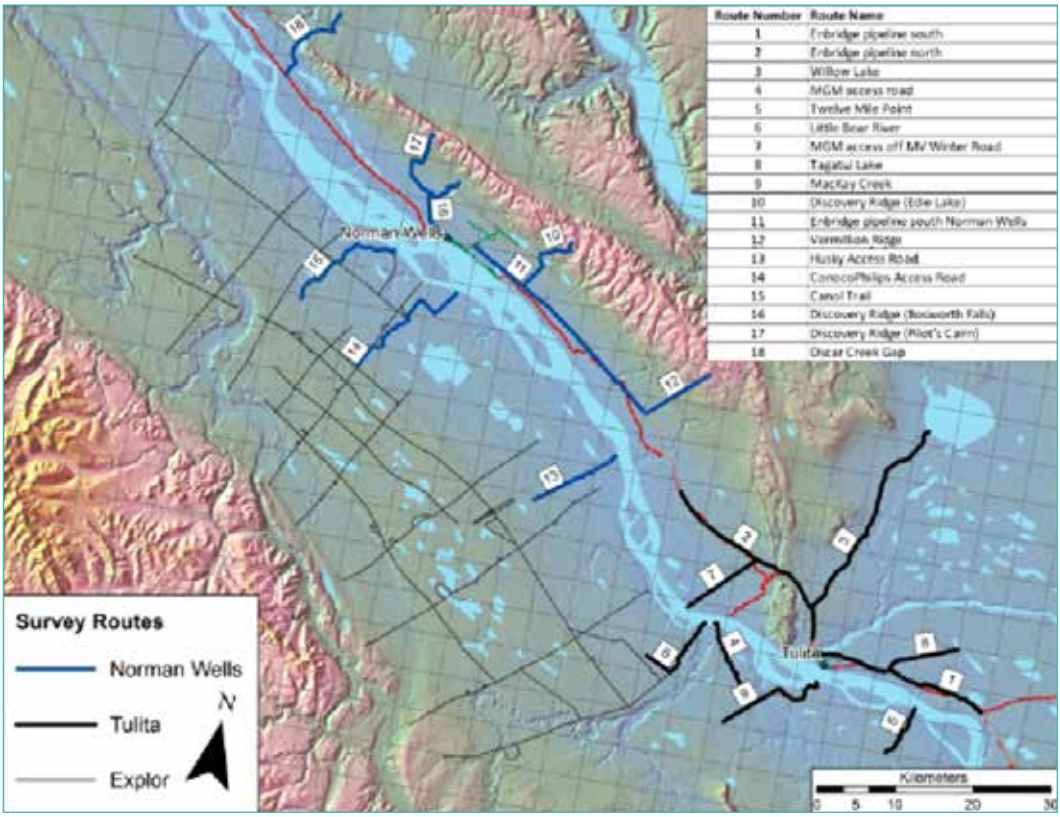
To help address concerns raised about potential impacts from oil and gas exploration on wildlife and their habitat in the Sahtú region, a three-year community-based monitoring program to survey wildlife tracks in the winter from 2014-2017 was implemented.

This project's purpose was to design and test a wildlife track monitoring program that could be used by communities, industry and others to produce information for wildlife managers about the abundance and distribution of mammals in a region. Tracking was conducted by youth and elders from Tulít'a and Norman Wells along existing trails and seismic lines.

Key Findings

- Twelve different species were identified during three winters of surveys, with marten, lynx and moose being the most common.
- Breaking survey routes up into 500-metre segments is likely the most suitable for monitoring the presence or absence of a wide variety of species with different home range sizes.
- In 2016, the final winter of the project, the Tulít'a Renewable Resource Council took a lead role in coordinating the field work. This proved to be a highly successful approach to implementing the monitoring program.

Jonathan Yakeleya recording a marten track with the TrailmarkTM data collection app on an Archer hand-held computer. (Credit: J. Hodson)



Routes surveyed by community monitors. Thin grey lines represent recent industry seismic lines.

How does this project help in understanding cumulative impacts?

This pilot project learned best ways to make the program run efficiently when working with assistance from the Renewable Resources Councils and Sahtú Renewable Resources Board. The method is a relatively easy way to track wildlife in the winter and could be conducted in other Sahtú communities to collect more information.

In the future, the program could be implemented in other communities and with industry to monitor regional changes in wildlife distribution. This information will help achieve the regional coverage necessary for monitoring changes to wildlife distribution brought about by industrial development, natural disturbance and climate change.

CIMP189

Years funded: 1

Principal investigator:
Margaret Ireland[1]
rmc@jmrfn.com

Co-investigators:
C. Laurent[2]
A. Perrin[2]

[1] Jean Marie River First Nation
[2] Yukon College

Recommended Reading:
For additional information on this project please visit nwtdiscoveryportal.enr.gov.nt.ca and search "CIMP189" or read the 16th issue of the NWT Environmental Research Bulletin (NERB), available online at www.nwtcimp.ca.

Using traditional knowledge of Jean Marie River First Nation elders to better understand changes in the boreal caribou habitat

