

CENTRE FOR ENHANCED FOREST MANAGEMENT



ADVANCES IN FORESTRY RESEARCH

DEPARTMENT OF RENEWABLE RESOURCES

EFM RESEARCH NOTE 04/2009



Aspen regeneration following understory-protection logging

LENNIE, A.D., LANDHÄUSSER, S.M., LIEFFERS V.J., AND D. SIDERS

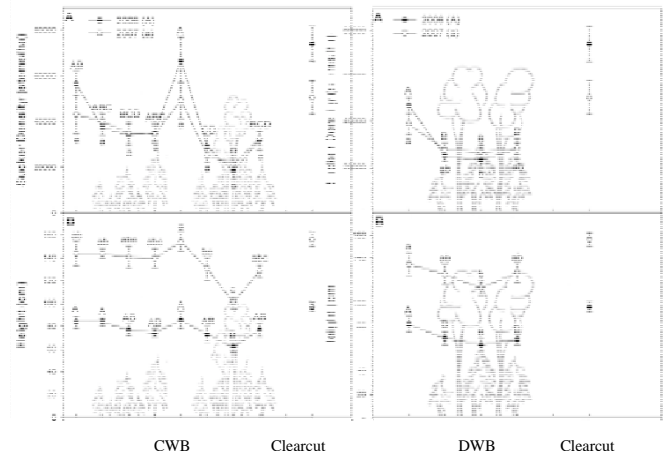
Many mature stands of aspen often have an understory of white spruce. Understory protection systems remove most of the mature aspen while at the same time protecting most of the spruce from damaged to allow them to continue their growth. As there are machine access trails into these stands and as spruce is patchy in its distribution it is hoped that aspen suckers will fill in the voids in the stand after logging. Additionally, in understory protection system, some mature aspen stems are left on the site to shelter the immature spruce trees from blowdown. Different patterns of the residual aspen trees (in strips or uniformly distributed) may influence the regeneration of the aspen after harvest. Objectives were to determine the density and growth of suckers in two different types of understory protection logging systems.

Methods: Ten sets of plots were established the boreal mixedwood forest of Alberta – 2 near Conklin, 2 north of Wandering River, 2 south of Grande Prairie, and 4 west of High Level. In each set ~25% of aspen were retained but these were left either in strips (Concentrated Wind Buffer (CWB)) or



uniformly distributed over the cutting area (Distributed Wind Buffer (DWB)). An uncut control and a clearcut were also produced. Aspen regeneration was assessed one and two growing seasons after logging and related to the different positions (microsites) created by the understory protection systems.

Results: Sucker density was higher in the clearcut than the understory protection cuts. The mean density of suckers was not different between the CWB and the DWB systems.



Sucker density and growth was greatest on the machine access trails and least in the CWB closest and under the strip of residual aspen.

Sucker performance was not affected by the number of passes of the skidder on the machine access trails. Attacks by aphids and shepherd's crook were observed to be greater in both understory protection systems compared to the clearcuts.

Implications: Aspen suckers can be expected to fill in the empty spaces on machine trails and areas without spruce. Their growth however, is reduced compared to the clearcut systems and there is still some doubt about their long-term survival in these more shaded environments.

The machine traffic on frozen ground, as it was the case in this study, had little impact on the success of aspen regeneration on the machine access trails.

Funding was provided by the Mixedwood Management Association, the Natural Sciences and Engineering Research Council of Canada (NSERC) and FRIAA. We thank Alberta Pacific Forest Industries, Footner Forest Products, Tolko Forest Products and Ainsworth Lumber Co for assistance in the field.

Further Information:

Lennie, A.D., Landhäusser, S.M., Lieffers, V.J., and Sidders D. 2009. Regeneration of aspen following partial and strip understory protection harvest in boreal mixedwood forests. For. Chron. (In press).

<http://www.cefm.rr.ualberta.ca/>

Centre for Enhanced Forest Management, Dept. of Renewable Resources, U. of A., Edmonton, AB T6G 2H1; Canadian Forestry Service, Northern Forestry Centre.

Simon.Landhausser@ualberta.ca; Victor.Lieffers@ualberta.ca;

"Fundamental and applied research to enhance the productivity of Alberta's northern forests"