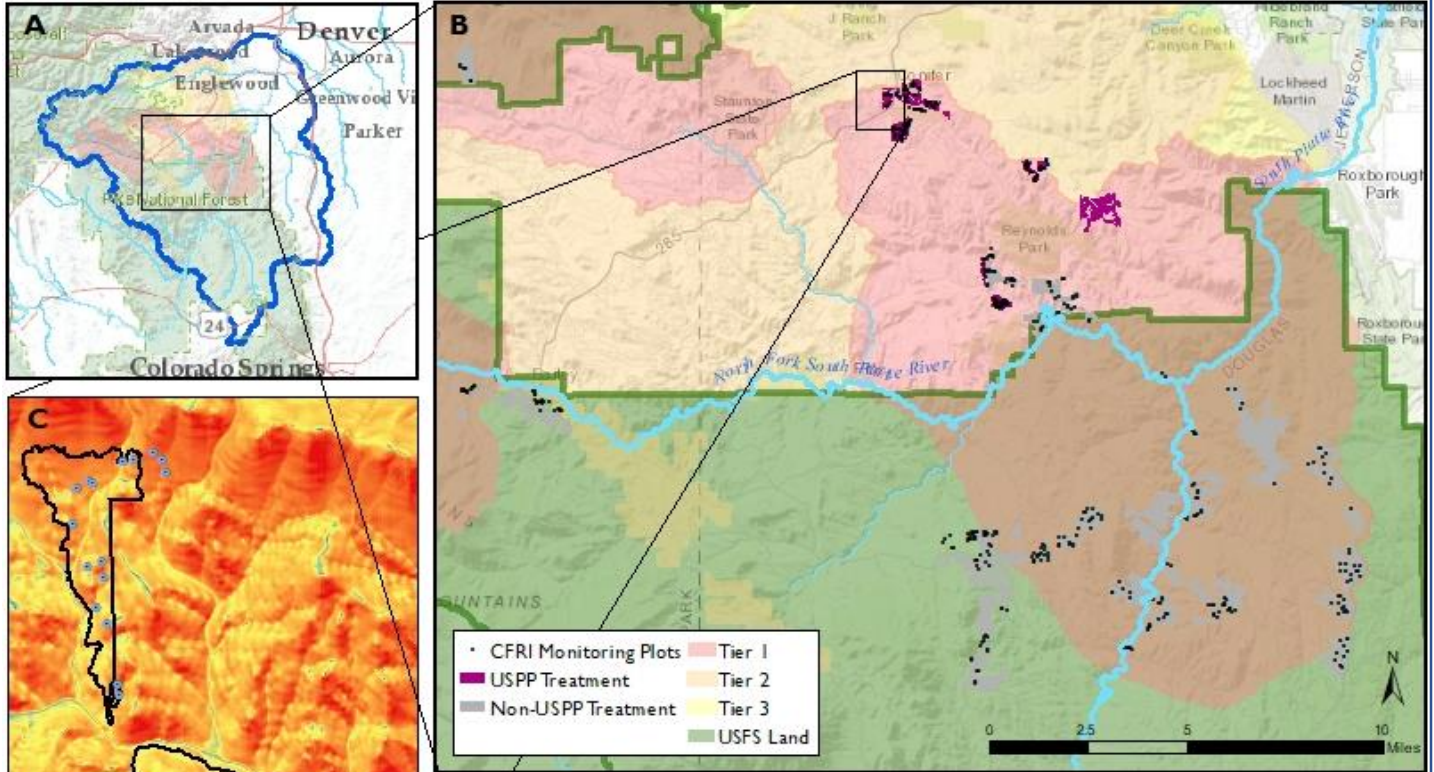




Upper South Platte Partnership Ecological Resilience Monitoring



The Upper South Platte Watershed (650,000ac; Fig A) transmits nearly 80% of water used residentially in the Denver metropolitan area and is home to thousands of landowners in mountain communities. Recent uncharacteristically large and severe

wildfires have damaged water storage and conveyance infrastructure, destroyed homes, and reduced forested area within the watershed.

