

New Designs for Caribou Habitat Restoration

Saulteau First Nations, Aski Reclamation LP and the University of Northern British Columbia

Loss of habitat and fragmentation of remaining old forest stands has been one of the primary causes for the decline of woodland caribou herds in British Columbia. Impacts of habitat loss have been both direct (i.e. loss of food sources) and indirect (creating conditions that increase predation risk).

This is particularly true for the Klinse-Za caribou herd in the Peace River watershed, which had declined to under 40 individuals in 2013. The West Moberly and Saulteau First Nations have been at the forefront of efforts to stem the decline of this herd through establishment of the Klinse-Za caribou maternity pen and working towards habitat protection in Klinse-Za/Twin Sisters Provincial Park.

A critical element to the survival of Klinse-Za caribou is the availability of lichens, a key winter food source. In early winter caribou feed on “reindeer” lichens (*Cladina* species) that typically grow in old pine stands. As winter snow cover deepens caribou move to higher elevations where they feed on lichens growing on tree branches, especially “witches-hair” lichens (*Alectoria* and *Bryoria* species). Both types of lichens reach their greatest abundance in old forests; for “reindeer” lichens in stands 80 to 100 years in age, and for “witches-hair” lichens stands 150 years in age or more.

Restoration of lichen-rich caribou habitat will be critical for long-term recovery of the Klinse-Za herd. Natural regrowth of forests after disturbance will play a big part in this recovery but this will take many decades before meaningful improvements occur in regional landscapes. A potential bridging measure to create caribou habitat sooner for the Klinse-Za herd is that of active habitat reclamation using lichen transplants. The use of lichen transplants to enhance caribou habitat is a new area of reclamation ecology, with relatively little information available to guide restoration efforts.



Woodland Caribou (*Rangifer tarandus caribou*), Southern Mountain Population were listed as a “threatened” species under the Species at Risk Act in 2003.



Terrestrial “reindeer” lichens such as *Cladonia stellaris* shown here provide an important winter forage source for caribou, who dig through the early winter snowpack to reach lichen mats. Photograph is from a pine lichen woodland near Gwillim Lake, in a proposed “control” lichen transplant plot location.

New Designs for Caribou Habitat Restoration

Saulteau First Nations, Aski Reclamation LP and the University of Northern British Columbia

One major challenge in reclaiming caribou habitat using lichen transplantation is that source lichen materials (for transplantation) cannot be grown under greenhouse or field conditions, as one would normally do with plants. Past transplants studies have relied on removal of naturally occurring lichen mats from old-growth forests. Although this approach is viable for small scale experiments, it becomes unsustainable at a larger scale or operational level.

One advantage that lichens have which has not been explored to-date in transplant experiments is that lichens can regrow from very small fragments. We believe this property of lichens is one that could be used to restore caribou habitat. If small lichen fragments can be used to reestablish caribou habitat the environmental impact of collecting source materials (lichens) from naturally occurring populations can be greatly reduced.

Saulteau First Nations, along with ASKI Reclamation LP, is working in partnership with the University of Northern British Columbia on reclamation trials to determine best practices for restoring caribou habitat using lichen transplants. Funding has been provided through the Real Estate Foundation of BC. Planned transplants in 2025 will look at severely burned habitats, such as the Battleship Mountain fire, and previously logged and control (or undisturbed) pine forests.



Lichen transplant studies at the site of the 2022 Battleship Mtn. fire will examine whether “reindeer” lichen transplants can survive in these recently burned sites.



Disturbed soils in recent clearcuts can encourage the growth of plants such as fireweed and shrubs instead of the lichens needed by caribou.

