Lick Creek Demonstration-Research Forest: 25-year fire and cutting effects on vegetation and fuels

Sharon Hood1, 2, Chris Keyes1, Anna Sala1, Duncan Lutes2, Katie Clyatt1, Katelynn Jenkins1
1University of Montana, College of Forestry and Conservation, Missoula, MT
2USDA Forest, Rocky Mountain Research Station, Missoula, MT
sharonmhood@fs.fed.us (406) 329-4818

INTRODUCTION
Knowledge of forest vegetation and fuel dynamics following restoration treatments is essential for managers to understand and prescribe treatments. However, studies of long-term treatment effects in ponderosa pine forests of the Northern Rockies are limited. We are renewing research at the Lick Creek Demonstration/Research Forest on the Bitterroot National Forest, Montana to assess 25-year-effects of burning and cutting restoration treatments in a ponderosa pine-dominated forest. In addition, this area has a photo-series dating from 1909.

OBJECTIVES
(1) How have restoration burning and cutting treatments affected vegetation dynamics?
(2) How have restoration burning and cutting treatments affected fuel dynamics?
(3) How have restoration burning and cutting treatments affected ponderosa pine forest resilience to drought, fire hazard, and mountain pine beetles?

TREATMENTS
• Control
• Shelterwood
• Shelterwood + wet prescribed burn
• Shelterwood + dry prescribed burn
• Commercial thin
• Thin + Fall prescribed burn
• Thin + Spring prescribed burn

TREATMENT EVALUATION
Forest structure and composition
Fuelbed

Vegetation and Fuel Successional Trajectories

Resilience from 2 drought periods
Bark beetle resistance from recent outbreak
Fire hazard over time since treatment

ANTICIPATED PRODUCTS:
(1) Complete 25-year (1991-2016) effects of seven silvicultural cutting and burning treatments on fuels and vegetation
(2) Archived FFI database
(3) Demonstration site
(4) Updated photo-history of the effects of fire exclusion and restoration treatments from 1909 – 2016.

IMPLICATIONS
This project will provide land managers with long-term effects of restoration treatments in Northern Rockies ponderosa pine/Douglas-fir forest to help guide future forest restoration efforts, including:
• Treatment longevity
• Resilience to drought
• Resilience to bark beetles
• Fire Hazard
• Forest and fuel dynamics

Shelterwood + wet prescribed burn treatment 24 years later.

Commercial thin + fall prescribed burn treatment 24 years later.