

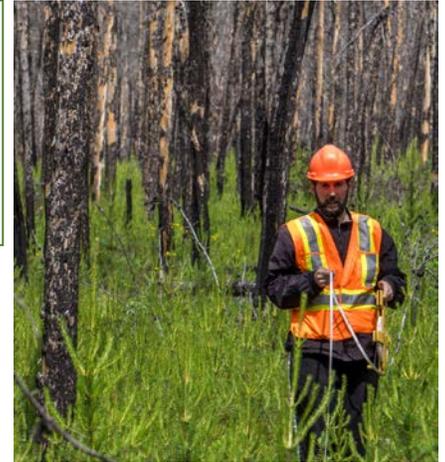
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Project summary

(1) Quantify woody vegetation (trees and shrubs) presence, density, and structure (including seedling and sapling stages) on seismic lines compared to adjacent stands; (2) Quantify growth rates (height/unit time) since last disturbance to predict recovery trajectories across the region; (3) Assess whether wildfire hastens recovery and how this may vary among forest types, local site conditions, and fire severity; and (4) Assess effectiveness of existing reclamation treatments (planting, mounding, etc.). This year I focused on reclamation treatments for the LiDea experiment and responses to wildfire in peatlands, but here will discuss the early results from LiDea. All field plots were based on 30-m long belt quadrats that quantified tree and shrub density, along with paired forest stand measures (basal area, tree density, stand height, stand age) in the adjacent forest.

Progress to date

In 2016 we sampled 70 sites (paired plots) on seismic lines within the Richardson fire of 2011 stratified to different fire severity levels with a peer reviewed paper on this currently in review. In 2017, 130 sites (paired plots) were sampled throughout the Fort McMurray to Conklin region within treed peatlands across different fire severity (0 to 100%) and fire age (1995–2016) classes. An additional 140 sites (paired plots) were sampled in 2017 within different treatment areas (Kirby, LiDea 1, LiDea 2). Preliminary results suggest that treatments are more beneficial in wetter ecosites, and application of coarse woody debris is beneficial in wetter but not drier ecosites. Additional work is being done on dendrochronology of regenerating trees on seismic lines to assess growth rates with to date 800 samples (cookies) collected from 130 different seismic line sites.

Management implications

Results from this project will inform government and industry on where to focus reclamation efforts thus potentially save reclamation costs by avoiding efforts where they are least effective or unnecessary. The examination of fires in xeric jack pine stands in 2016 suggested that natural recovery (passive restoration) of seismic lines should be expected post-fire for these sites. Restoration efforts here are not therefore needed if frequent fires are experienced. Consideration of fire frequency may also be a consideration for treed peatlands, as preliminary results from 2017 suggest fires can benefit recovery of seismic lines in peatlands, or at least provide seismic lines with an advantage of recovery over adjacent stands. Reclamation treatments in treed peatlands suggested that wetter ecosites, particularly rich fens, benefit most from mounding and planting. The application of coarse woody debris improved recovery in wetter, but not drier, ecosites. Focusing restoration efforts on rich fens may provide the best cost-benefit for forest recovery.

Geographic location

The study area stretches from Wandering River to McClelland Lake (region along Hwy 63) and from Fort McMurray to Conklin (region along Hwy 881) of northeastern Alberta.