Lichen Forage Restoration in Woodland Caribou Habitat
Saulteau First Nations, University of Northern British Columbia and ASKI Reclamation
Lichen Restoration Trials - Project Update

Mat-forming terrestrial lichens, often called “reindeer lichens” or “reindeer moss”, provide a critical forage source for caribou in British Columbia. These mat-forming lichens typically develop 60-80 years after fire in dry pine or spruce forests. Changes in how the landscape is disturbed can greatly affect how much lichen is available for caribou. Landscapes with high amounts of disturbed habitats from logging or fire will face a period of many decades before lichen mats can redevelop.

In a series of lichen reclamation trials jointly initiated by the Saulteau First Nations, the University of Northern British Columbia (UNBC) and ASKI Reclamation, we have been looking at the viability of using lichen transplants to reduce the time-period before lichen mats will grow again in disturbed landscapes. The focus of these trials has been on developing methods to transplant lichens into recently logged and recently burned environments. Essentially, we are trying to give nature a helping hand and speed up natural processes that support lichen establishment.

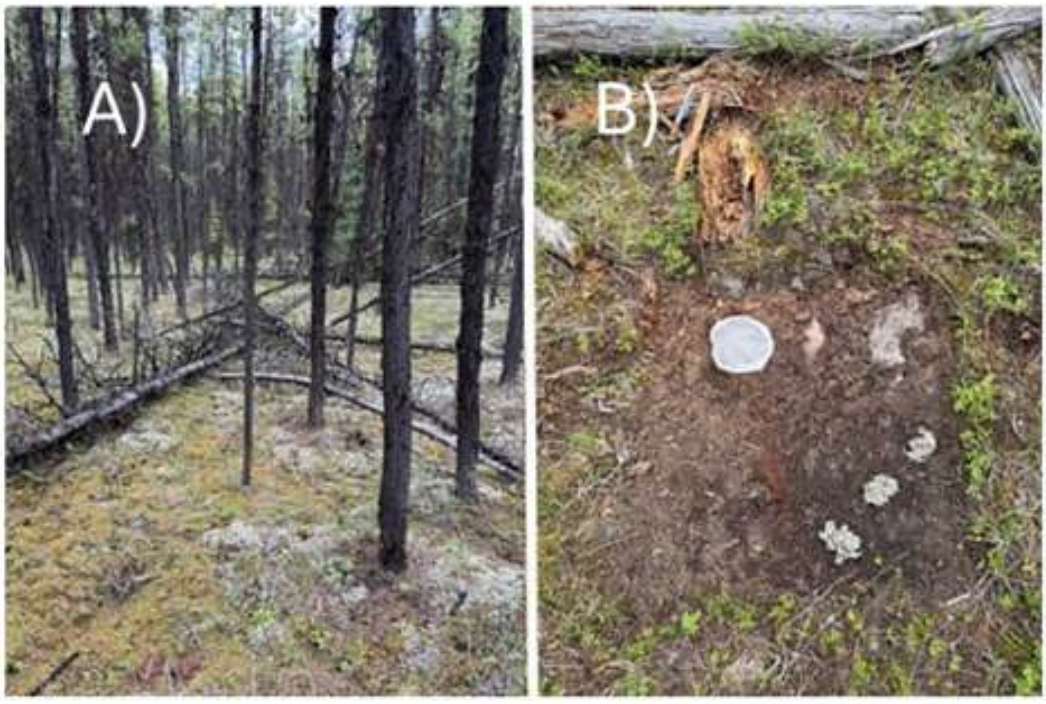
In the spring of 2025, lichens were transplanted into 3 areas south of Gwillim Lake and into areas burned by the 2022 Battleship Mountain wildfire. Lichen transplants at each location were established within 1x1m plots, set out in groups of 10, along 30 m transect lines at each site. The transplant protocol was designed to determine which size of lichen transplant would establish best in the Gwillim Lake and

Battleship Mountain sites, with transplant pieces ranging in size from “palm’ shaped clumps down to transplants consisting of fine fragments. If smaller lichen fragments can be transplanted successfully, the impact on existing caribou habitat is reduced, as less source material is needed to support lichen establishment.

