Assessing Soil and Vegetation Recovery Following the 2005 School Fire – 4 years post-fire –

Umatilla National Forest

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Overview

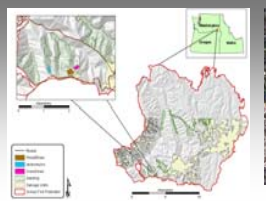
We have completed four years of research on the effects of burn severity and post-fire management (native seeding, mulching, timber salvage) on native vegetation and invasive plants. One year of field sampling remains, and by the conclusions of the project we expect to have significant findings on: 1) the influence of burn severity and pre-fire tree density; 2) the effect of salvage logging; 3) the effectiveness of erosion control treatments; and 4) the ability to map vegetation with satellite imagery. The 2005 School Fire burned 49,515 ac in canyon grasslands and mixed conifer forests. Post-fire rehabilitation included extensive seeding with native grasses, salvage logging and experimental mulch treatments to reduce sedimentation.

Canada thistle patch

Yellow star thistle

Field trip to salvaged site

Erosion response



Wood straw

Native seed

Grain straw

- Very little erosion
- Control maximum
  - 2006 0.5 tons/acre
  - 2008 0.04 tons/acre
- Low rainfall intensity and amounts
- Strong vegetation response on all sites
- Less than 10% soil exposure in fall 2008
- Weak soil water repellency across fire

Field monitoring of vegetation response

- Weeds before fire = more weeds after fire
- Increased risk of weed invasion on salvaged sites
- More non-natives on high severity sites (max 2% cover)
- Seeded native grasses established well
- Non-seeded, non-salvaged sites recovering to pre-fire conditions
- Mulch treatments seem to be affecting native vegetation and tree seedling recovery

Low burn severity
Low pre-fire density

High burn severity
Salvaged, seeded

Moderate burn severity
Seeded, no salvage

High burn severity
Salvaged

Remote sensing analysis

- Example of a straw patch
- Collected weed/vegetation patches with GPS
- Spectral signatures
- Second Quickbird image in 2009