

Onaqui, Utah, Sagebrush-Cheatgrass Site

Preliminary Overview of Pre- and 1-yr Post-treatment Results

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- Key objective: can we quantify thresholds of condition in order to predict whether a site will recover to a desirable condition on its own following treatment or will degrade without active restoration?
- Plot-level treatments:
 - *Control* – no treatment
 - *Fall controlled burn*
 - *Mow* – mechanically thin ≈50%
 - *Tebuthiuron* – chemically thin ≈50%
- Subplot-level treatment:
 - *Plateau pre-emergent herbicide*
- Study design based on repeated monitoring of permanent subplots
- Subplots span a wide range of conditions based on cover of residual perennial grasses
- We are in the process of collecting first-year post-treatment data now so this overview is based on Utah results
- Of 7 sagebrush-cheatgrass sites in the network Onaqui is the only one that is not on basalt, but in an ordination (based on soil characteristics, life form cover, climate, etc.) it does not stand out as unique
- Variety of studies, including: Vegetation/fuels monitoring, butterfly abundance/diversity, ant seed preferences/abundance, soil moisture (4 stations, each with 4 depths under each of squirreltail, Sandberg's, sagebrush, bare ground), soil resin stakes (same micro placement scheme as soil moisture), weather station (only in control plots); rodent plots (3 grids/plot, 50 traps/grid, trapped 3 times/year for 3 nights in a row)
- DWD, 10-hr, 100-hr, and 1000-hr: decreased in burn, increased in mow
- Live shrub density: decreased in burn, unaffected in other treatments
- Dead shrub density: increased in mow and to some extent in tebuthiuron
- Shrub cover: unaffected by plateau, greatly decreased by fire, decreased to 50% in mow; no detectable change yet in tebuthiuron
- Big sagebrush seedling density: decreased in burn, increased in mow
- Live herbaceous fuel: much less in 2007 than 2006; appears to increase in mow; no plateau effect; not clearly affected by burn
- Perennial grass density: increased in 2007, especially in mow; no plateau effect
- Perennial grass cover: decreased in 2007; no plateau effect
- Annual cover: cheatgrass greatest in control; cheatgrass and especially annual forbs greatly reduced with plateau
- Litter ground cover: reduced by burn, increased by mow
- Harvester ant foraging:
 - Which seeds do ants collect and move?: 90% non-natives, especially *Ceratocephala testiculata*, 10% natives
 - How do ants respond to seeding post-fire?: Ant foraging behavior (# of seed patches detected and emptied) increased strikingly in response to fire
- Rodent trapping: in burn a reduction in rodent diversity but large increase in kangaroo rat activity (*Dipodomys ordii*)