

David Little Livestock Range Management Endowment AT THE UNIVERSITY OF IDAHO

2015 Project Progress Report:

Distribution of fuel components in sagebrush steppe-targeted grazing applied to reduce wildfire spread.

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Background

Large and frequent wildfires have plagued southern Idaho over the past decade: many of those fires were several 100,000 acres in size. Fires such as these reduce wildlife habitat in sagebrush steppe, contribute to the expansion of invasive grasses such as cheatgrass, and reduce the amount of forage that is available for livestock grazing. Our research examines the impact of targeted cattle grazing, in the dormant versus peak biomass seasons, on fuel load and rangeland integrity. We will observe how the timing and intensity of grazing affects the plant community, and the impact of grazing on fire behavior, including flame length and rate of fire spread.

Hypotheses and Objectives

The overarching objective is to quantify the effect of peak biomass versus dormant seasons grazing on fuel loads, spatial distribution of fuels, and species composition.

- We hypothesize that cattle grazing during the peak biomass season will reduce overall fuel load, measured at peak fire season, more than cattle grazing in the dormant season.
- We hypothesize that grazing in either season will reduce fuel loads and continuity to the point that fire behavior is reduced as fire moves through the grazed areas.

2015 Field Work:

Our research plots are located in mountain big sagebrush and Wyoming big sagebrush the Reynold's Creek watershed in Owyhee County, ID. Twelve weeks of vegetation monitoring, grazing, and prescribed burning were completed this summer and fall to finish the data collection. The summer grazing took place in June and July with monitoring of 36 plots and grazing of 24, 12 each of low and moderate utilizations. Ten heifers from the local land owners Jerry Hoagland and Brad Huff's herd were used to graze these plots. Fall monitoring and grazing took place from the end of August through September. Again, 24 plots were monitored and grazed, 12 each at low and moderate utilizations, and half of each control plot was monitored to assure no significant vegetation growth took place after initial monitoring. Again, heifers from Hoagland and Huff's herd were used for fall grazing.

Prescribed Burns:

On August 10, 2015 the Soda Fire started burning in Owyhee County; it was not contained until the August 25th, and a little over 279,000 acres burned. Luckily, this fire missed our study area by less than a mile. Due to this fire, we received notice that all BLM prescribed burns scheduled within the County had be put on hold for two to three years. We challenged this ban with a powerful letter explaining the need and urgency of this project; with significant pressure from BLM Bose District fuels specialist Lance Okeson, we were able to secure permission for BLM fire crews to assist with our prescribed burns.

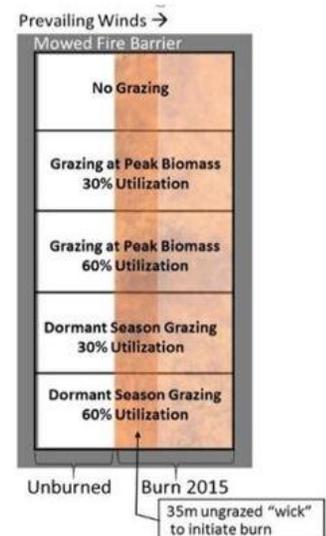


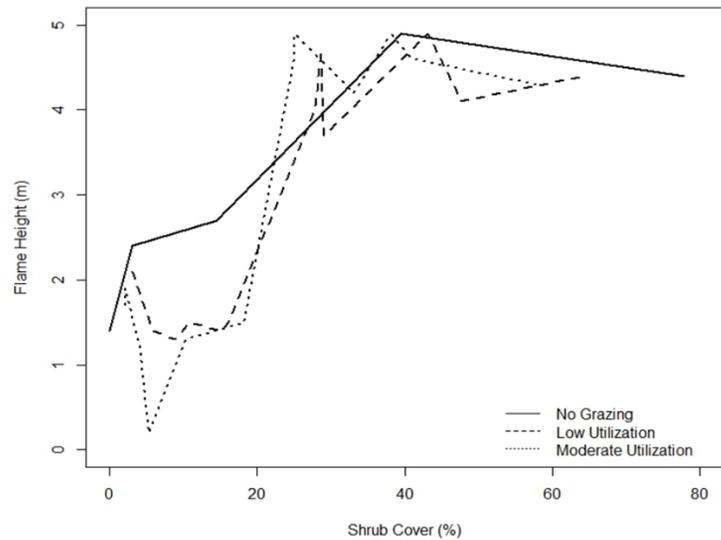
Figure 1. The plot layout for grazing scenarios and burn treatment

On September 28th and 29th, we burned half of each replicate to gain real-world data of changes in fire behavior from livestock grazing (Figure 1). Twenty-eight BLM fire personnel, along with engines and dozers, were on site to complete the burns. Five observers recorded fire behavior for each replicate and three video cameras were placed around the replicate to obtain video of each prescribed burn. The prescribed burns proceeded according to plan and without incident.

