

# PINE LICHEN WOODLANDS, NORTHERN CARIBOU AND FORESTRY

## Adaptive Management of Forestry Practices in Pine-Lichen Woodlands in North Central British Columbia

Project Update

March 2004

### Background

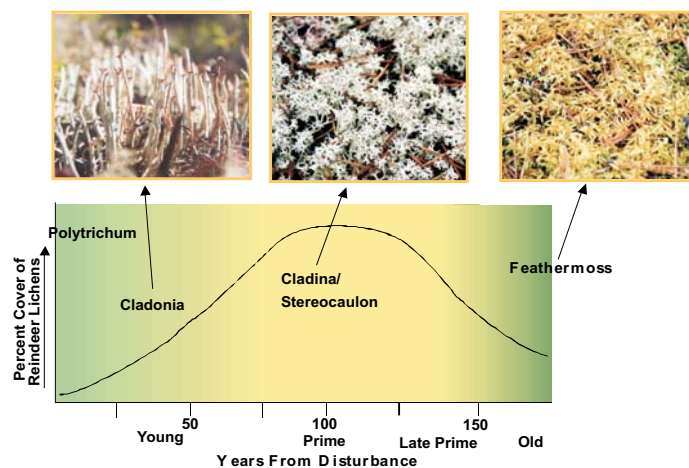
Pine-lichen woodlands are an important resource with multiple resource demands on them. They provide critical winter range for northern caribou, and a source of fibre for forestry operations that is not limited by seasonal constraints. In 2001 an adaptive management project was established to collect information on the influence of forestry activities on terrestrial lichen community development.

Activities undertaken evaluate how different harvesting and silviculture treatments effect changes to the forest floor characteristics. Measurements focus on quantifying microsite changes, in particular changing conditions of the growing medium at a site. Improving our understanding of the factors influencing the distributional ecology of terrestrial lichens results in more reliable information that can be used to manage caribou and forestry resources.

The development of this project has occurred from multiple planning initiatives converging on a common goal. Within both the Mackenzie and Vanderhoof Forest Districts the associated Land and Resource Management Plans (LRMP) have identified concerns around managing caribou resources. More recently, the designation of caribou as a threatened species in the *Southern Mountains National Ecological Area* by the Council on the Status of Endangered Wildlife in Canada (COSEWIC) has increased importance of understanding the relationships of northern caribou and their habitat. This project will provide information on how to best manage pine-lichen woodlands. Low elevation pine-lichen winter range is the least abundant range type of northern caribou in the Omineca.

### Pine Lichen Woodlands

Pine lichen woodlands are characterized by flat or south aspects, dry coarse textured soils and a poor nutrient regime. This combination of features creates harsh growing conditions where trees have short, rounded crowns and the understory plant communities are sparse. Lichens do well because they can tolerate the harsh growing conditions and do not have to endure competition from other vegetation.



Pine-Lichen woodlands in the Omineca are subject to a succession trajectory which traverses 4 phases of development. Succession involves the replacement of one plant community by another in a progressive development through time. The climax phase in these types is dominated by feather mosses.

For northern caribou succession to the feathermoss stage results in a loss of forage, thus, it is important to maintain a balance of age classes of pine lichen woodlands with ½ being between 70 and 140 years old and half being less than 70 years old.

**Adaptive Management** is a systematic process for continually improving management policies and practices by learning from the outcome of operational programs (J. B. Nyberg). The 6 steps involve:

- Problem assessment
- Project design
- Implementation
- Monitoring
- Evaluation
- Adjustment of future Decisions

