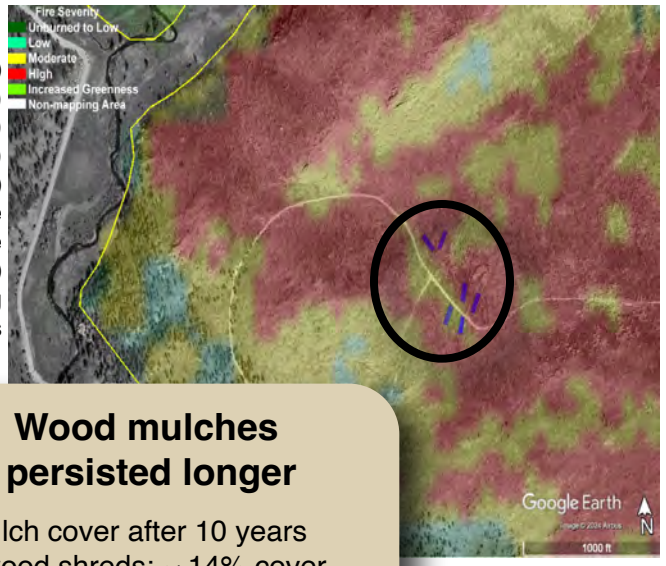
Long-term ecological impacts of post-fire mulching for erosion control

2024 HAR
Summer Field Tour

Installed July 2012
6 blocks with
8 plots (3- x 7-m) each

Mulches (3)
Wheat straw (weed free)
Wood shreds (local chips)
Wood strands (WoodStraw)
Application rates (2)
BAER standard rate
150% of BAER rate
Controls (2)
No mulching
Synthetic (rubber tire shreds

High Park Fire - June 2012



Managers are faced with several options for post-fire erosion control, and the choice they make could have longer-term impacts on ecological processes and plant community development.

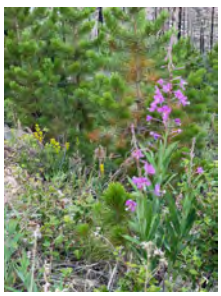
Wood mulches persisted longer

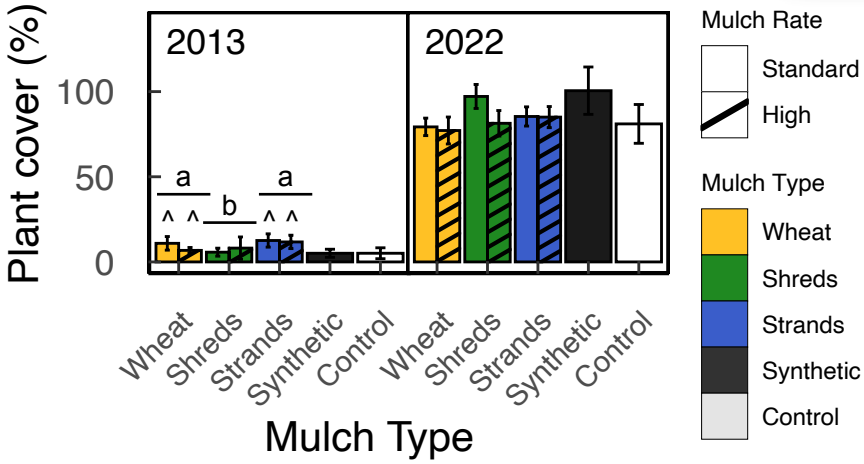
Mulch cover after 10 years
- wood shreds: ~ 14% cover
- wood strands ~ 21% cover
- wheat straw: <0.5% cover

Understory plant communities converged over time

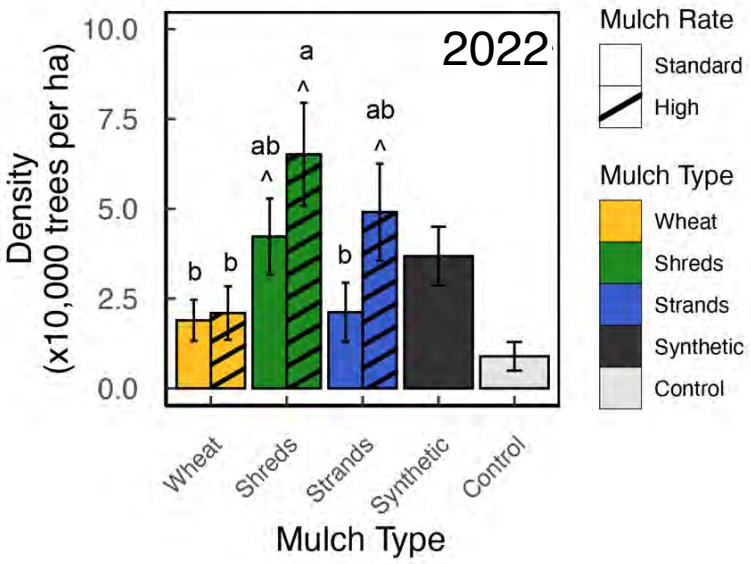
Effects were most pronounced in the first years after mulch treatment.
- Understory plant cover tended to be lowest in non-mulched control plots throughout the study but only significantly so the first 2 years post fire.
- Non-native species were more abundant in wheat straw plots for first 4 years after fire.

By 10 years post fire, mulch had few effects on understory cover or community composition (species & their abundance).





Higher lodgepole pine establishment with persistent mulches



Mulch effects on improving soil moisture is likely driving the tree response.

Inside of plot Outside of plot

Outside of plot Inside of plot

Our experiment was able to isolate the longer-term impacts of mulch type and application rate on soil characteristics, post-fire plant cover, and lodgepole regeneration in a high-severity burned lodgepole pine forest.

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