Purpose

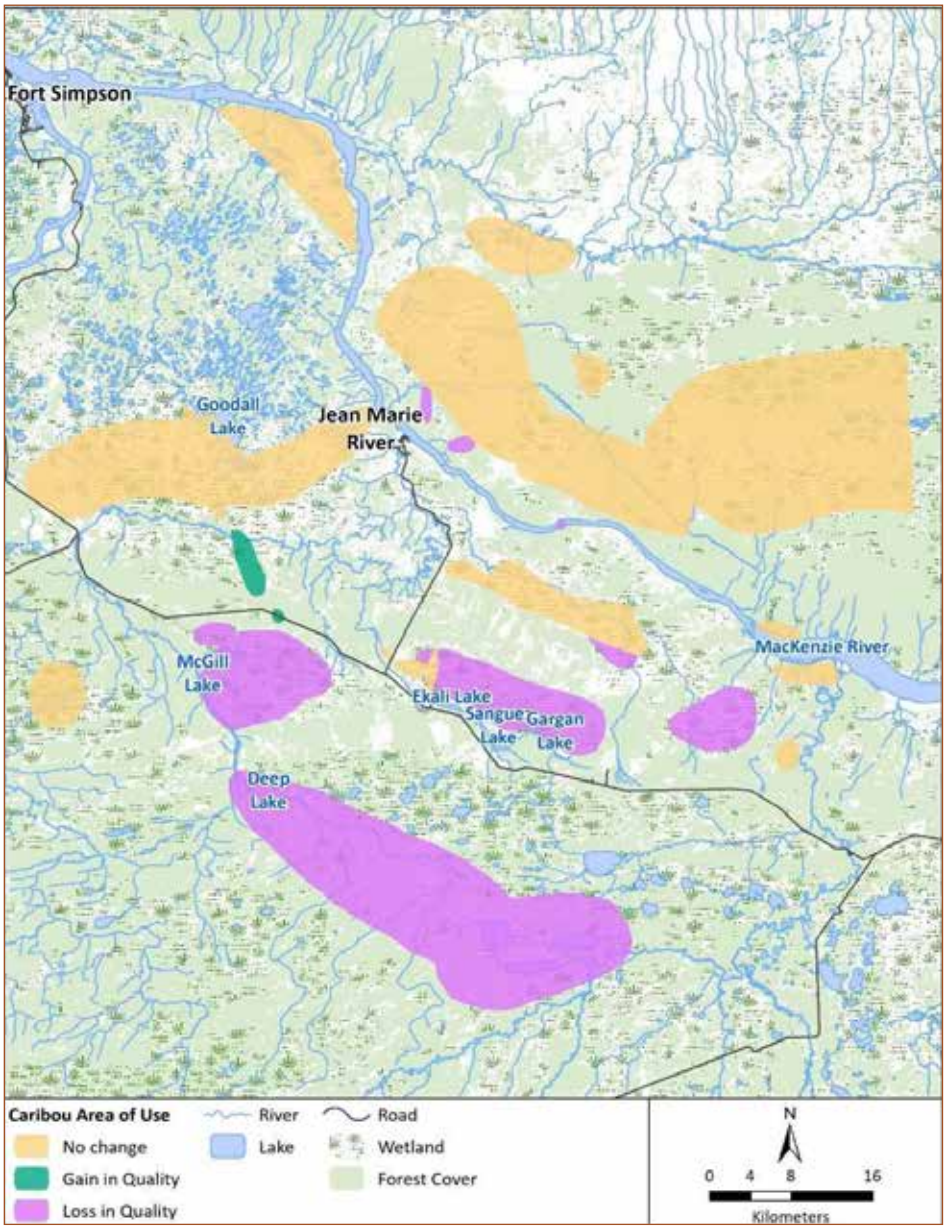
The community of Jean Marie River is concerned with environmental changes occurring in our traditional territory. What affects the land affects our way of life and our culture. The decline in the quality of caribou habitat is a concern because hunting caribou is an important traditional food and source of spiritual renewal.

This project documented the cumulative impact of permafrost thaw and wildland fire on boreal caribou habitat. Areas of boreal caribou habitat were identified using traditional knowledge, information from one-on-one interviews and scientific information gathered from existing datasets.

Key Findings

- Project results showed that the quality of boreal caribou habitat has decreased in 35% of the areas, remained stable in 64% of the areas, and increased in 1% of the areas.
- Evaluation of the impact of forest fire and permafrost thaw showed that the latter has a particularly high impact on boreal caribou habitat, with 88% of boreal caribou areas affected and forest fire has a significant impact, with 29% of boreal caribou areas affected.
- Interview participants qualified that the current state of the boreal caribou habitat in the Jean Marie River area as being of 'medium' quality and is continuing to decline in quality.

Cyrielle Laurent (left, Yukon Research Centre) and Margaret Ireland (right, JMRFN) conduct a traditional knowledge interview with Billy Norwegian (center, JMRFN). (Credit: Yukon Research Centre)



Boreal caribou habitat change in quality from analysis of interview data.

How does this project help in understanding cumulative impacts?

Results show boreal caribou habitat conditions are being affected by forest fires and permafrost thaw. This may affect traditional harvest. It is likely that many other communities face similar challenges. Strategies to ensure food security are needed at the community level to address these challenges.

Future work will continue to integrate traditional knowledge with additional scientific knowledge to evaluate and monitor the loss and rate of changes to boreal caribou habitat as well as locate sustainable boreal caribou habitat around our community.

CIMP190

Years funded: 1

Principal investigator:
Acho Dene Koe First Nation administration
@adkfn.com

Recommended Reading:
For additional information on this project please visit nwtdiscoveryportal.enr.gov.nt.ca and search "CIMP190" or read the 18th issue of the NWT Environmental Research Bulletin (NERB), available online at www.nwtcimp.ca.

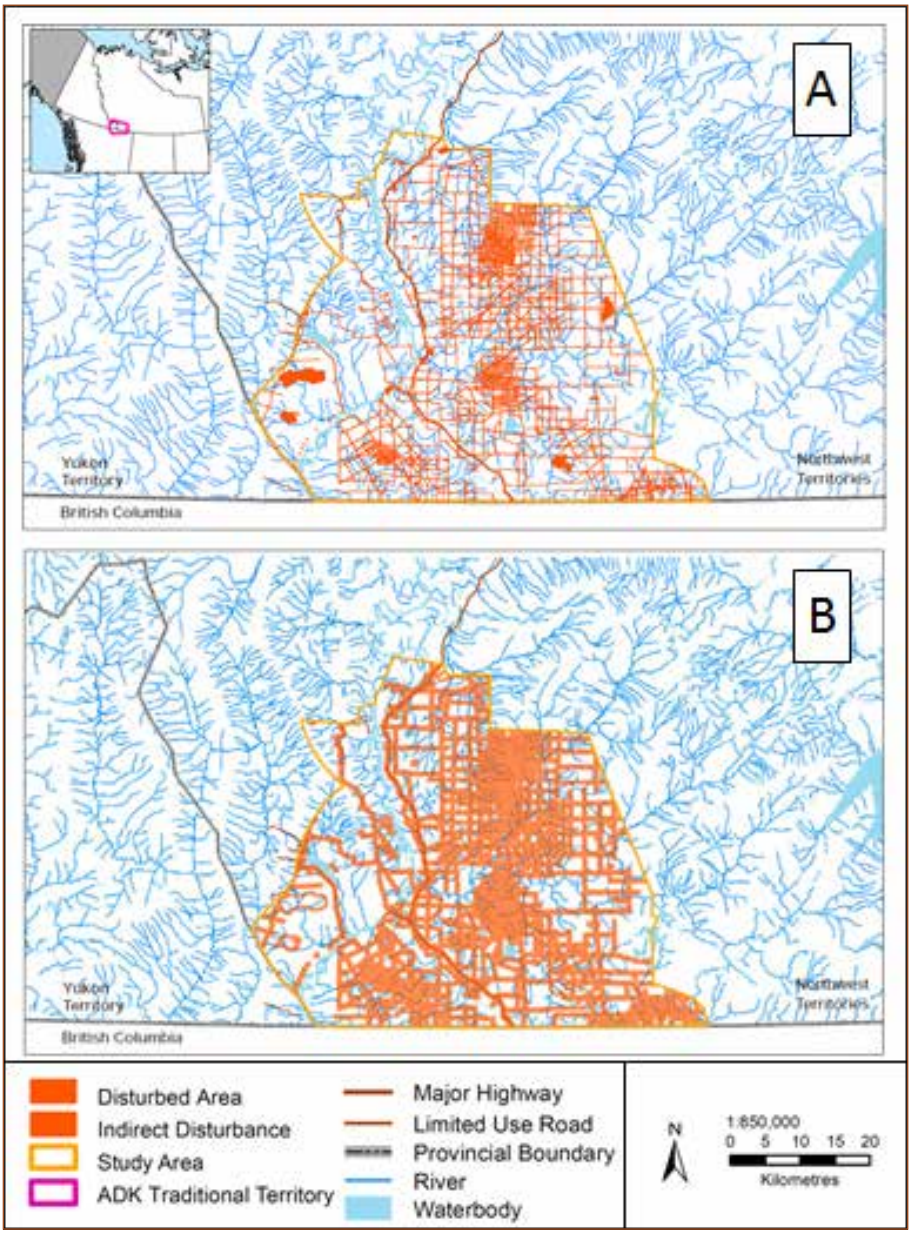
Acho Dene First Nation boreal caribou traditional knowledge and cumulative impacts qualitative assessment

Purpose

The purpose of this project was to examine natural and human-induced impacts to boreal caribou within Acho Dene Koe First Nation (ADKFN) traditional territory. Impacts were observed for several ecological components, including habitat, migration routes, calving areas, food sources and water sources, and aspects of ADKFN culture, including hunting, transportation routes, habitation and gathering areas, and historic and named places.

