

## Fire behaviour in jack pine/black spruce fuels following mulch fuel treatments: a case study at the CBCFS project

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### Background

The Canadian Boreal Community FireSmart project has been the site of several research projects designed to evaluate the efficacy of fuel treatments in mitigating wildfire. In June 2016, FPInnovations conducted an experimental crown fire which challenged a mulch fuel treatment.

### Treatment type

This mulch fuel treatment was applied in March 2011 in an area of high density jack pine/black spruce fuels. Mulching was conducted in a grid pattern (Figure 1) which resulted in stand retention of 28%. Untreated fuels were retained on the southwest and southeast sides of the plot as ignition zones to initiate crown fire and challenge the fuel treatment.

**Figure 1. Mulch grid plot at CBCFS project site.**



### Wildfire environment conditions

Ignition in the untreated fuels on the southeast side of the plot commenced at 1607 on June 30, 2016. At that time the initial spread index was at the 95<sup>th</sup> percentile. The moisture content of mulch debris was 5% while conifer needle moisture content was 84%.

### Fire Behaviour

Within 30 seconds of ignition, crown fire developed in the untreated fuels of the ignition zone. As crown fire entered the treatment area, fire behaviour was reduced to intense surface fire in the first mulch line (Figure 2).

**Figure 2. Crown fire passage into mulch treatment.**



Fire behaviour transitioned between intermittent crown fire and surface fire as the fire progressed through the chipped debris in the surface layer and clumps of residual stems. Rate of spread varied through the treatment area with fluctuations in wind speed. The overall rate of spread through the treatment area was 13.4 m/min.

### Forthcoming project report

A detailed project report will be posted to the FPInnovations wildfire program website in 2017. For additional information about other FPInnovations research involving forest fuel management and fuel treatment effectiveness see:

<http://wildfire.fpinnovations.ca/Research/ProjectPage.aspx?ProjectNo=119>

<http://wildfire.fpinnovations.ca/Research/ForestFuelTreatment.aspx>