

NWT Environmental

Research Bulletin (NERB)



NWT Cumulative Impact Monitoring Program (NWT CIMP)

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 in the NWT.

NWT Environmental Research Bulletin (NERB)

A series of brief plain language summaries of various environmental research findings in the Northwest Territories. If you're conducting environmental research in the NWT, consider sharing your information with northern residents in a bulletin. These research summaries are also of use to northern resource decision-makers.

Recovery of boreal caribou habitat after forest fires

Deninu K'ue First Nation (DKFN) Elders and harvesters recognize forest fires as a major threat to the local boreal caribou population. Boreal caribou rely on lichen as a food source during winter. These lichens are vulnerable to high burn severity. This study examined the impacts of forest fires on the recovery of boreal caribou habitat. Results showed that lichen recovery is affected by the natural regeneration of forest and the severity of the fire.

Why is this research important?

As climate change continues, forest fire frequency and severity are expected to increase. By looking at impacts of recent and historic forest fires on lichen abundance, we can predict when habitat disturbed by forest fires can again be used by boreal caribou.

What did we do?

Data on lichen species and abundance were collected in the South Slave Region of the Northwest Territories between 2018 and 2021. Over 100 sampling plots were surveyed across six fire-age categories based on time since fire: 0-5 years, 6-10 years, 11-20 years, 21-40 years, >40 years, and unburned. Habitat characteristics and fire severity were also recorded for each plot.



The height of lichen was measured by lowering a clear plastic ruler to the ground at each intersection where lichen occurred. (Credit: M. d'Entremont)

What did we find?

We found that:

- Lichen abundance was higher in open habitats with average to dry soil conditions.
- The abundance of lichens present was influenced by the severity of the fire that had occurred.
- Small amounts of lichens were present within 1-5 years post fire, with certain species recolonizing quickly.
- After 10 years post fire, there was a decline in lichen coverage, likely due to the increase in the naturally regenerating forest cover.
- At 20 years post fire, an increase in lichen growth occurred again.
- Some lichen species reach their maximum coverage 20 years post fire, while others continued to increase over the next 40-100 years.

What does this mean?

At the landscape level, a mix of younger and older habitats from a varied fire history likely provides ideal conditions for the recovery of boreal caribou habitat. The natural recovery of lichens post fire remains relatively slow, but when recovering areas are mixed with older, undisturbed sites, habitat availability for foraging caribou can be sustained. This research adds to the growing amount of knowledge on caribou habitat recovery post fire and can be used to inform boreal caribou range planning and management.

What's next?

In 2021, the DKFN started a lichen enhancement project to initiate the regeneration of lichen in local fire-impacted areas. Contact DKFN for more information.

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Recommended Reading

d'Entremont, M.V. and P. Gibeau. **2022.** *Recovery of boreal caribou habitat after forest fires – CIMP194.* Final Report submitted to the NWT Cumulative Impact Monitoring Program. 20 pp. Available on the NWT Discovery Portal (www.nwtdiscoveryportal.enr.gov.nt.ca).



Field team in 2021. (Credit: K. Tuttle)