

REGENERATION OF NORTHERN WHITE-CEDAR FOLLOWING SILVICULTURAL TREATMENT: A LONG-TERM STUDY

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Northern white-cedar (*Thuja occidentalis* L.) is found on many different types of sites, both in pure stands and in mixture with other species. Common associates include spruce (*Picea* species), balsam fir (*Abies balsamea* (L.) Mill.), and yellow birch (*Betula alleghaniensis* Britton). Unfortunately, the circumstances leading to the successful recruitment of northern white-cedar are poorly understood. Some studies suggest that regeneration is associated with small natural disturbances such as blowdown. However, silvicultural treatments imitating nature have had varying degrees of success with regard to northern white-cedar regeneration. Browsing has been identified as the main factor limiting establishment and sapling development in many regions, but some areas do not regenerate successfully even when fenced.

Concerns about sustainable forest management have motivated researchers to study the relationships between silvicultural treatments and northern white-cedar regeneration. Experiments have been planned on lowland areas in the Gaspé Peninsula, eastern Québec and on mesic sites in the Outaouais region, western Québec. Though these new experiments will enable us to better identify the conditions associated with successful regeneration, they will only provide a short-term perspective. Medium-term data will be provided by a retrospective study of partial cuts conducted 15-20 years ago. Fortunately, researchers at the Penobscot Experimental Forest in Maine have been collecting data on northern white-cedar regeneration and growth for over 50 years. The PEF experiment includes 10 replicated silvicultural treatments. These data will be analysed in order to determine if there are relationships between treatment and northern white-cedar regeneration, and the findings will be used to develop treatments for the Gaspé Peninsula experiment. Further analysis will be conducted in order to examine the interactions of treatment and site type on cedar regeneration and tree response to partial cutting.

The results of this study will provide us with a better understanding of northern white-cedar regeneration mechanisms, and will help us to identify silvicultural regimes that promote cedar establishment and growth.