Return to Forest Cover

BERA Project Update

Effects of Active Restoration Treatments on Conifer Species Growth and Survival

Project Update Year
2021

Lead
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Project Theme Area
Remote Sensing & Vegetation

Project Code
RS1b

Project Location
Lower Athabasca Region- CNRL Kirby, Cenovus Lidea I & II

Working Group
Greg McDermid, UofC; Julia Linke, UofC; Scott Nielsen; UofA; Michael Cody, Cenovus; Guillermo Castilla, CFS

Why is this study important?
Natural conifer tree regeneration may be slow or stagnant due to a range of factors that degrade growing conditions. Active restoration treatments (mounding, ripping, coarse-woody debris) and tree planting may be prescribed along lines that exhibit poor natural regeneration to improve soil, hydrologic, and microsite conditions. However, these treatments are expensive and expose areas to additional disturbances. We need knowledge to assess how young conifer trees respond to treatments to better target limited restoration dollars. This study explores how active-restoration treatments affect black spruce, tamarack, and jack pine survival and growth along recovering seismic lines. By comparing seedling success (height, growth, and survival) in treated and naturally regenerating lines across a range of ecological conditions, this study aims to identify line types and characteristics that may benefit from active restoration treatments.

How was it completed?
Field data was collected during 2017 and 2021 in permanent BERA study sites within CNRL and Cenovus restoration project areas near Conklin, AB. Height, increment growth, and survival was measured for over 2200 conifer seedlings along 82 seismic line sites in lowland and upland ecosites. The large sample will provide high statistical power to deduce how treatments influence growth and regeneration.

What are the core management implications to date?
Preliminary results show jack pine seedlings are significantly more likely to die compared to black spruce seedlings. After analysis is complete, my results will reveal (1) if treatments are effective to promote conifer survival and growth compared to untreated lines, and (2) under which environmental conditions are treatments most effective to promote conifer tree growth and the return of forest cover. These results will provide evidence to help guide future restoration initiatives and may be used to predict patterns of regeneration under left-for-natural versus active restoration scenarios.

Achievements
Preliminary results will be presented at URISA (Urban and Regional Information Systems Association) online Student Showcase on November 25th, 2021.

Boreal Ecosystem Recovery & Assessment