**Terrestrial lichens are critical for sustaining northern caribou populations**

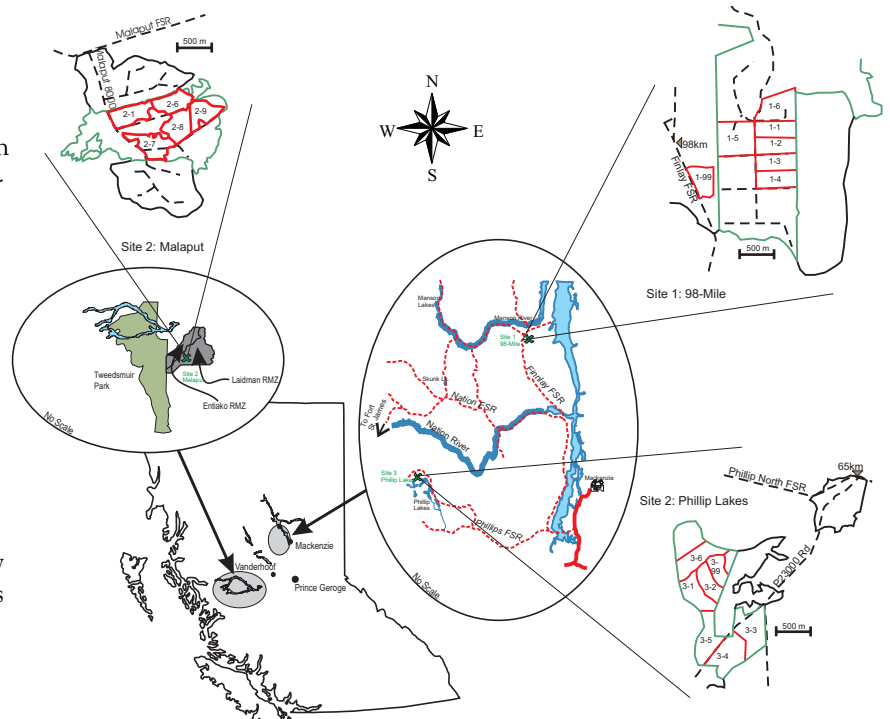


**Looking ahead:** Without incorporating the management of a sustainable supply of terrestrial lichens into the planning of forest harvesting activities, we are at risk of having the sites grow too old to sustain an abundant supply of terrestrial lichen cover.

## Study Area

Three sites have been established for this project. Two are located in the Mackenzie Forest District (98-Mile and Phillip Lakes Sites) and one (Malaput site) is situated in the Vanderhoof Forest district.

The two Mackenzie blocks are in the Sub-Boreal Spruce biogeoclimatic zone and the Vanderhoof block is in the Sub-Boreal Pine Spruce zone. Assessments of soils, stand structure, plant community composition and plant community development indicate that all sites exhibit similar ecological



## Treatments and Tests

At each site a combination of treatments incorporating different harvesting and silviculture activities have, or are being implemented.

**Harvest Systems:** cut-to-length (CTL) and whole-tree (WT) harvest systems are being compared. It is believed that the CTL systems will result in less disturbance to the organic mat but result in greater debris accumulations than the WT system.

**Season of Harvest:** winter versus summer activities are being compared. A winter snow pack is believed to protect the forest floor and subsequently result in less disturbance. In addition winter harvesting activities are anticipated to have higher levels of debris accumulation than summer treatments.

**Site Preparation:** Drag scarifying treatments are being compared to areas left untreated. The drag scarify treatment creates a large level of disturbance to compare against.

**Regeneration:** The influence of stand conditions created from natural regeneration versus planting will be compared. It is believed natural regeneration will result in a more open irregular stand structure that is less densely stocked than what would result from planting.

Treatment Regime	Predicted Condn for Lichen	Harvesting Method	Harvesting Season	Site Preparation	Regen Method
1	Best	WT	Winter	None	Natural
2	Good	CTL	Winter	None	Natural
3	Good	CTL	Summer	None	Natural
4	Moderate	CTL	Summer	None	Plant
5	Worst	CTL	Summer	DS	Natural
6	Good	WT	Summer	None	Natural
7	Moderate	WT	Summer	None	Plant
8	Worst	WT	Summer	DS	Natural
9	Worst	WT	Summer	DS	Plant

Grey Shading = combinations applied in Vanderhoof  
Colored Font = combinations applied in Mackenzie

All treatment results will be monitored and the response of the lichen and other vegetation will be documented.

## Project Progress:

The project is entering the monitoring phase of the adaptive management process. Activities previously undertaken included the pre-harvest sampling of ecological site factors at 3 sites, implementation of treatment activities at 2 sites, and the collection of post-harvest data at one site. This table summarizes the activities that have been completed (black text) and those that are still required (red text).

	Pre-Harvest Assessments	Treatments	Post-Harvest Assessments
98-mile	2002	2002/03	2003
Malaput	2002	2003/04	2004
Phillip Lks	2003	2004/05	2005

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## Participants and Partners:

The preparation of this AMP project is a collaboration of private and government interests. The main proponents are:

