



### INCREMENTAL SILVICULTURE OF LODGEPOLE PINE

#### Legend

Scale 1:20,000

- Trail
- Block boundary
- Landings
- Signs
- Fertilized areas

#### What's next?

Fertilization will continue in the future to maintain optimum nutrition in those treatment units. All densities, except 1240 stems/ha, are scheduled to be pruned in 1998, and again in 2010.

Measurements of tree and understory vegetation response to these treatments will be carried out annually. Crop tree form will be assessed every five years.

#### Conclusions

When considering a "vision" for the future, do we want a diversity of forest habitats, wildlife, products and values in the next century?

If so, management of stand densities must become more flexible and site specific. We must start now by expanding our management horizons to develop a diversity of stands across the forest landscape.

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## INCREMENTAL SILVICULTURE OF LODGEPOLE PINE

Stand Tending and Biodiversity



Canada

CANADA-BRITISH COLUMBIA  
PARTNERSHIP AGREEMENT ON  
FOREST RESOURCE DEVELOPMENT  
FRDA II



**FOREST**  
RENEWAL BC

## Objectives

This study was initiated to determine the influence of stand density and optimum nutrition on:

- growth and yield of crop trees
- habitat structure and quality
- range resources
- small mammal populations and diversity

## Discussion

Lodgepole pine stands are currently thinned to within a very narrow range of stand densities in juvenile spacing programs. However, there may be advantages to creating a wider range of stand densities.



Open stands contain more microhabitats than dense stands. This microhabitat diversity is composed of understory herb and brush species. Open-grown crop trees have large canopies that tend to simulate old growth conditions. These heavily thinned stands will grow large diameter timber in a relatively short time. Low density or open stands provide an opportunity to create early successional stages of herbaceous and shrub layers in the understory vegetation. This vertical structure enhances biodiversity because of the greater number of habitats present.



Red squirrel

Feeding damage

Studies show that red squirrel populations and feeding damage were reduced in low density stands.

Heavy thinning in a managed stand postpones canopy closure and maintains understory vegetation for a longer period.



Stands of higher density provide important cover for wildlife (thermal, security and nesting). These stands will produce higher volumes of high quality timber, because of the higher density and slower growth. They will be suited for wood volume production for the construction lumber market and pulp industry.

Clearly, if we want a diversity of forest habitats, wildlife, wood products and values in the next century, stand densities must be more flexible, site specific and combined with more innovative silviculture. Managing for a variety of stand densities, will provide a richness of communities.

## Experimental design

This area is an 80-ha opening which was clearcut in 1976, and has regenerated with a mixture of planted and natural lodgepole pine. Topography is gently rolling with variable aspect; site class is medium.

The block was divided into four areas which were manually spaced in 1993 to different densities (292, 470, 980 and 1240 trees/hectare).

All vegetation (herbs, shrubs and trees) was sampled within a system of plots and subplots, to compare vegetation growth for each species.

An area of 10 m x 30 m, was fenced in each unit, to provide a measure of vegetation growth without grazing by livestock. This will allow study of the benefits of the treatments to domestic grazing, and the impact of grazing on wildlife habitat.

In the spring of 1995 and 1997 half of each stand was fertilized. There was an immediate response in growth of herbaceous vegetation in the fertilized stands. Growth response of shrubs and trees to fertilization was slower at the beginning, but should become substantial in the next years.