



## **Interactions between long-term scarification and climate regime control the competitiveness and reduces the spread of boreal ericaceous shrubs**

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Ericaceous shrub species such as sheep laurel (*Kalmia angustifolia* L.) and Labrador tea (*Rhododendron groenlandicum* (Oeder) Kron & Judd) have evolved various mechanisms for interfering with black spruce growth. Thus, in boreal forests of Quebec, Canada, mechanical scarification is a post-harvest silvicultural treatment used to reduce competition from ericaceous shrubs in regenerating black spruce (*Picea mariana* (Mill.) B.S.P.) stands. Studies have confirmed that scarification increases the growth of black spruce seedlings in the years following treatment, however long-term studies in different climate regimes are lacking. We report on a study where we examined, 16 years after treatment, the effects of scarification on the spread and competitive ability of ericaceous shrubs in a wet maritime vs. dry continental climate. We found that total ericaceous shrub cover was higher in the maritime than in the continental climate. In both climates, scarification resulted in lower total ericaceous shrub cover and shorter annual rhizome growth than non-scarified plots. In the maritime climate, scarification resulted in higher specific rhizome length, lower canopy openness, higher foliar nitrogen and lower foliar phenolic concentrations. We conclude that scarification generally reduces the long-term encroachment of ericaceous shrubs on black spruce cutovers, but the benefits of this silvicultural treatment are greater in wetter climates.