Key Findings

- Interviewees confirmed boreal caribou in their traditional territory; 27 caribou habitat areas, two migration routes and 13 caribou food source areas were identified. Traditional use of caribou was also demonstrated through 33 identified hunting areas, 16 transportation routes, eight habitation/gathering sites and six historic and named places.
- The majority of traditional use sites identified are located in the southeast portion of ADKFN territory, which is an area of historic oil and gas exploration.
- Linear features (like seismic lines and roads) are present in the area. ADKFN members have observed wolves using these lines for hunting caribou.
- Despite these disturbances, interviewees indicated healthy caribou populations exist within their traditional territory.



Direct (A) and indirect (B) disturbance within the study area. (Adapted from Acho Dene Koe First Nation Boreal Caribou Traditional Knowledge and Cumulative Impacts Qualitative Assessment, Non-Confidential Final Report, 2018.)

How does this project help in understanding cumulative impacts?

Northern decision-makers can use this information for future development decisions in the southern NWT. The TK from this project will be used to inform planning in this region during the upcoming boreal range planning process.

CIMP94

Years funded: 11

Principal investigator:
Petter Jacobsen[1]
petterfjacobsen@gmail.com

Co-investigators:
T. Steinwand[1]
J. Pellissey[2]
B. Croft[3]

[1] Tłı̨chǫ Government
[2] Wek'èezhìi Renewable Resources Board
[3] Government of the Northwest Territories, Department of Environment and Natural Resources

Recommended Reading:
For additional information on this project please visit nwtdiscoveryportal.enr.gov.nt.ca and search "CIMP94".

Tłı̨chǫ Ekwǫ̀ Naowo: "Boots on the Ground" Bathurst Caribou monitoring program

Purpose

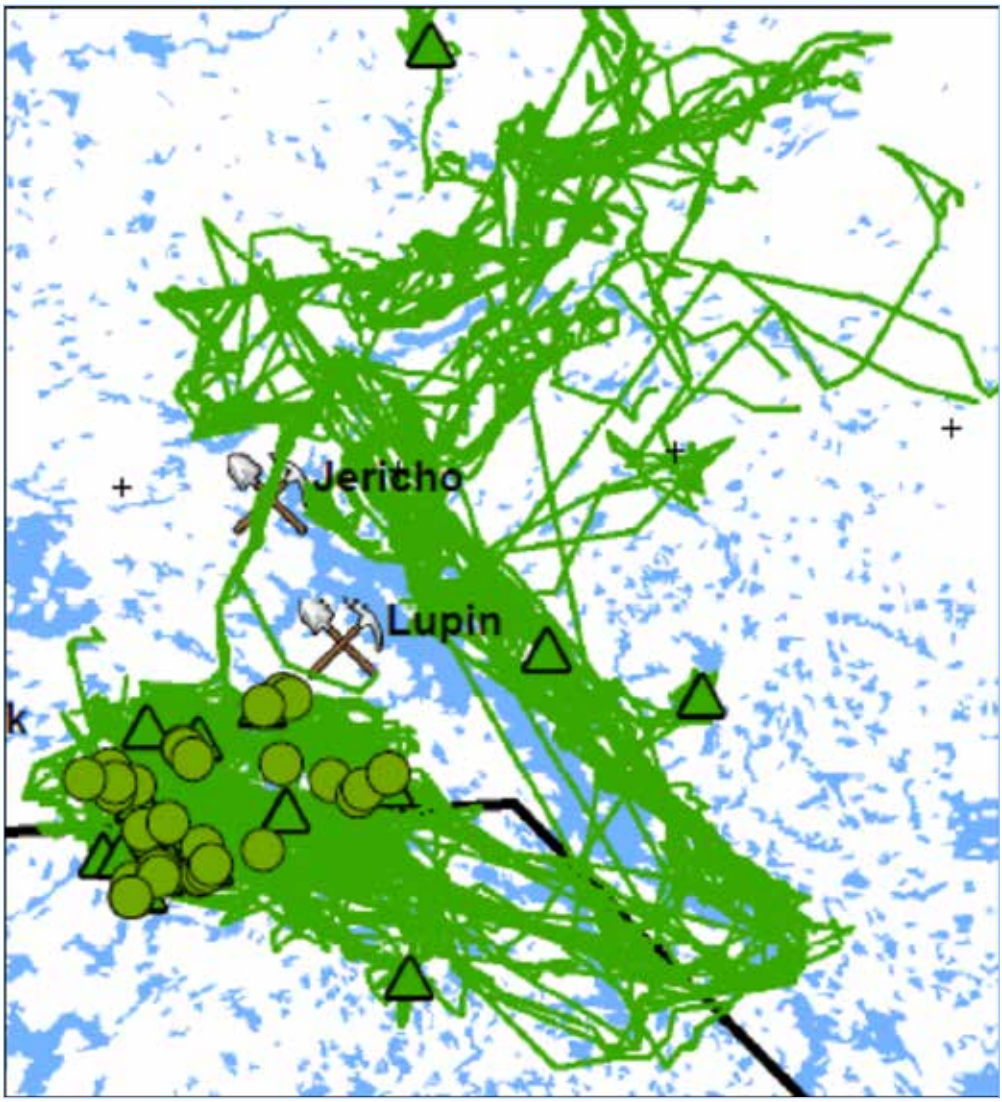
This project began in the summer of 2009 and is ongoing. The purpose of the project is to monitor the condition of the Bathurst caribou herd on its summer range using local and traditional knowledge, focusing on four key indicators: (i) habitat, (ii) caribou, (iii) predators, and (iv) industrial development.

For six weeks each summer, Tłı̨chǫ and Inuit elders and harvesters documented observations about Bathurst caribou at Kokètì (Contwoyto Lake) and the surrounding land.