A critical part of the study design was transplanting lichens into old-forest habitats where we know they already grow well. The transplants at these old-forest sites function as a “control” for our experiments, giving us baseline information on the suitability of our methods. These transplants can then be compared to transplants in disturbed habitats that have been impacted by past fires and clearcut practices. The Gwillim Lake area was selected as the primary region for assessing baseline growth rates of transplanted lichens in old-growth forest stands.

Old-growth pine-lichen woodlands in the Gwillum Lake area are found on sites with well-drained glacial deposits, usually located in elongate valley-bottom “bench” topographic positions. Dry pine stands with sparse understory vegetation (Fig. 1A) in the Gwillim Lake area are ideal for the growth and development of terrestrial lichens (see lichen mats in cover photo and in Fig. 1C), which would be shaded out by understory plant growth in moister sites. The Gwillim Lake stands provide an important lichen browse source for the Quintette caribou herd. Pine-lichen woodlands near the Bullmoose forest service road showed extensive signs of recent caribou use and fall within mapped high usage areas. Saulteau Guardians, in collaboration with UNBC researchers, have researched plot setup and have established monitoring protocols at the Gwillim Lake sites.

Working with Saulteau Guardians, UNBC researchers collected the lichen samples from the Gwillim Lake and Battleship Mountain sites in the fall of 2025. Lichen samples were transported to UNBC for weighing (to determine growth rates over the summer) and for analysis of chlorophyl fluorescence (a method of assessing lichen viability). This work has resulted in the development of protocols for reclamation using lichen transplants.



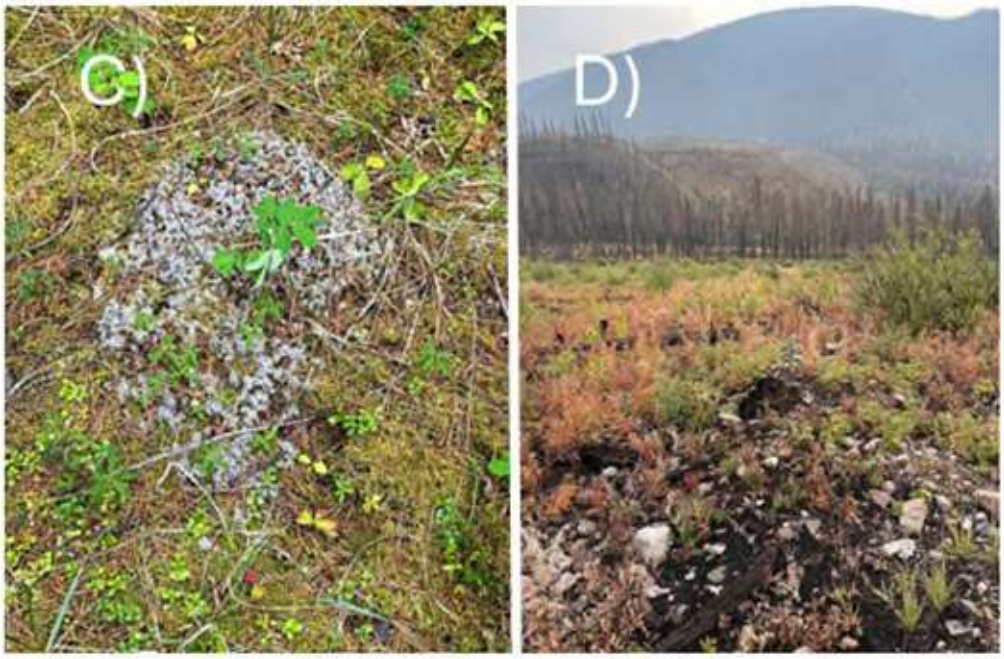


Figure 1. A) Old-growth pine-lichen woodlands, as shown here near the Bullmoose FSR, provide critical lichen forage values for caribou and are the location of control plots for our lichen restoration trials. B) Lichen reclamation plots consist of 1x1 m areas that have been cleared of existing vegetation and inoculated with lichen fragments of different size. The plot shown here is in the control area at the Gwillim Lake site. C) Lichens are most abundant 80 to 100 years after fire in pine lichen woodlands. After that point in time feather moss mats can gradually infiltrate and cover lichen mats, reducing caribou forage values, as shown here in the Bullmoose Road old-forest site. D) Lichen reclamation plots have been established in the Battleship Mountain fire area where we are assessing the ability of lichen transplants to survive in the more extreme (blackened) post-fire soil surface environments.

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