

Plumas/Lassen Administrative Study Vegetation Module
Forest Restoration in the Northern Sierra Nevada:
Impacts on Structure, Fire Climate, and Ecosystem Resilience.

Report of Activities during 2008

Project Staff

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OBJECTIVES

The vegetation module of the Plumas-Lassen Administrative Study studies how changes in the forest canopy affect ecosystem functioning, including microclimate, growth and competition of shrubs and juvenile trees, understory diversity, and landscape continuity. Research approaches include stand-level experimental manipulations, measurement of plant growth and survival along existing environmental gradients, and assessment of impacts of routine (i.e., non-experimental) forest management activities.

Research Activities 2008

We monitored microclimate conditions (air temperature and humidity, wind speed), fuels dryness, and soil temperature in twelve plots subsequent to experimental thinning and group selection in 2007.

Results

We viewed the microclimate data on the day when a major fire began (Moonlight fire, Sept. 3-15 2007, 65, 000 acres) to see how the three treatments (untreated control, fuels-reduction thinning, and group selection) behaved. Maximum wind gust speed was slightly higher in the thinned stands than in the controls, and at least twice as high (up to 15 mph) in group selection openings as in controls (Figure 1). In contrast, maximum daily air temperature and minimum relative humidity did not differ among the treatments, perhaps because of the increased ventilation in the thinned stands and group openings (Figure 2 and 3).

