

# Project Outline: Spatial Heterogeneity

LR Sub-Team Name: **Spatial heterogeneity subgroup**

Timeline: to December 2014

Sponsors: Front Range Roundtable – LR Team

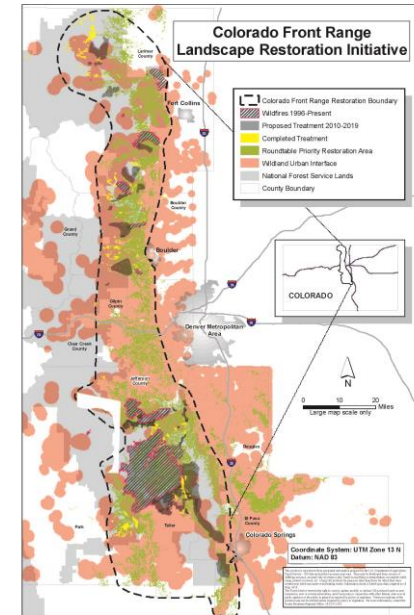
## CY 2014

### Goals

1. To refine spatial heterogeneity desired conditions to facilitate 2. and 3.
2. To develop methods for monitoring stand-scale spatial heterogeneity
3. To develop methods for monitoring landscape scale spatial heterogeneity
4. To undertake spatial heterogeneity monitoring at stand- and landscape-scales using aerial imagery for 2010-2013 treatments

## Why this? Why now?

- **Situation:** Under the awarded Front Range Collaborative Forest Landscape Restoration Project (FR-CFLRP), the Landscape Restoration Team of the Front Range Roundtable is required to set desired conditions and monitor treatments for the achievement of those desired conditions. The initial FR-CFLRP monitoring plan (Clement and Brown 2011) recognizes the Landscape Restoration Team's desire to "Establish a complex mosaic of forest density, size and age" at the stand and landscape scales. There is general agreement in the science community that fire suppression, historical grazing and logging and climate change since the time of settlement have altered the lower montane ponderosa dominated forests of Colorado's Front Range. There has been an increase of fuels through increased recruitment of trees, homogenization of forests at the landscape scale through the filling in of forest openings, and over the last couple of decades increased risk of large uncharacteristic stand replacing wildfires. Furthermore, recent research has suggested that these forests were likely to have had a fine-scale "groupy-clumpy" pattern within stand, with a mixture of groups of trees, openings and single isolated trees.
- **Complication:** However, this desired conditions statement in Clement and Brown (2011) is very broad, and therefore it is difficult to monitor and judge if treatments have successfully achieved this desired conditions. Further, the initial monitoring plan does not fully describe which metrics we will use to monitor spatial heterogeneity, or the methods used to evaluate these metrics. Therefore, there is need to further refine these aspects of the monitoring plan.
- **Resolution:** The Spatial heterogeneity subgroup was formed to refine these statements, and develop methods to monitor spatial heterogeneity.



## Scope

### CY 2014 Deliverables

1. CFRI whitepaper describing spatial heterogeneity desired conditions at stand and landscape scales (In draft, Dickinson et al 2014)
2. CFRI whitepaper outlining protocol for monitoring stand-scale spatial heterogeneity using aerial imagery (Published, Pelz and Dickinson 2014)
3. CFRI whitepaper outlining protocol for monitoring landscape-scale spatial heterogeneity (In process)
4. Undertake monitoring for the 2010-2013 treatments (Analysis this summer by Emma Giles)
  - a. CFRI Report
  - b. Peer-reviewed journal article?