Key Findings

- A strong correlation between climate change and the conditions of caribou habitat were observed. Higher temperatures earlier in spring meant melted snow cover on the land by late June. As a result, herds were observed to engage in new types of behaviours, such as moving in circles and standing in water to minimize the heat and insect harassment.
- Injuries were the main health issue observed in animals, although a low number of caribou were observed to be injured.
- In 2018, the monitoring teams observed several groups of caribou with few calves. In contrast, several herds with high numbers of yearlings were observed, which correlates with the high number of calves observed in 2017.

(Credit: P. Jacobsen)



Congregation of cow and bull caribou northwest of the naʔokè (watercrossing), between Kokètì (Contwoyto) and Itchen lake in mid-August. Green lines on the map show movement of Bathurst caribou based on collar locations from June to August 2017. Green dots represent cow caribou; Green triangles: bull caribou. Source: GNWT-ENR

How does this project help in understanding cumulative impacts?

Results from this project have been incorporated into management processes of several caribou management agencies, including the Wek'èezhìı Renewable Resources Board and the Government of the Northwest Territories' Department of Environment and Natural Resources.

CIMP169

Years funded: 3

Principal investigator:
Jody Pellissey[1]
jpellissey@wrrb.ca

Co-investigators:
A. Legat[2]
C. Nitsiza[3]
C. Nitsiza[3]
M. McCreadie[2]

[1] Wek'èezhìı Renewable Resources Board
[2] Gagos Social Analysts, Inc
[3] Community of Whatì

Recommended Reading:
For additional information on this project please visit nwtdiscoveryportal.enr.gov.nt.ca and search "CIMP169" or read the 4th issue of the NWT Environmental Research Bulletin (NERB), available online at www.nwtcimp.ca.

When do caribou return? Impacts of wildfires on Tǫdzı

Purpose

This project documented Tłı̨chǫ knowledge about tǫdzı (boreal caribou) – in particular, the relationship between range use (preferred landscape and habitat) and wildland fire.

According to Elders, when forest fire destroys certain habitat that tǫdzı need for winter foraging or for cover from predators, tǫdzı move to a different area of their range. Usually, it takes 20 to 30 years for forage lichen to recover after a fire. However, tǫdzı may still use impacted areas as routes to other habitats if the forage has recovered sufficiently.

Key Findings

- The Tłı̨chǫ perspective considers the state of tǫdzı and their habitat within the context of dè. Dè is about interconnectedness and belonging to place and includes everything that is associated with land, ground, dirt, earth, and with whom Tłı̨chǫ have a relationship with that is responsive to their attention, action, and behaviour.
- Elders found that tǫdzı have less range than they did in the early 1990s due to the frequent occurrence of large, intense wildland fires.
- In some burned areas, vegetation communities were returning more slowly because soil conditions were extremely dry; however, in wetland areas, vegetation communities were returning relatively quickly.
- Evidence of tǫdzı, including tracks, pellets and browsing, were found at sites where wildfires had never occurred or where burns had occurred at least 15 years earlier. Evidence of tǫdzı in areas recently burned by wildfires was not found by the research team or by elders.
- To maintain a healthy population, tǫdzı need 100% of their current range, which includes the various habitats and vegetation they need at different times of the year for birthing, resting from predators and insects, foraging, etc.
- Tǫdzı must be able to move freely throughout their range, to seek and find the various suitable habitats they need, in various locations, as forest fires and other factors can make certain locations unavailable for periods of time—sometimes very long periods of time.

Documented vegetation communities at monitoring site. (Credit: A. Legat)

Documented animal and human activity at monitoring site (Credit: A. Legat)

How does this project help in understanding cumulative impacts?

Tłı̨chǫ traditional knowledge provides unique and relevant information and perspectives not available through science and other sources. Tłı̨chǫ Elders want their people to use their knowledge system; and for decision-makers to listen, honour and use their ways of caring for the land and wildlife.

CIMP187

Years funded: 4

Principal investigator:
Ryan Danby[1]
Ryan.danby
@queensu.ca

Co-investigators:
G. King[2]
K. Dearborn[1]
P. Treitz[1]
D. Chen[1]

[1] Queen's University
[2] University of Alberta

Recommended Reading:
For additional information on this project please visit nwtdiscoveryportal.enr.gov.nt.ca and search "CIMP187" or read the 25th issue of the NWT Environmental Research Bulletin (NERB), available online at www.nwtcimp.ca.

Changes in vegetation productivity and phenology across the Bathurst Caribou range

Purpose

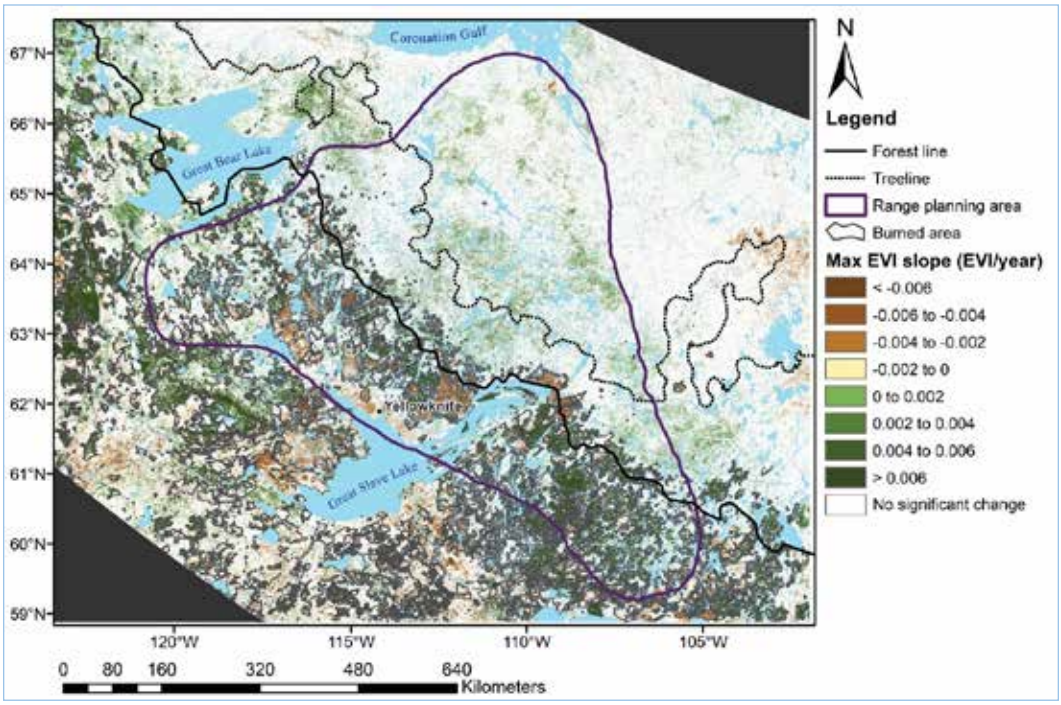
Caribou are a critical resource for northerners and it is important to understand the factors that have contributed to the population decline. One reason that has been suggested for the rapid decline of the Bathurst barren-ground caribou herd is a change in vegetation to more shrub cover due to climate change. This project monitored the abundance of shrubs across the herd's range through the use of satellite imagery, and field collection of shrub stems.

