

Vegetation Team: Mounding Promotes Tree Regeneration on Seismic Lines

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Project Summary

Many seismic lines have experienced poor tree regeneration since initial disturbance, with most failures occurring in treed peatlands – habitat for threatened woodland caribou (*Rangifer tarandus caribou*). Extensive networks of seismic lines, which can reach densities as high as 40 km/km², are thought to have contributed to declines in caribou. The reforestation of seismic lines is therefore a conservation focus. Methods to reforest seismic lines are expensive (averaging \$12,500 per km) with uncertainty in which lines need which treatments, if any, resulting in inefficiencies in restoration actions. Here, we monitored the effectiveness of treatments on seismic lines as compared to untreated seismic lines and adjacent undisturbed reference stands for treed peatlands in northeast Alberta, Canada. Mechanical site preparation (mounding and ripping) increased tree density when compared to untreated lines, despite averaging 3.8-years since treatment (vs. 22 years since disturbance for untreated). Specifically, treated lines had, on average, 12,290 regenerating tree stems/ha, which is 1.6-times more than untreated lines (7680 stems/ha) and 1.5-times more than the adjacent undisturbed forest (8240 stems/ha). Using mechanical site preparation of mounding or ripping, treated seismic lines had consistently more regenerating trees across all four ecosites, although amounts of stems observed on treated poor fens were not significantly higher than untreated or adjacent undisturbed reference stands.



Management Implications and Lessons Learned

Reclamation treatments in treed peatlands suggest that all ecosites benefit from mounding/ripping and planting in increasing tree regeneration, although this was not significant in poor fens. This work demonstrates short-term (<6 years) success for reclamation efforts with possible longer-term promise. Research sites should be re-visited (monitored) in the future to evaluate longer-term trajectories. It is possible, treatments in poor fens should be avoided if several decades since line creation has elapsed as mechanical site preparation did not have short-term gains in this ecosite.

Publication(s)

Filicetti, A.T., Cody, M., and Nielsen, S.E. (2019). Caribou conservation: Restoring trees on seismic lines in Alberta, Canada. *Forests* 10(2), 185