



Boreal Ecosystem
Recovery & Assessment
An NSERC Collaborative Research & Development Program

ECOLOGICAL TEAM FALL 2017: **EFFECTS OF LINEAR DISTURBANCES AND FIRE SEVERITY ON VELVET LEAF BLUEBERRIES IN RECENTLY BURNED JACK PINE FORESTS**

Charlotte Dawe, B. Sc. student

University of Alberta, Department of Renewable Resources
cadawe@ualberta.ca

Research Team:

Scott Nielsen and Angelo T. Filicetti
University of Alberta, Department of Renewable Resources



Project summary

There is limited information on how velvet leaf blueberry (*Vaccinium myrtilloides* Michx.) responds to fires and existing small forest gaps associated seismic lines. We measured the effects of forest gaps from seismic lines versus adjacent (control) forests across a fire severity (% tree mortality) gradient on the presence, abundance (cover), vigor (height), and berry production of *Vaccinium myrtilloides* in recently (five-year) burned jack pine (*Pinus banksiana* Lamb.) forests near Fort McMurray, Alberta. Presence was greatest in forests that experienced low to moderately-high fire severities with declines at high fire severity. Abundance did not differ among seismic lines or adjacent forest, nor did it differ along a fire severity gradient. In contrast, vigor and berry production were greater on seismic lines compared to adjacent forests with fire severity positively affecting berry production, but not plant vigor. After controlling for changes in plant cover and vigor, berry production still increased with fire severity and within seismic lines compared with adjacent forests. Our findings suggest that narrow forest gaps from seismic lines and fire severity interact to affect the fecundity (berry production) and growth (height) of *Vaccinium myrtilloides*. This has important implications for assessing the ecological effects of fire on linear disturbances associated with energy exploration in the western boreal forest.

Progress to date

Project completed. Data were gathered during the summer of 2016 with analysis between the fall of 2016 and winter of 2017. A research paper was completed by the fall of 2017 and since published in the journal *Forests* (Dawe et al. 2017).

Management implications

Open seismic lines promote berry production in *Vaccinium myrtilloides*, especially if recently burned. Restoration actions that promote regrowth of forests on seismic lines should therefore reduce vigor and berry production to being similar to that of adjacent forests. This would reduce the value of these sites to wildlife, especially black bears that are predators to woodland caribou, but also cultural values (harvesting by indigenous peoples). This work quantifies the amount of increase in fruiting shrubs following fire, and especially when on linear forest gaps associated with seismic lines.

Geographic location

Our study sites were located north of Fort McMurray, Alberta near the McClelland Lake.