Key Findings

- Areas below treeline experienced a wide variety of change due to the influence of recent and past forest fires. In contrast, changes to tundra regions beyond treeline were mostly increases in productivity measured using remote sensing methods.
- Areas beyond treeline mainly experienced a longer growing season. This was due mostly to an earlier spring in many years, rather than a later fall.
- Nearly half of all areas beyond treeline experienced a significant increase in total annual productivity.

How does this project help in understanding cumulative impacts?

Vegetation change on the herd's winter range is closely linked with forest fire dynamics. However, changes beyond the treeline, particularly on the calving and summer ranges, may be related to climate warming, a reduction in grazing due to significant declines in caribou numbers, or a combination of the two. Project results will inform future updates to the Bathurst Caribou Range Plan and can be used by environmental regulators and Indigenous governments and Indigenous organizations.



Trends in annual vegetation productivity from 2000-2007. Green indicates areas where vegetation productivity increased, and brown indicates areas where it decreased. Darker shades indicate stronger trends. White areas did not experience any significant trends.

Large portions of the Bathurst caribou herd's summer range, like this landscape near Big Lake, have experienced significant increases in vegetation growth. Work is underway to determine if this is due to increased shrub growth as a result of climate change. (Credit: R. Danby)

CIMP171

Years funded: 3

Principal investigator:
Johanne Black[1]
jblack@ykdene.com

Co-investigators:
R. Freeman[2]
P. Wong[3]

[1] Yellowknives Dene First Nation
[2] DownNorth Consulting
[3] Trailmark Systems and Consulting

Recommended Reading:
For additional information on this project please visit nwtdiscoveryportal.enr.gov.nt.ca and search "CIMP171".

Barren-ground caribou traditional knowledge mapping and analysis

Purpose

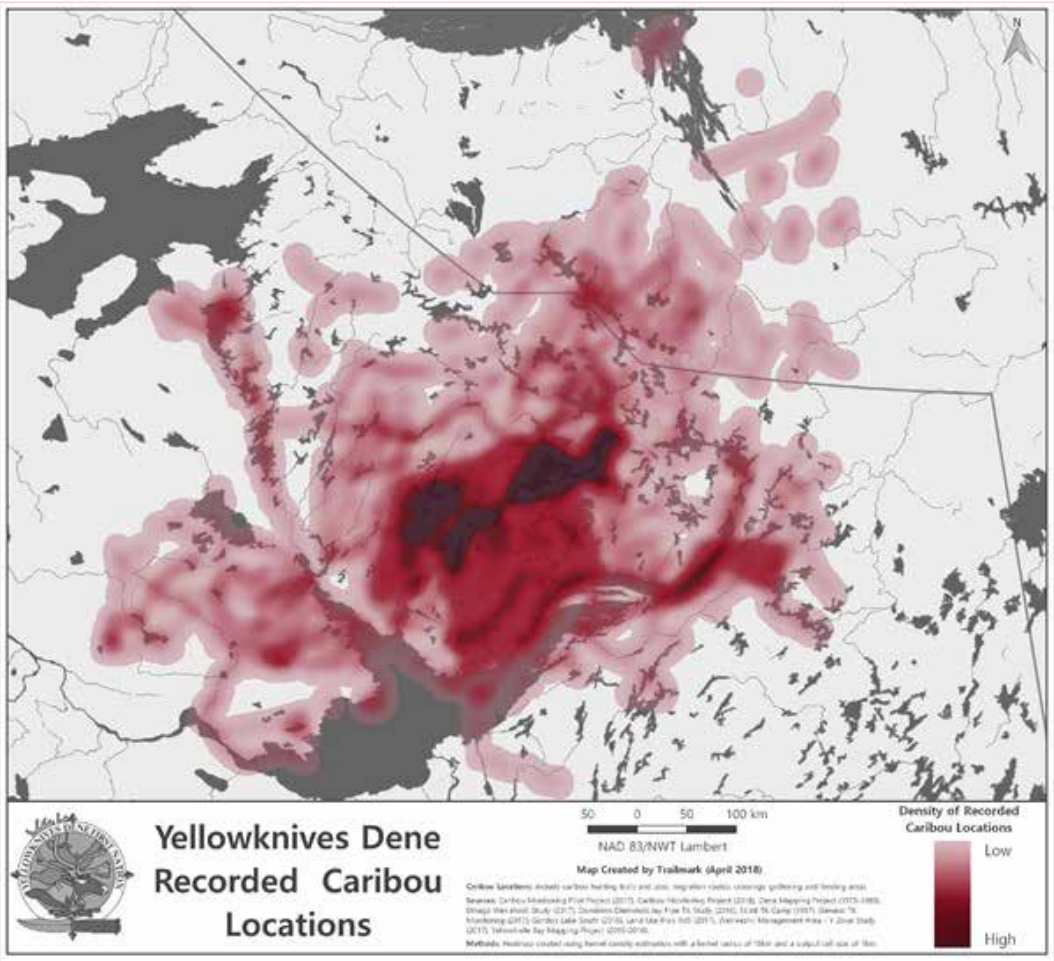
The purpose of this project was to use Yellowknives Dene First Nation (YKDFN) traditional knowledge to develop monitoring indicators to track and assess cumulative impacts on barren-ground caribou.

Key Findings

- A digital archive containing Traditional Knowledge (TK) and information shared by YKDFN on caribou is now accessible to and managed by the YKDFN, independently from external parties. In addition, a public portal containing TK and information shared by the YKDFN on caribou is now available online to researchers, decision-makers, and other external parties.
- The digitized TK for use at the community's discretion.
- On-the-land data monitoring protocols developed and guided by the YKDFN provide key opportunities for YKDFN to gather contemporary data on caribou while practicing traditional skills on the land and engaging in knowledge transfer (e.g., between active hunters and youth). This knowledge transfer was integral to understanding ways YKDFN can monitor cumulative impacts.
- YKDFN's set of criteria for TK indicators in cumulative impact monitoring of caribou are not exclusive, and include: patterns in migration, herd composition, and health, as well as abiotic, biotic, and human interactions.

How does this project help in understanding cumulative impacts?

This project highlighted key TK-based monitoring indicators for understanding cumulative impacts on caribou as identified and provided by the YKDFN. In addition to caribou, this project collected information about other themes for cumulative effects understanding and management.



A heat map indicating areas associated with past and current information on caribou recorded by the YKDFN. We note that this map is only limited to areas that were recorded and have been digitized in the IMS through this project; it is likely there are other areas that YKDFN use associated with caribou (and otherwise) that are not presented here. The sources of this information come from diverse methodologies according to the research focus at the time.

CIMP122

Years funded: 1

Principal investigator:
Nancy Kingsbury[1]

[1] Environment and Climate Change Canada

Recommended Reading:
For additional information on this project please visit nwtdiscoveryportal.enr.gov.nt.ca and search "CIMP122".

