



BERA Project Update

Mounding Effects on Tree Seedling Survivability and Growth Along Seismic Lines

Project Update Year
2021

Lead

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Project Theme Area
Soils and Ecohydrology

Project Code
SY3b

Project Location

Brazeau County & Lac La Biche County, AB, CAN

Working Group

Reach out to Jennifer to join the working group

Why is this study important?

Previous studies of seismic lines have shown that boreal treed peatlands have little to no tree recovery, even decades after the initial disturbance. These seismic line scars fracture the landscape and have notably different environmental properties. The reasons behind this non-recovery have not been confirmed but may be attributed to the altered microtopography and hydrologic characteristics of seismic lines. To continue to explore the complexities of tree establishment on treed peatland seismic lines, my research will explore how mounding treatments (that alter microtopography) affect the rate of tree seedling growth. By identifying the effects of mounding treatments on tree establishment and growth, we can provide evidence to suggest one method over another for future restoration projects.

How was it completed?

Five mounding treatments were examined across two study locations. At Site 1, near Brazeau Dam in Brazeau County, AB I examined Black Spruce and Tamarack seedling planted within the (1) Rip & Lift (mounds created by dragging a plow along the line), (2) Inline Mounding (mounds dug up from the line and placed veg-side up), (3) Hummock Transfer, (natural hummocks transplanted from undisturbed areas to the line), and (4) Unmounded (no mounding treatment). At Site 2, off HWY 881 in Lac La Biche County, AB I examined Black Spruce seedlings planted on (5) Inverse Mounding (mounds dug up from the line and placed veg-side down).

The key variables collected from each tree seedling included: seedling health, seedling height and 1st and 2nd leader lengths, mound relative elevation, soil moisture, and vegetation percent cover of nine major land covers. Six to nine seedling samples were also collected for an ongoing analysis of root characteristics and ectomycorrhizal associations.

What are the core management implications to date?

This study was designed to inform the scientific community and industry partners interested in exploring seismic line restoration using mounding treatments. As a part of the BERA research project we are looking for solutions to restore barriers along seismic lines and make them less navigable for predators. An important contributor to these barriers would be a cover of natural tree seedlings reaching ~1m tall. This study will help determine the effects of mounding on tree establishment and growth. In turn, this will inform future seismic line restoration on the ideal mounding characteristics for optimal seedling survival and rapid growth.