



Monitoring Summary *Mary's Lake*

Wildfire Mitigation Strategy: A ponderosa pine-dominated mixed conifer stand was thinned and residual slash was piled for later burning in a project funded by the Colorado Big Thompson Headwaters Partnership to protect water resources from wildfire.

Project Highlights: Forest thinning reduced tree density, though mostly small trees were removed with minimal change to canopy cover. This reduced modeled flame lengths under severe fire conditions, but fire intensity remained relatively high with passive crown fire predicted both before and after treatment. Additional follow-up treatments, such as carefully applied broadcast burning, could reduce surface fuels, raise tree crown base height, and further lower tree density to increase fire mitigation effectiveness at this site.

Project Information

Funding Source	Colorado-Big Thompson Headwaters Partnership
Location	Larimer County, CO
Year Completed	2018
Area Monitored	34 acres
Forest Type	Mixed conifer
Implementation Method	Thin
Slash Treatment	Pile burn



Forest and Fuels Inventory

Summary	Pre-treatment	Post-treatment
Year sampled	2015	2018
Live basal area* (ft ² /ac)	84 ± 49	62 ± 28
	4,265 ±	
Live tree density (trees per acre)	8,420	207 ± 365
Canopy cover (%)	43 ± 27	39 ± 32
Canopy base height (ft)	7 ± 6	7 ± 5
Fine Woody Fuel Loading (tons/acre)	1.0 ± 0.5	1.9 ± 1.4

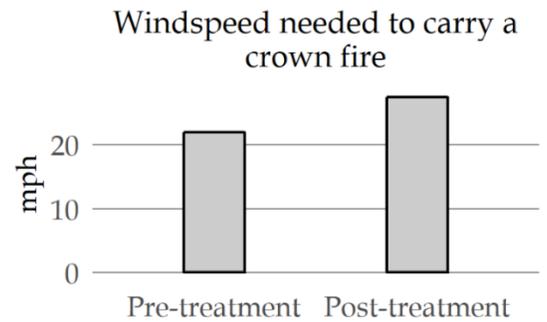
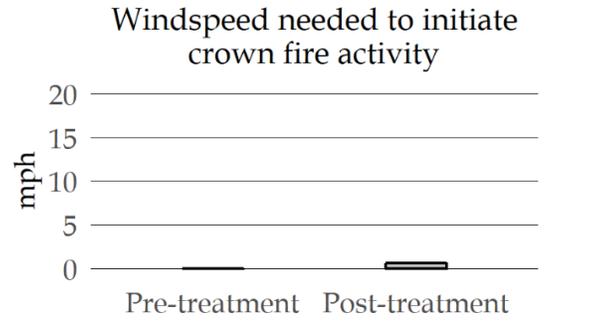


*Basal area is the cross-sectional area of tree stems at breast height (4.5 ft.) for a given area.

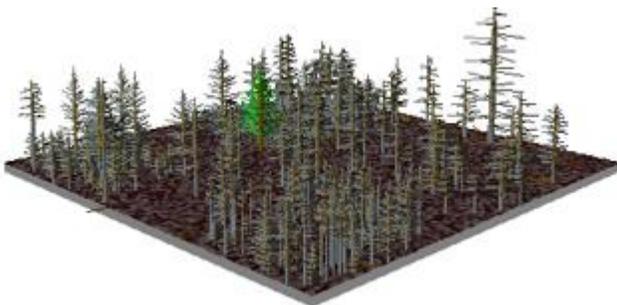
Methods to assess wildfire risk reduction

We assessed the effectiveness of fuels treatment to change expected fire behavior by collecting forest and fuels inventory data at 10 field plots pre-treatment and post-treatment. Field data was used to model potential fire behavior with the Fire and Fuels Extension to the Forest and Vegetation Simulator. The table displays fire behavior outputs modeled under severe and moderate conditions. The graph and images show changes in forest structure and modeled fire behavior under severe conditions.

Modeled Fire Behavior				
	Pre-treatment		Post-treatment	
Fire weather and fuel conditions	<i>Severe</i>	<i>Moderate</i>	<i>Severe</i>	<i>Moderate</i>
Fire type	Passive	Passive	Passive	Passive
Total flame length (ft)	42.0	2.4	26.3	3.7
Surviving tree basal area (ft ² /ac)	1 (1%)	44 (52%)	1 (2%)	21 (34%)



Pre-treatment



Post-Treatment

