

Research Bulletin

NWT Cumulative Impact Monitoring Program

Tundra “Greening” Reflects Subtle Changes in Available Food for Caribou

Summary

As the Bathurst caribou herd has declined in number, portions of their late-summer range have “greened”. This greening is seen in satellite images, which show plants are growing more than they used to. We wanted to find out if this greening is changing the balance of food available for caribou. In the tundra, low-growing vegetation like lichen and grasses are important caribou food. However, taller shrubs like dwarf birch, which are less tasty to caribou, may be increasing. Based on research from other parts of the Arctic, shrubs like birch often become more common as areas green and outcompete smaller plants like lichen, which can reduce the amount of good food for caribou.

Why is This Important?

Access to high-quality food on the Bathurst caribou range is important to the herd’s health. This research helps us understand how greening may affect the food available to caribou on the Northwest Territories tundra.

What Did We Do?

Within the late-summer range of the Bathurst caribou, along the treeline, we studied 30 small plots of land between 0.25 – 1 m² in July 2019, recording how much of the plot was bare ground (soil, leaf litter, or rock), lichens, or different plants. We then harvested and weighed all

lichens and plants to see which were most dominant based on how much ground they covered, how often we found them, and how much they weighed. We compared two types of areas, identified using satellite images: ones that had greened over a 28-year period from 1984 to 2012 (“Greening” sites), and ones that stayed mostly the same (“No Change” sites).

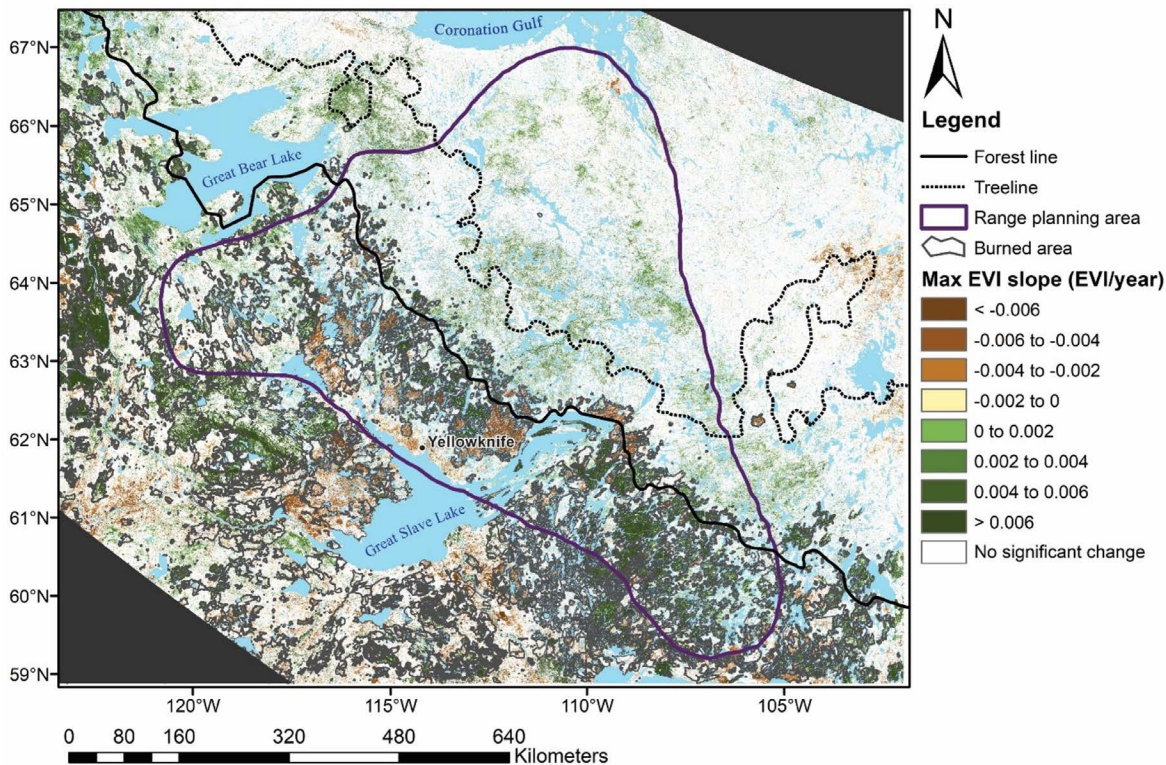
What Did We Find?

While the types of vegetation were similar across all sites, dwarf birch dominated in Greening sites, while lichen dominated in No Change sites, which also had more bare ground. However, regardless of the site, grasses and similar plants grew more in wetter soils. In areas where dwarf birch was dominant, we saw less lichen and less bare ground.

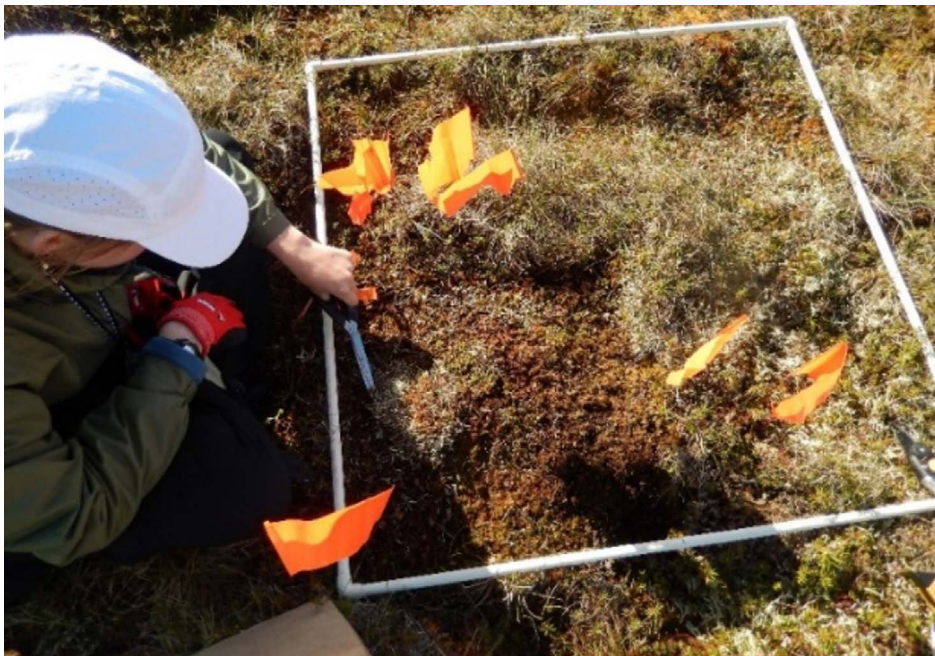
What Does This Mean?

Greening seen on satellite images seems to reflect an increase in dwarf birch and a decline in lichen. As climate change continues and less preferred food like birch becomes more dominant, caribou may have difficulty accessing their favourite summer foods like grasses, flowering plants, and mushrooms. Less lichen on a greening tundra means that winter foods for caribou are reduced or caribou may need to move to different areas to access food.





Trends in annual vegetation productivity from 2000-2017. 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. (Credit: R. Danby)



Above-ground plant material and lichens are carefully harvested from a plot. (Credit: C. Bonta)

What's Next?

By understanding where and how plant communities are changing, we can better predict where caribou food might be affected. Specific areas that may be considered for protection and monitoring on the Bathurst range can then be identified.

For More Information

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