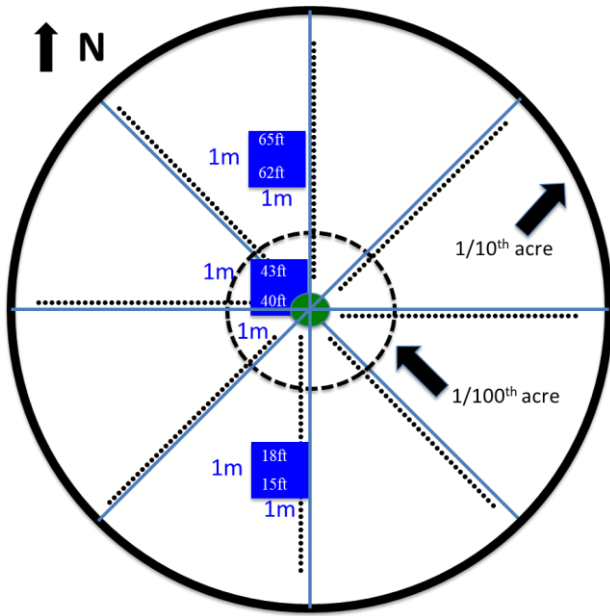
The Upper South Platte Partnership (USPP) works collaboratively to mitigate risks of catastrophic wildfires by implementing forest management on non-federal land. Desired outcomes of management efforts focus on landscape resilience, fire adapted communities, and safe and effective wildfire response. Areas in the watershed at greatest risk for extreme wildfire conditions, within Wildland Urban Interface, and high erosion potential have been prioritized for treatment (Fig B).

Colorado Forest Restoration Institute (CFRI) monitors landscape resilience projects to evaluate contributions towards USPP-wide objectives and inform adaptive management. Sites with greatest potential for learning are prioritized for monitoring (implementation innovations, under documented forest types, etc; Fig C). Since 2016, pre- and post- treatment monitoring has been conducted in **200 plots on 1,040 acres across 8 USPP projects.**



Upper South Platte Partnership Landscape Resilience Management Objectives For Ponderosa Pine and Frequent Fire Montane Forest Restoration Activities

Metric	Desired Condition	Monitoring Type
(1) Mean conifer canopy cover over the sub watershed scale (HUC 12)	Average 30% (range 0-100%) within currently forested areas over the entire 55,000 acre sub-watersheds by the year 2030	Remote Sensing
(2) Reduction of conifer tree cover, while maintaining a complex mosaic of forest canopy cover at stand scales	Maximizing variability within each project from 0-100%, with 30% average conifer canopy cover (acceptable average 10-40%) within each project.	Remote Sensing and/or Field Based Measure
(3) Arrangement of conifer canopy cover within treated stands	~25% of canopy cover in individual trees ~75% of canopy cover in groups of 2+ trees	Field Based Measure
(4) Conifer species composition	Increased ratio of ponderosa pine to other conifers where present.	Field Based Measure
(5) Forest conditions that support future application of prescribed fire	Limit accumulation of fine woody fuel on the soil surface and minimize or isolate large areas of connected tree crowns.	Field Based Measure, Burn Boss Consultation
(6) Maximum area of high potential for active crown fire within treated area	10 acres average (range: 0 acres to 25 acres)	Remote Sensing



Remote sensing and field based monitoring evaluates project and stand scale forest structure, fuel loading, and understory plant response to management activities.

Field Based Monitoring:

Stand Structure

- Photo points and topography
- Seedling, sapling, and overstory tree species composition, size, and crown position
- Tree canopy cover and distribution of canopy group sizes

Potential Fire Behavior

- Vegetation heights and height to live crown
- Coarse and fine woody fuel loading

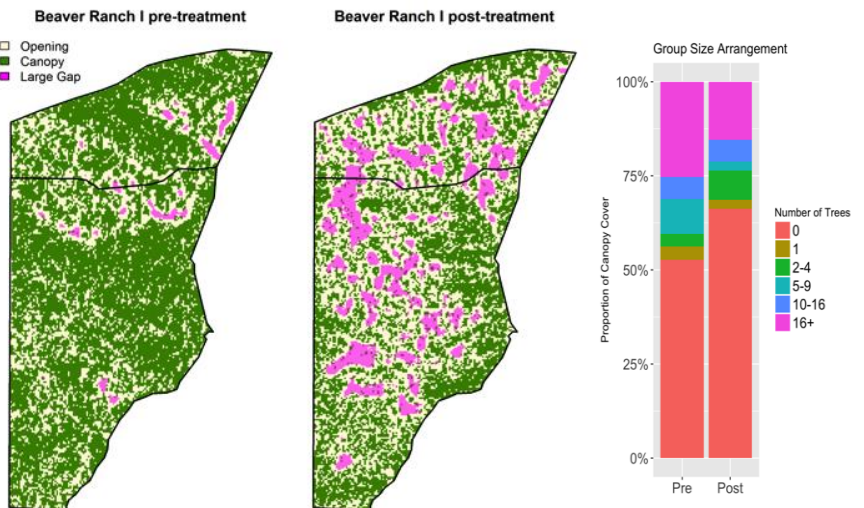
Diversity and Soil Erosion

- Understory plant richness and cover

Remotely Sensed Monitoring:

Project scale forest structure

- Continuity of tree canopy cover
- Size, complexity, and arrangement of openings
- Origin of openings: created or expanded by management activity



Do you have questions or want more information? Please contact
Jeffery.cannon@colostate.edu. CFRI-1902.