Compiling a territory-wide vegetation dataset

Purpose

Information on vegetation is important for informing the assessment of cumulative impacts on caribou since habitat is a key factor for population health. This projects' purpose was to develop a single, consistent NWT vegetation dataset that could be used to assess spatial and temporal trends in vegetation composition and abundance.

Key Findings

- A standardized template for vegetation data was developed and a dataset was compiled that integrated five data sources from six distinct regions of the NWT.
- Spatial analysis showed some interesting differences in vegetation across the NWT, including low overall plant cover with abundant shrubs in the east and high plant species diversity in the mountains.
- Since there were no repeated measurements of vegetation over time (one-year study only), it was not possible to analyze temporal changes.

How does this project help in understanding cumulative impacts?

Project results can inform resource management decision-making, particularly for caribou. Further data contributions to make the dataset more robust and useful for comparisons over time would be helpful.

Bog cranberry. (Credit: N. Kingsbury)

CIMP141

Years funded: 9

Principal investigator:
Wenjun Chen[1]
wenjun.chen
@Canada.ca

[1] Natural Resources Canada

Recommended Reading:
For additional information on this project please visit nwtdiscoveryportal.enr.gov.nt.ca and search "CIMP141" or read the 9th issue of the NWT Environmental Research Bulletin (NERB), available online at www.nwtcimp.ca.

Satellite monitoring for assessing resource development's impact on Bathurst caribou

Purpose

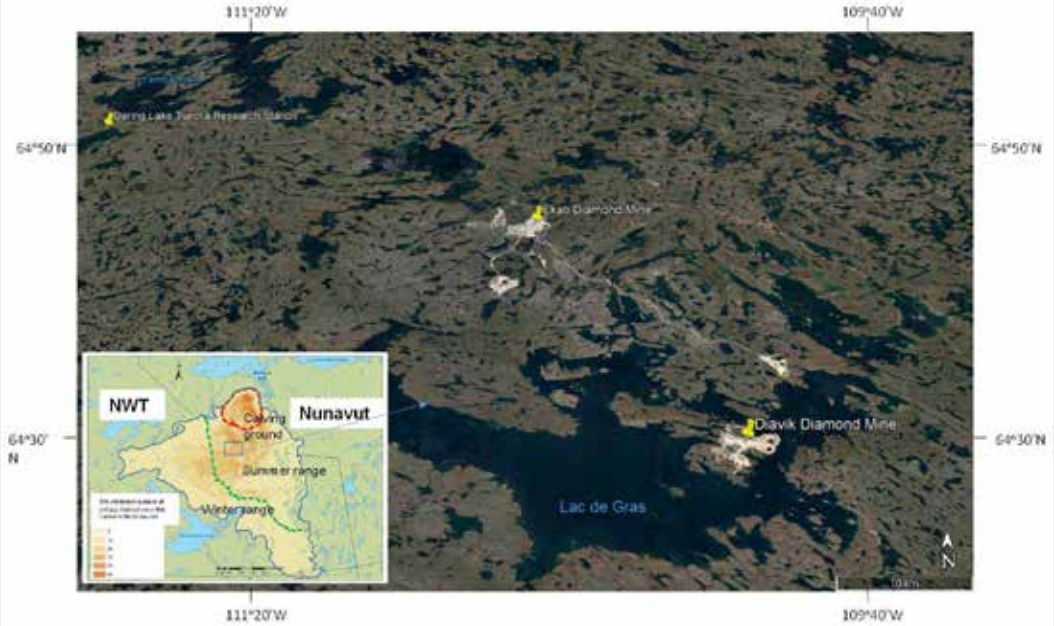
This project's purpose was to understand the reason for the observed zone of disturbance to caribou around diamond mining activities in the Slave Geological Province. Factors that could affect caribou senses, including the taste of forage, sight of mining activities and hearing of noise were measured.

Key Findings

- The Zone of Visual Disturbance (ZOVD) was measured using a method that related the distance measurement with the likelihood of a caribou seeing the disturbance. The maximum distance from which a caribou can visually distinguish a mining operation was about 5 km.
- The Zone of Dust Disturbance (ZODD) from a mining road was measured using soil pH measurements taken at increasing distances from a mining road. Soil pH near mining roads was strongly alkaline (pH 9) and then decreased with distance to become slightly acidic (pH 5), which is normal in this region.
- Using this soil pH gradient method, the ZODD was measured to be 1,760 ± 469 metres from the Misery Road, 1,220 ± 290 metres from the Sable Road, and 1,080 ± 278 metres from the Fox Road. The difference in these extents may be related to the amount of traffic, as indicated by road use history.
- Challenges were encountered in determining the Zone of Noise Disturbance related to wind-induced recording noise and the ability of caribou to hear higher frequencies than a human. Further work is required to develop an appropriate way to measure noise disturbance.

How does this project help in understanding cumulative impacts?

Measuring the zone of influence (ZOI) is important because it can be used to track the impacts to caribou of avoiding industrial development. Several studies have estimated the size of the ZOI of mining operations in the Bathurst caribou summer range using aerial survey or satellite collar data; however, little is known about what causes the ZOI. Knowing the causes of the ZOI is important for decision-makers to develop and implement ways to reduce its size.



Project study area in the North Slave region, NWT within Bathurst caribou habitat.

Bathurst caribou (Credit: Environment and Climate Change Canada)

An example of a digital photograph used for quantifying the visibility of a truck on a mining road. The photo was taken 90 m from the Misery Pit Road – at km 3 - on August 15, 2015. (Credit: W. Chen)

CIMP153

Years funded: 4

Principal investigator:
Don Russell[1]
drussell
@yukoncollege.yk.ca

Co-investigators:
A. Gunn[1]

[1] CircumArctic Rangifer Monitoring and Assessment Network

Recommended Reading:
For additional information on this project please visit nwtdiscoveryportal.enr.gov.nt.ca and search "CIMP153".

Modeling cumulative impacts on Bathurst caribou

Purpose

The decline of the Bathurst caribou herd has been a significant concern for communities and wildlife managers for more than 10 years. This project's purpose was to develop and implement cumulative impact modeling for the Bathurst Caribou Range Planning process to assess the effects of different real and potential future development, harvest and climate scenarios.

Key Findings

- Developed a user-friendly, web-based, interactive site where general audiences can better understand the purpose, details and findings of cumulative effects assessments within the range of the Bathurst caribou herd.
- Fully integrated the existing Movement, Energy-Protein and Population models to reduce the need to manually transfer information from one model to the next.
- Created a "Lite" version of the model to allow less technical users to explore implication of harvest policy, reduced Zones of Influence, etc. on the population response of the Bathurst herd. This user-friendly version of the model is now accessible at www.cariboumodel.ca
- Provided a means for technical users to download and implement the Caribou Cumulative Effects software.

How does this project help in understanding cumulative impacts?

