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Monitoring Summary

Ramsay Shockey Unit C

Wildfire Mitigation Strategy: Ponderosa pine was thinned, with residual slash lopped and scattered in a collaboratively funded demonstration project designed to promote forest resilience to wildfire and protect water supply and infrastructure.

Project Highlights: Forest thinning decreased tree density by almost half, but only reduced basal area slightly as a result of focusing on the removal of small trees. Predicted fire hazard mitigation benefits were minimal following treatment. While thinning increased modeled windspeeds needed to carry active crown fire in the stand due to more space between tree crowns, lower windspeeds are predicted to initiate tree torching, flame lengths remain high, and fewer trees are predicted to survive a wildfire. Additional tree removal combined with slash treatment to reduce surface fuels, such as broadcast burning, may increase fuels reduction benefits and enhance stand resilience to wildfire.

Project Information

Lead Implementer	Larimer County Department of Natural Resources
Funding Sources	Peaks to People Water Fund, Northern Water
Location	Larimer County, CO
Year Completed	2016
Area Monitored	34 acres
Forest Type	Ponderosa pine
Implementation Method	Hand thin
Slash Treatment	Lop and scatter

Pre-treatment photo point

Forest and Fuels Inventory

Summary	Pre-treatment	1 yr post-treatment
Year sampled	2016	2017
Live basal area* (ft^2/ac)	116 ± 35	90 ± 38
Live tree density (trees per acre)	257 ± 165	143 ± 70
Canopy cover (%)	52 ± 8	42 ± 13
Canopy base height (ft)	13 ± 5	13 ± 7
Fine Woody Fuel Loading (tons/acre)	0.7	1.4

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

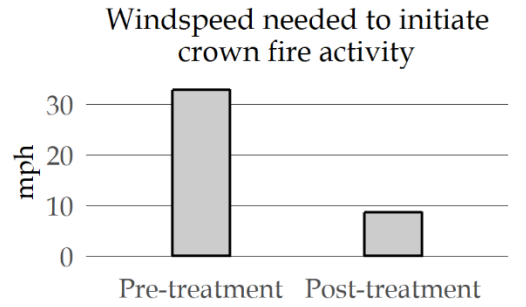
Post-treatment photo point

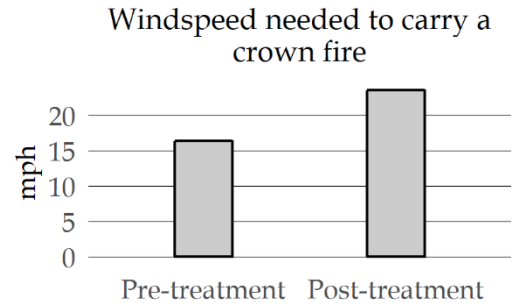
Fire Hazard Analysis

We assessed the effectiveness of fuels treatments to change expected fire behavior by collecting forest and fuels inventory data at 9 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.

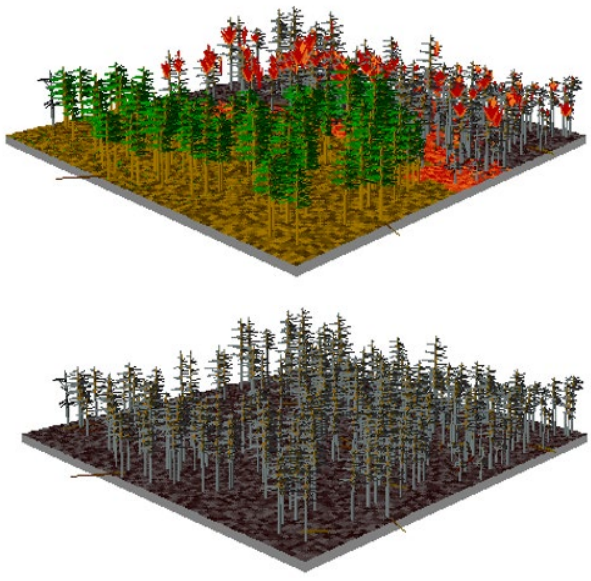
Modeled Fire Behavior

	Pre-treatment		1 yr post-treatment	
Fire weather and fuel conditions	***Severe***	*Moderate*	***Severe***	*Moderate*
Fire type	Conditional Crown	Surface	Passive	Surface
Total flame length (ft)	42.1	1.5	30.0	3.1
Surviving tree basal area (ft²/ac)	0 (0%)	87 (75%)	1 (1%)	57 (63%)

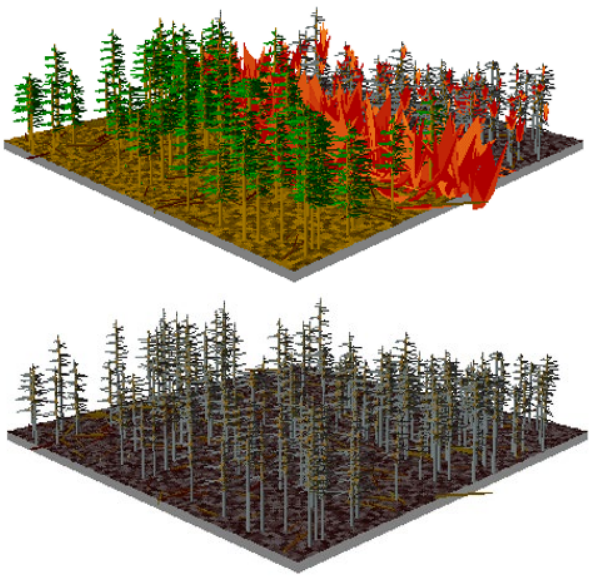




Pre-treatment



Post-Treatment



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Full methods and details described in the Peaks to People Monitoring Report, available at cfri.colostate.edu. January, 2019.