



# Thinning to Obtain Stand Structures for Mule Deer Winter Habitat



Peter Marshall<sup>1</sup>, Ken Day<sup>2</sup> and Dalcy Dobson<sup>3</sup> Contacts: peter\_marshall@ubc.ca; kenday@interchange.ubc.ca; JDforestry@telus.net

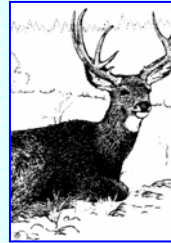
1: Department of Forest Resources management, University of British Columbia, Vancouver, BC, Canada 2: Alex Fraser Research Forest, Williams Lake, BC, Canada 3: J.D. Forestry Services, Williams Lake, BC, Canada

## Introduction

Mule deer are found from the Yukon Territories in northwest Canada south to the Mexican border and from the Pacific Coastal mountains in the west to the prairies east of the Rocky Mountains. The Rocky Mountain mule deer (*Odocoileus hemionus hemionus*) is one of four sub-species and reaches its northern limit of continuous distribution in the vicinity of Williams Lake, British Columbia, Canada.

Interior Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) forests, with appropriate stand structures, provide important winter habitat for the deer in this area. A considerable area of these forests were logged 40 to 50 years ago, removing many of the larger trees. The resulting stand structures have limited winter habitat value for the mule deer due to the scarcity of large trees. DBH growth in these forests is slow without intervention, and it is taking many years to replace the large trees necessary for good winter habitat.

A retrospective analysis of response to precommercial thinning in these stands was undertaken to assess whether thinning would allow target stand structures to be reached more quickly.



## Discussion

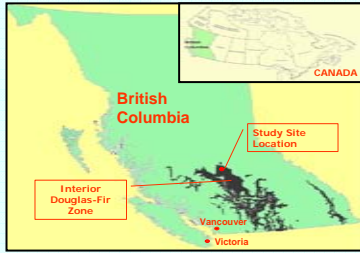
- There was a clear increase in DBH growth following thinning.
- This response was larger for the smaller DBH classes.
- None of the stands included in this study currently meet the structure targets thought to be necessary for good mule deer winter habitat, primarily due to a shortage of larger DBH trees.
- The precommercially thinned stands should reach the structure targets considerably sooner (~ 20 years ??) than the control stands.

References:  
 Armleder, H.M., R.J. Dawson, and R.N. Thomson. 1986. Handbook for timber and mule deer management coordination on winter ranges in the Cariboo Forest Region. Land Management Handbook 13. B.C. Min. For., Research Branch, Victoria, B.C.  
 Dawson, R., H. Armleder, B. Bings and D. Peel. 2002. Management strategies for mule deer winter ranges in the Cariboo-Chilcotin Part 1a: Management plan for shallow and moderate snowpack zones. Cariboo Mid-Coast Interagency Management Committee, Williams Lake, B.C.

## Methods

### Study Area

The location of study area and Interior Douglas-fir Zone



### Target Stand Structure:

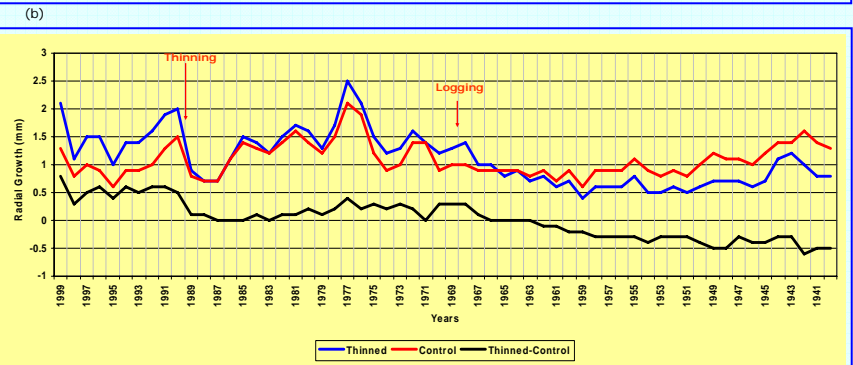
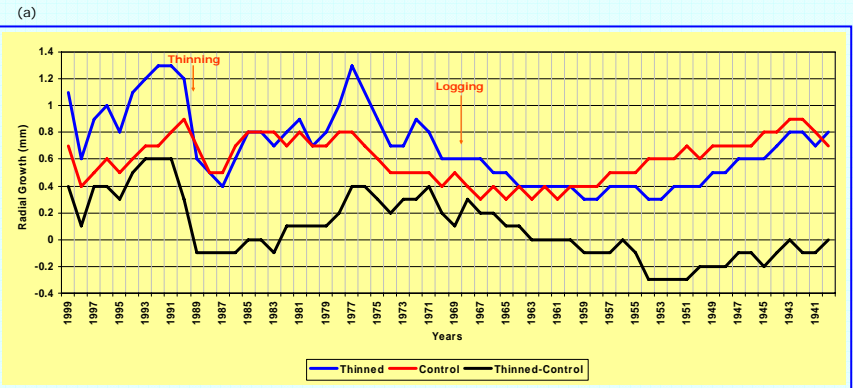
- The main requirement for good mule deer habitat is uneven-aged forests, comprised primarily of Douglas-fir with wide deep crowns, arranged in clumps.
- Target densities range from 16 to 29 m<sup>2</sup>/ha in stems > 12.5 cm dbh and from 6 to 16 m<sup>2</sup>/ha in stems > 37.5 cm DBH.
- An ideal quadratic mean DBH is between 28 and 32 cm.

### Study Design:

- Fixed-radius plots were located in paired thinned (T) and control (C) areas in three replicates.
- At least 5 plots were located in each replicate-treatment combination.
- Thinning took place between 1989 and 1991 depending on the replicate.
- 30 Douglas-fir trees were selected in each replicate-treatment combination, spread across the DBH classes present, and were cored at breast height in 2000 and radial growth measured.

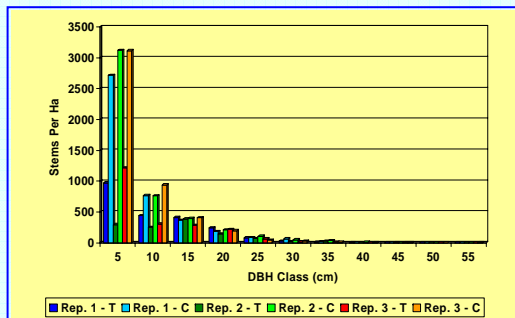
## Results 2

Average annual radial increment for sample trees in the thinned and control plots, Replicate 2, from:  
 (a) the 10 cm dbh class; and (b) the > 20 cm dbh class.



## Results 1

### Current Stems Per Ha by DBH Class



### Change in 8-Year Average Radial Growth (Pre- vs. Post-Thinning)