The project's modeling provided the platform to explore different scenarios, allowing participants in the Bathurst Caribou Range planning process to understand the consequences of various actions and to identify the most important drivers of population change. Project results can assist with decision-making about assessment, monitoring and management of cumulative impacts by allowing the relative ranking of impacts of different real and potential future scenarios.

CIMP170

Years funded: 4

Principal investigator:
Jennifer Baltzer[1]
jbaltzer@wlu.ca

Co-investigators:
S. Cumming[2]

[1] Wilfrid Laurier University
[2] Laval University

Recommended Reading:
For additional information on this project please visit nwtdiscoveryportal.enr.gov.nt.ca and search "CIMP170".

Impacts of wildfire extent and severity on caribou habitat: from woodland to barren-ground

Purpose

Projected increases in wildfire due to climate change are a significant issue for caribou. Fire reduces forage availability and habitat quality, and contributes to cumulative impacts on caribou. Interactions between fire, climate, soil and initial vegetation conditions determine vegetation recovery after fire in ways that are not fully understood, making future availability of caribou habitat hard to predict.

This project's purpose was to determine: (i) the short-term and long-term impacts of wildfire on caribou habitat, and (ii) the implications for future caribou habitat conditions.

A widespread network of permanent forest sampling plots was established in forests south of Great Bear Lake. Vegetation and soil samples were collected at each plot and analyzed to understand the responses of NWT forests to extreme wildfire events.

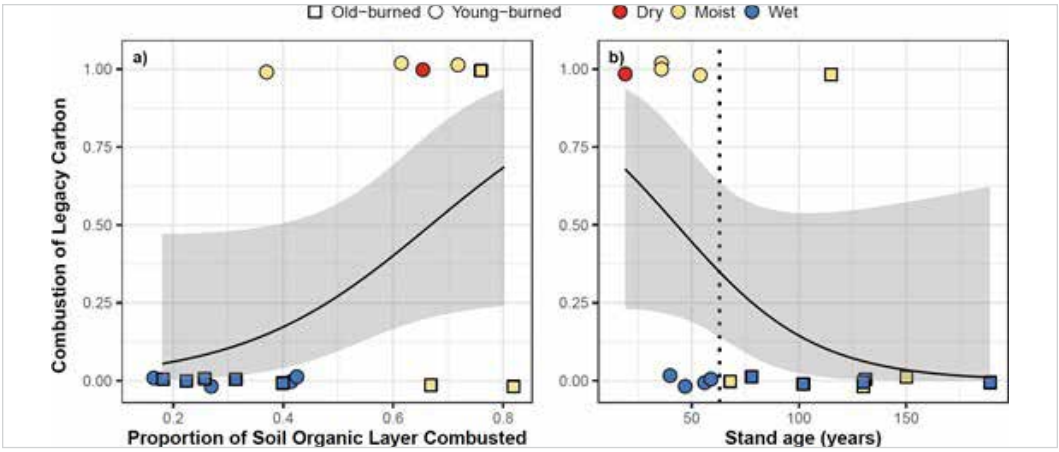
Key Findings

- Dry, well-drained parts of the landscape appear more vulnerable to fire and changes in forest type and soil structure as a result of fire.
- The majority of the ground vegetation was seen to recover by the re-sprouting of below-ground plant parts. This suggests that in most of the wildfire impact areas, burn severity was not sufficient to destroy below-ground plant parts.
- In very dry areas where burn severity was greater, the vegetation recovered mainly from seed, making dry, well-drained areas the most vulnerable to change.

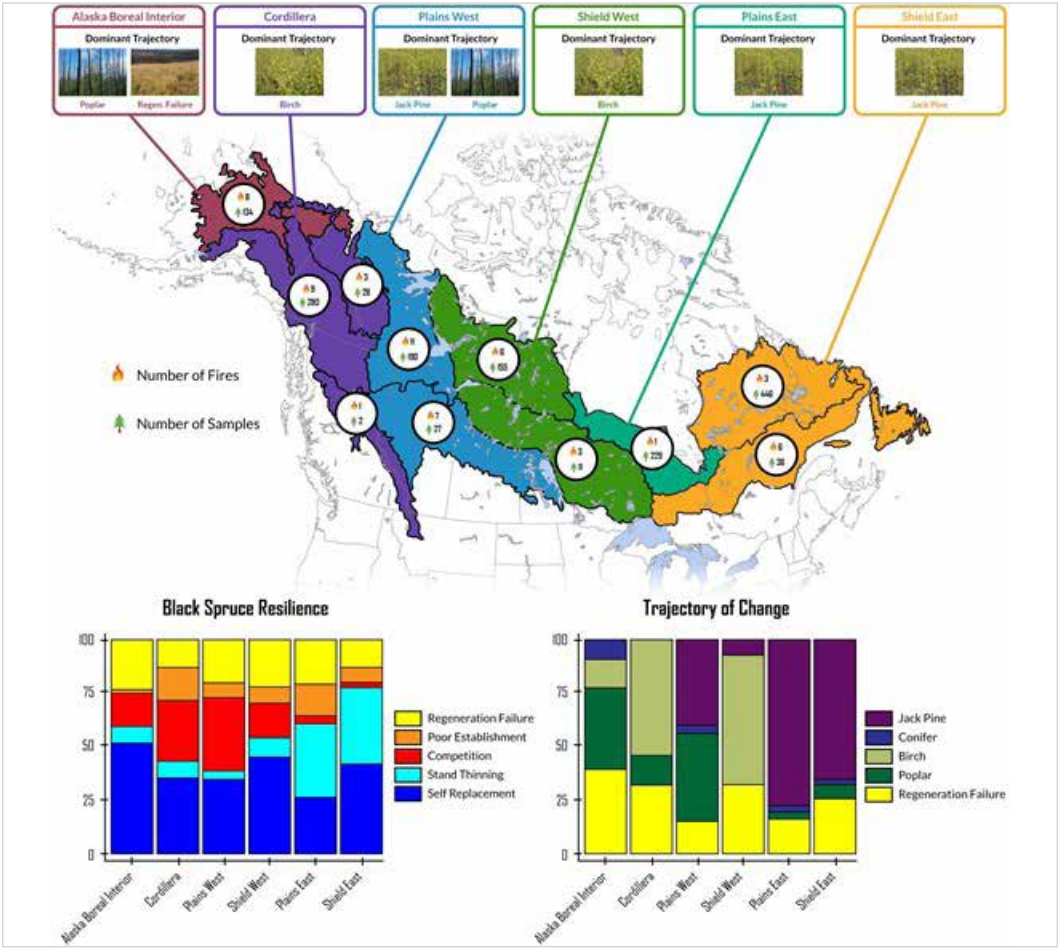
How does this project help in understanding cumulative impacts?

This project demonstrated the potential for climate warming and drying to compound the effects of severe burning during wildfire in determining post-fire regeneration outcomes.

Both the empirical results and modeling outputs are likely to contribute to decision-making regarding land use planning. An example of that application is our collaboration with the GNWT and Tides Canada in supporting the development of carbon stocks and futures for proposed protected areas in the NWT.



