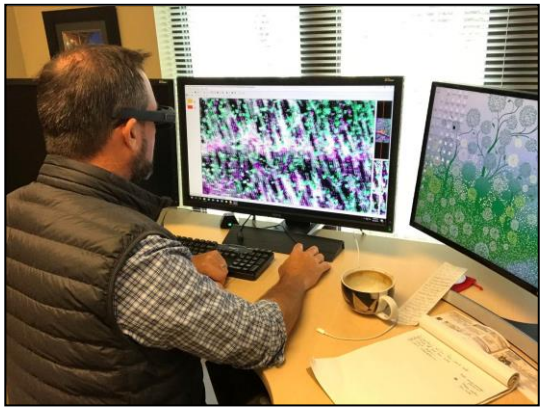
Boreal Ecosystem Recovery & Assessment
An NSERC Collaborative Research & Development Program

REMOTE SENSING TEAM 2018:
REMOTE SENSING TOOLS FOR CONIFER STOCKING ASSESSMENT - PART 1: MANUAL SOFTCOPY INTERPRETATION

Dr. Greg McDermid
University of Calgary, Department of Geography
mcdermid@ucalgary.ca

Research Team:
Julia Linke[1], Mir Mustafizur Rahman[1], Man Fai Wu[1], Guillermo Castilla[2]
[1] University of Calgary, Department of Geography; [2] Canadian Forest Service, Natural Resources Canada



Project summary

Under the correct conditions, remote sensing can provide the information necessary to perform conifer stocking assessments on boreal seismic lines. However, we require a sound understanding of the circumstances under which remote sensing can adequately deliver. In pursuing this goal, BERA researchers are working on a number of studies aimed at revealing the influence of various data, site, environmental, and processing factors on remote-sensing based stocking assessments. The target of this particular project is *manual softcopy photointerpretation*. In this work, we will compare traditional assessments of conifer seedling location, density, and stocking performed in the field to remote-sensing assessments performed using 5-cm airborne imagery. We want to know: (i) how does softcopy interpretation compare to field surveys, and (ii) how is performance affected by factors such as seedling size, site type, and illumination conditions?

Progress to date

Preliminary results based 50 belt plots reveal good seedling-detection accuracies (>70%) for individuals larger than 100cm, but poor results (<40%) for seedlings smaller than 50cm. We found that photointerpreters tended to over-estimate conifer seedling densities in general, but the interactions of seedling size, site conditions, and light conditions are still being assessed. Final results, based on 125 belt plots, are scheduled for March, 2019.

Management implications

Stocking assessments are a key element of Alberta's new seismic-line restoration guidelines, and we require remote-sensing based strategies for performing them. The workflows surrounding softcopy interpretation are mature, but have not yet been evaluated for the task at hand. This research will show the conditions under which managers can expect to perform survival assessments and establishment surveys using this technique.

Geographic location

The study areas for this research are the Kirby South, Foster Creek, and LiDEA project sites near Bonnyville and Conklin, Alberta.