



Effects of linear disturbances & fire severity on velvet leaf blueberry in recently burned jack pine forests



Charlotte Dawe, Angelo T. Filicetti & Scott E. Nielsen, Dept. of Renewable Resources, University of Alberta

Introduction

Blueberries (*Vaccinium myrtilloides*) are of high cultural (First Nations) value and a key wildlife resource, especially for black bears (Fig. 1). Wildfires increase blueberry abundance shortly after fire until tree closure, although the specific response to fire severity is less well known. Moreover, small forest gaps associated with seismic lines have previously been suggested as negatively affecting fruiting shrubs, such as blueberry, yet open forest gaps, including clearcuts, generally promote blueberry abundance. Here we examined how blueberries respond to: (1) the interaction between seismic lines & fire severity; and (2) line width (forest gap size).



Fig. 1: Velvet leaf blueberry (*Vaccinium myrtilloides*) is a key cultural species and of importance to wildlife.

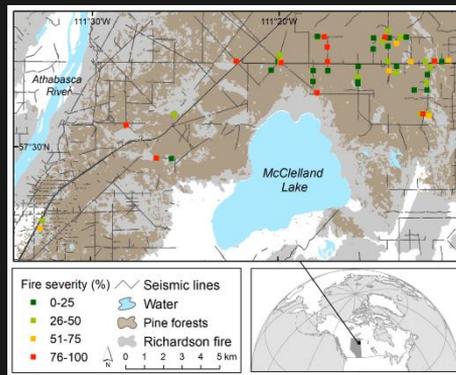
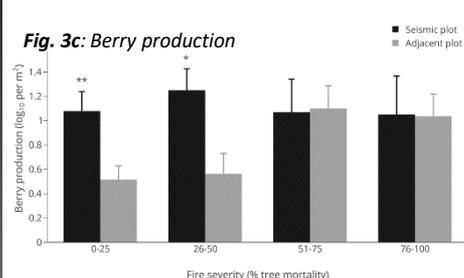
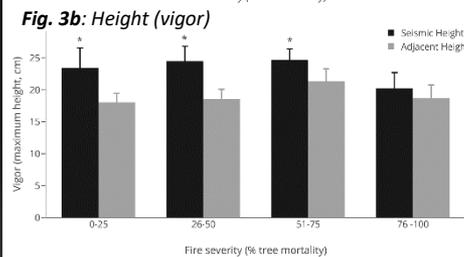
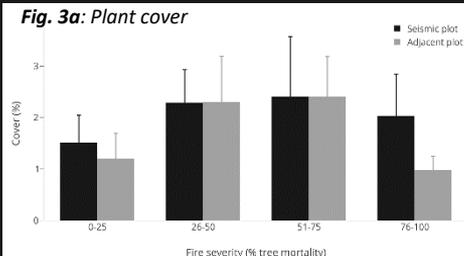


Fig. 2: Study site - 66 paired (seismic + forest) plots.

Methods

66 paired 30-m transects (one seismic line, one adjacent forest) stratified by 4 levels of fire severity (Fig. 2). Presence recorded in 1x30 m belt, while cover, plant height, and berry production were measured in ten 1x3 m quadrats. Paired t-tests were used to compare seismic line & adjacent forest plots for each fire severity class by blueberry measure. Mixed effect linear regression was used to assess multivariate relationships.



Key results

- No difference b/w lines & forest for presence & cover (Fig 3a), but peak at mid-severity
- Height of plants was higher on lines, except at highest burn severity (Fig. 3b)
- Berry production was higher on lines in low-to-moderate burn severity (Fig. 3c)
- Cover, height & total berries ↑ with line width (i.e. light)
- Adjusting for cover & height, total berries:
 - ↑ with burn severity
 - ↑ on seismic lines

Implications

Seismic line forest gaps & fire promote habitat for key cultural & wildlife values in jack pine forests.



Article
Effects of Linear Disturbances and Fire Severity on Velvet Leaf Blueberry Abundance, Vigor, and Berry Production in Recently Burned Jack Pine Forests

Acknowledgements

This research was supported by a Natural Sciences and Engineering Research Council of Canada Collaborative Research and Development Grant (CRDPJ 469943-14) in conjunction with Alberta-Pacific Forest Industries, Cenovus Energy, and ConocoPhillips Canada. Additional funding provided by Northern Scientific Training Program (NSTP) and COSIA Alberta Biodiversity Conservation Chairs program.