Predicted combustion of legacy carbon as a function of a) the proportion of soil organic layer combusted and b) stand age at the time of burning, with plots grouped into stand age at time of fire and moisture categories. In b) the dotted line represents the age threshold used to differentiate young-burned and old-burned plots. Shading represents the 95% prediction intervals and points are staggered for visual differentiation.



Black spruce resilience across North America. Bar charts provide data on the number of sites that fall into each state change category (Black spruce resilience; and for parts of the landscape experiencing state change, what that trajectory was (Trajectory of change). Sites in Western Canada are more susceptible to loss of black spruce resilience than eastern Canada, which was due to regional climatic differences.

CIMP202

Years funded: 3

Principal investigator:
James Hodson[1]
james_hodson
@gov.nt.ca

Co-investigators:
C. DeMars[2]
E. Gurarie[3]
A. Kelly[1]
E. Lamontagne[1]
D. Cluff[1]
T. Davison[1]
L. Smith[1]
K. Groenewegen[1]
S. Schwarz[1]
R. Serrouya[2]
A. Smith[3]

[1] Government of the Northwest Territories
[2] Alberta Biodiversity Monitoring Institute
[3] University of Northern British Columbia

Recommended Reading:
For additional information on this project please visit nwtdiscoveryportal.enr.gov.nt.ca and search "CIMP202".

Boreal caribou habitat selection analysis and mapping to support range planning in the NWT

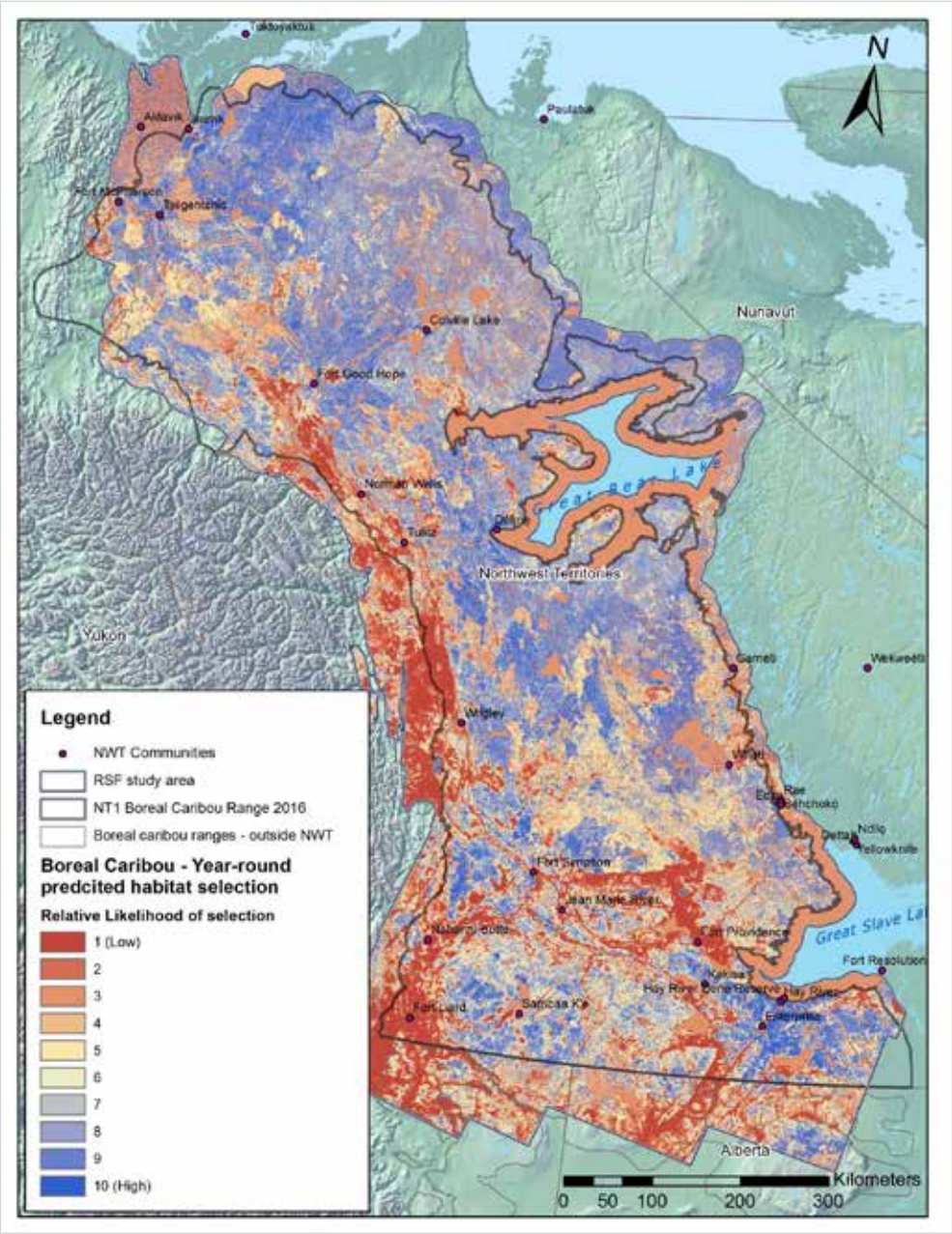
Purpose

Boreal caribou are listed as a threatened species nationally and in the NWT. The national recovery strategy for boreal caribou requires that range plans be developed to demonstrate how natural and human disturbance will be managed to maintain and protect their critical habitat (Environment Canada 2012, Environment and Climate Change Canada 2016).

This project's purpose was to generate predictive maps of seasonal habitat selection to help identify important areas for boreal caribou and support the development of regional boreal caribou range plans within the NWT. The project helped to better understand how land cover type, wildfires and human disturbance features influence where boreal caribou prefer to be on the landscape.

Key Findings

- Boreal caribou were found to select recent (less than 10 years old) and older (greater than 30 years old) burned areas during the snow-free seasons, and then increasingly avoided burned areas less than or equal to 40 years old from early to late-winter.
- Caribou avoided areas close to major roads and other disturbances, and avoided areas with high densities of linear disturbances during snow-free seasons. This suggests that range plans should try to maintain areas for boreal caribou that include a mix of recent fires to meet their requirements in the snow-free season, and areas without recent fires (>60 years old) which are preferred winter habitat.



Boreal Caribou: Year-round predicted habitat selection.

How does this project help in understanding cumulative impacts?

Currently, habitat disturbance is a primary factor leading to declines of boreal caribou across Canada, and the cumulative footprint of fire and buffered human disturbance are included in models relating caribou population trend to habitat disturbance levels. Maps of predictive habitat selection generated by this project are being used by GNWT-ENR in boreal caribou range planning, to identify Values at Risk for boreal caribou for use in fire management decisions, and in the habitat offset plan for the Tłı̨chǫ Highway.

(GNWT)

For more information:
nwtcimp@gov.nt.ca

For monitoring results:
nwtdiscoveryportal.enr.gov.nt.ca