Monitoring fine-scale spatial patterns of restoration treatments in the Uncompahgre Plateau

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Background

- Large, severe wildfires impact many dry forests of the western U.S prompting forest managers and stakeholders to take action.
- The Uncompahgre Partnership (UP) seeks to reduce fire risk and increase forest resilience to wildfire through the Collaborative Forest Landscape Restoration Program (CFLRP).
- Mechanical thinning treatments of the UP CFLRP in ponderosa pine dominated forests focus on restoring historical elements of spatial patterns:
  - Creating open conditions
  - Creating ‘mini-meadows’
  - Increasing spatial heterogeneity
- Complex and variable spatial patterns drive many processes including:
  - Environmental conditions
  - Biodiversity
  - Forest growth and dynamics
  - Wildlife habitat availability
  - Fire behavior

Methods and Results

A. We examined four UP mechanical thinning treatments including (1) Unc Mesas, (2) Upper Sawmill, (3) Lower Sawmill, and (4) Monitor Mesa units.
B. We acquired aerial imagery from the National Agricultural Imagery Program (NAIP).
C. We used supervised maximum likelihood classification to classify imagery as canopy (green) and openings (yellow).
D. We delineated ‘mini meadows’ as openings larger than 24 m (80 ft) in diameter (magenta).

Monitoring questions

Given the large past and future investment in this and similar restoration programs, we examined:
1. Are treatments meeting desired goals related to creation and maintenance of complex spatial patterns?
2. How do restoration outcomes relate to historical conditions as described in previous studies?

Discussion

- UP treatments are moving forests toward collaboratively-defined desired conditions by creating more open, complex landscapes.
- Historical conditions can provide further context to landscape changes.
- Matonis and others (2014) reconstructed historical (1875) forests and found meadow coverage may be as high as 65%.
- Extensive meadows may have been the result of widespread moderate-to high-severity fires (Baker 2017).
- Continuous deliberation on desired conditions in the face of scientific understanding is an important part of an adaptive management (AM) approach.
- Additional monitoring is warranted to understand the ecological function of meadows over time.

References