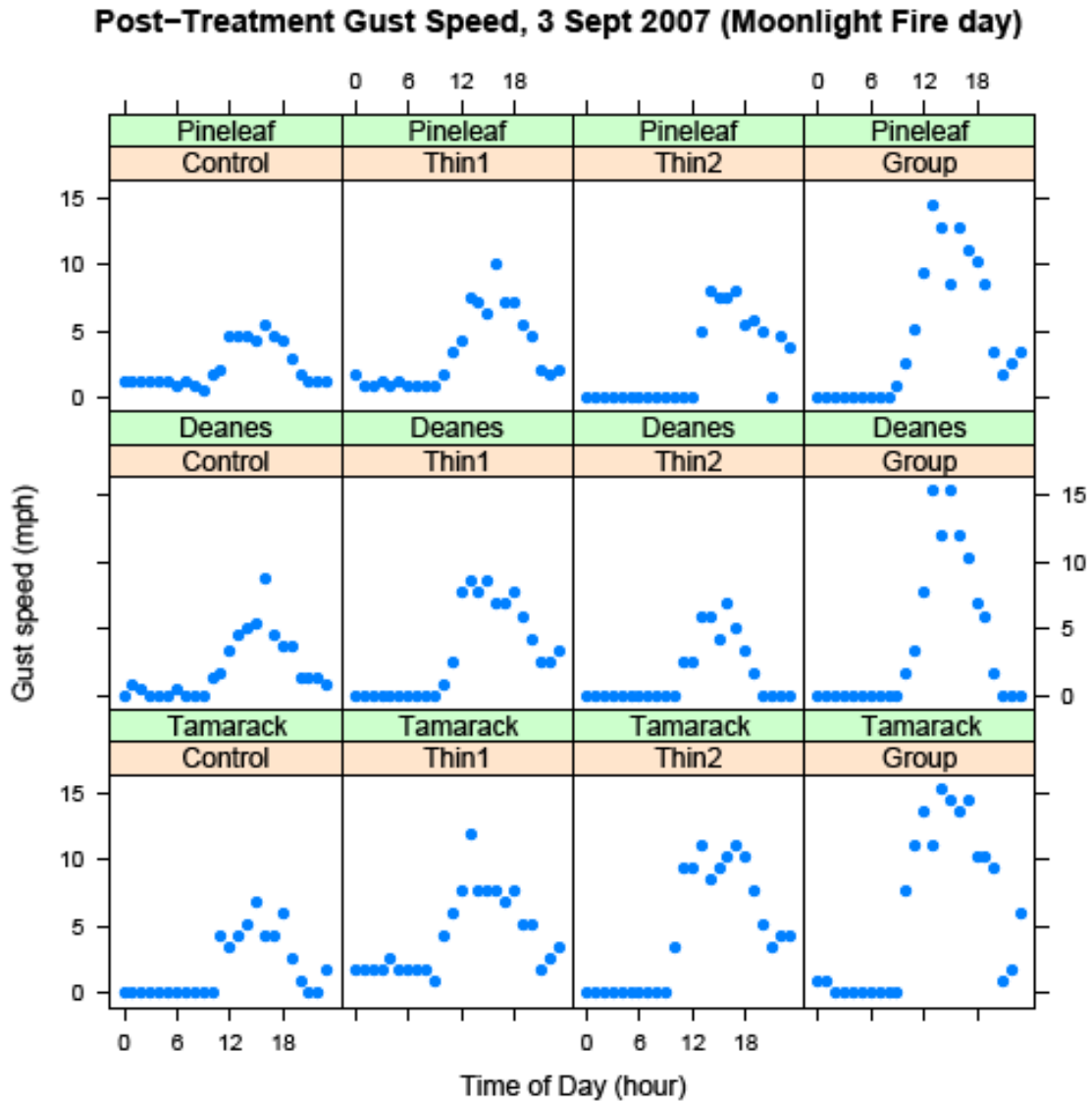


Figure 1. Wind gust speed at 8 feet above ground in experimentally treated mixed conifer stands in Meadow Valley on the day the Moonlight fire began, 3 Sept. 2007. Treatments were control, thinning for fuels reduction (thin1 and thin2), or harvest via group selection (Group). Each row denotes an area where a group of 4 treatments were applied.

Post-Treatment Air Temperature, 3 Sept 2007 (Moonlight Fire day)

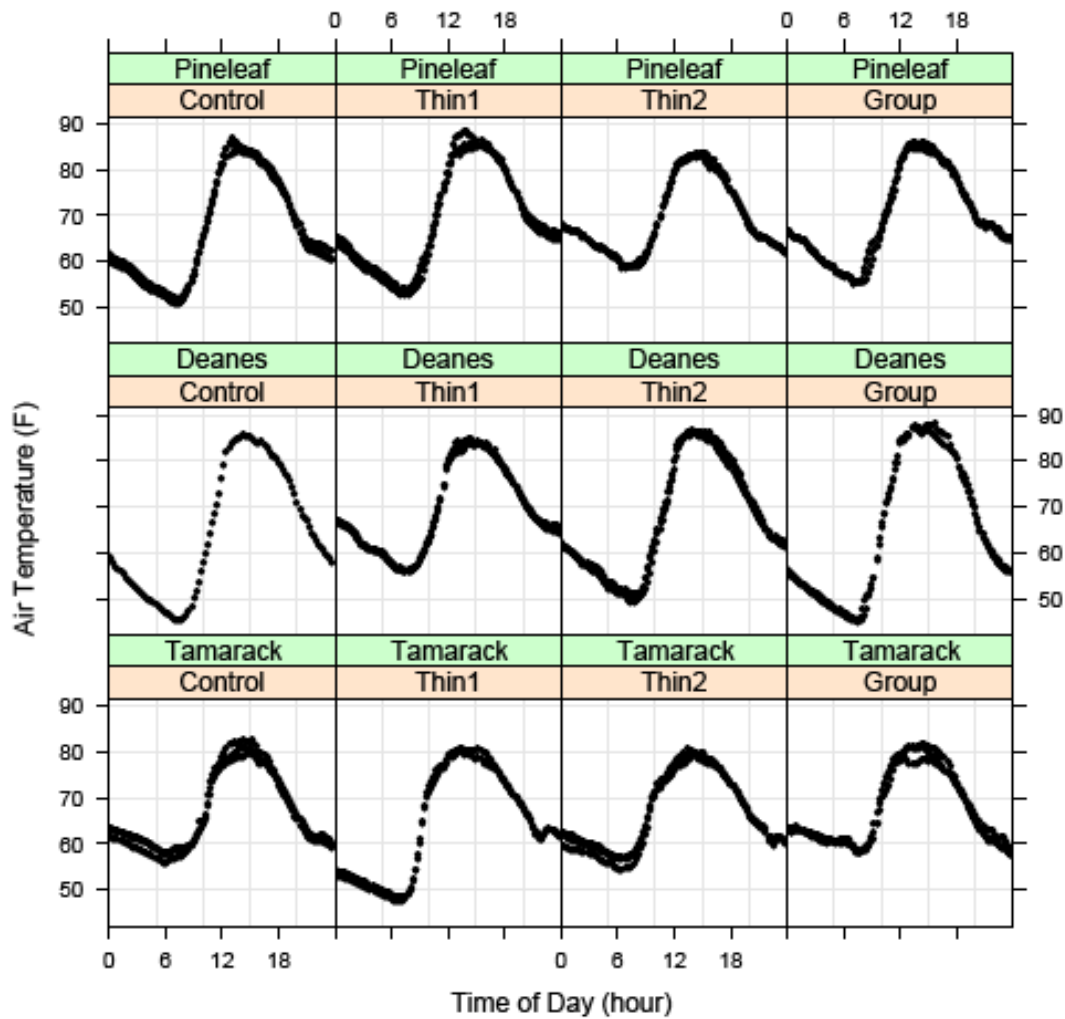


Figure 2. Air temperature at 6 feet about the ground on the day of the Moonlight Fire (3 Sept. 2007), measured in stands in the Meadow Valley area that were either untreated (Control), thinned for fuels reduction (Thin1 and Thin2), or harvested via group selection (Group). Maximum air temperature did not differ among treatments.

