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**Project summary**

Reclamation of exploratory well pads is required in Alberta, although not necessarily back to the previous treed state. Data on leave-for-natural restoration of seismic lines has been shown to delay regeneration in some forest types, but is promoted following wildfire. In this study we examined the effects of wildfire on natural regeneration in exploratory well pads in jack pine-dominated forests. Specifically, we compared natural regeneration in a post fire environment on abandoned exploratory well pads and in adjacent forest stands using belt transects and stem counts. We found that conifer recruitment was higher on well pads than in forest plots for areas without fire and a natural lack of recruitment in unburned jack pine stands. However, this trend was reversed at higher fire severity with high overstory mortality from fire resulting in much higher conifer regeneration for both forests and well pads. Reindeer lichen, a main food source for caribou, was also higher on well pads than in adjacent forest, but responded negatively to fire. Our results suggest that fire should be considered as a possible tool in seismic line and well pad restoration in forests with fire-adapted species such as jack pine.

**Progress to date**

In the autumn of 2017, we assessed tree regeneration at 35 exploratory well pad sites in the Richardson McClelland Lake area in northeastern Alberta. Each site was composed of a paired set of plots with one within the well pad and the other in the adjacent forest (control). Analysis is complete and a manuscript is in preparation and we anticipate submission by the end of 2018.

**Management implications**

Applying silvicultural restoration treatments, such as planting, in areas dominated by jack pine is likely to be ineffective. The reasons for this ineffectiveness are two-fold: (1) jack pine is an extremely shade intolerant species, rarely growing or surviving in the understory; and (2) the jack pine life cycle is dependent on wildfire to release seeds from serotinous cones where new forest stands regenerate with minimum overstory cover. Therefore, the application of tree planting in this forest type is unlikely to result in regenerated forests. We propose that reclamation consider these ecological constraints.

**Geographic location**

Our study sites were located north of Fort McMurray, Alberta in the Richardson area which burnt in 2011 just north of McClelland Lake.