Post-Treatment Relative Humidity, 3 Sept 2007 (Moonlight Fire day)

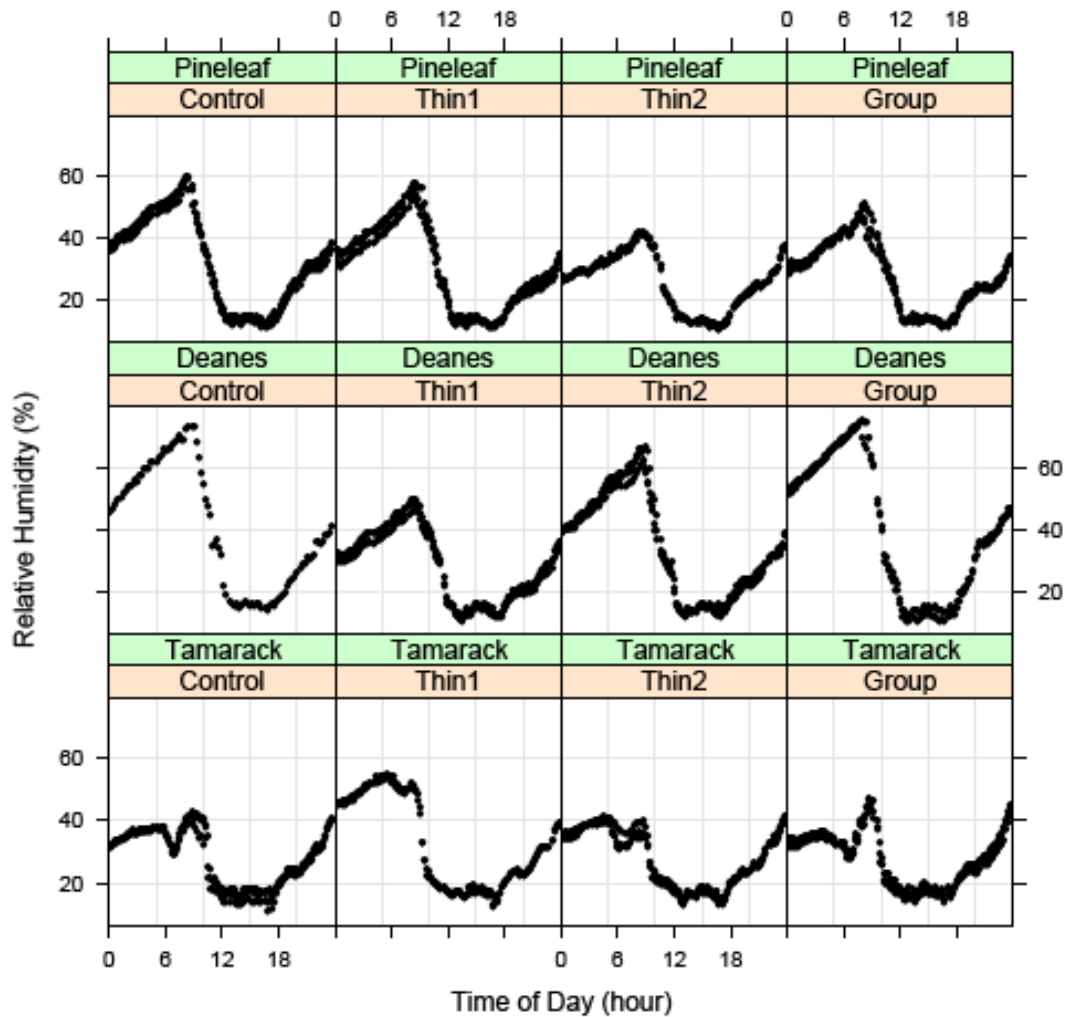


Figure 3. Relative humidity at 6 feet above the ground on 3 September, 2007, in experimental stands in the Meadow Valley area. There is no difference in minimum relative humidity among treatments. See legend of Figure 1 for explanation of treatment and row headings.

Outreach

Plumas-Lassen study symposium, Quincy, CA, April 2008.

Publications (in Review)

Bigelow, S. W., and S. A. Parks. Predicting altered forest connectivity due to group selection silviculture. In review at *Landscape Ecology*.

Bigelow, S. W., M. P. North, and W. R. Horwath. Resource-Dependent Growth Models for Sierran Mixed-Conifer Saplings. In review at the *Open Forest Science Journal*.