Preliminary Results

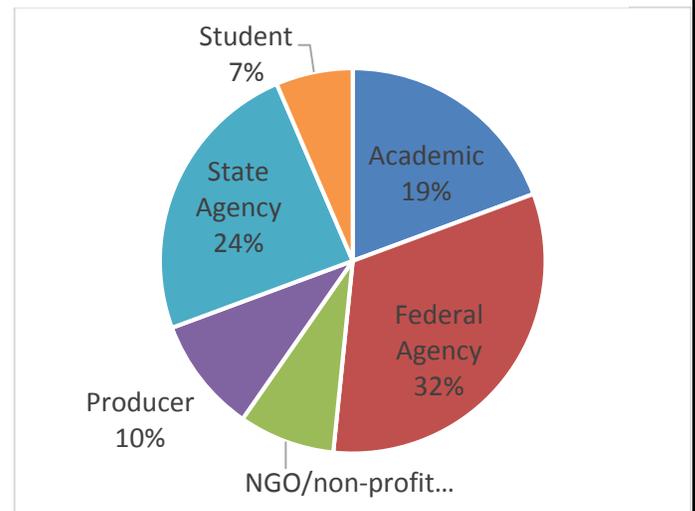
Initial vegetation monitoring showed that our lower plots in Wyoming big sagebrush produced an average of 353 lbs/ac, ranging 186 -791 lbs/ac; our upper plots in mountain big sagebrush produced an average of 1050 lbs/ac, ranging 593-2190 lbs/ac. Utilization of cattle grazing in the summer was 38% and 56%, low and moderate respectively, with fall utilization being comparable at 37% and 50%, low and moderate, respectively (Tables 1).

While our burn data is still being reviewed, we did find that grazing was effective at reducing flame heights in grazed plots with low shrub cover. As shrub cover increases, the effect of grazing decreases and in plots with >30 % shrub cover grazing did not reduce flame heights. According to observations, in areas with high shrub cover, fire carried equally well though the shrub regardless of the amount of fine herbaceous fuels beneath and between the shrubs.



Field Tour

Results from this project were presented at a field tour following the University of Idaho Rangeland Center Fall Forum, *Fuel-Fire-Future*, held October 22nd-23rd, 2015. The field tour started near Castleford, ID, and covered areas burned in the 2007 Murphy Wildland Fire Complex and the 2012 Kinyon Road Fire. Altogether, 62 participants attended, including local producers, federal and state agency personnel, academic professionals, non-profit organizations and students. Impacts of livestock



grazing on flame lengths and fire rate of spread measured at the Reynolds Creek prescribed burns conducted on September 28th-29th were some of the highlights presented by graduate student Chris Schachtschneider and assistant professor Eva Strand during the field tour.

Table 1 Treatment landscape average characteristics and standard error for no grazing control, and low and moderate livestock utilization treatment blocks in Reynolds Creek ID. Herbaceous biomass displayed on dry matter basis.

	Treatment	Shrub Cover (%)	Shrub Height (cm)	2014 Pre-Grazing Herbaceous Biomass (kg ha ⁻¹)	2015 Pre-Grazing Herbaceous Biomass (kg ha ⁻¹)	2015 Utilization (%)
	No Grazing	27.6 ± 6.9	91 ± 10	514 ± 90	887 ± 143	Not Examined
Summer	Low	22.1 ± 5.7	76 ± 11	505 ± 103	778 ± 128	43.8 ± 1.4
	Moderate	24.4 ± 5.7	84 ± 11	491 ± 70	818 ± 99	60.1 ± 2.0
Fall	Low	21.3 ± 4.6	93 ± 11	513 ± 97	681 ± 118	31.9 ± 2.1
	Moderate	18.2 ± 3.9	86 ± 10	585 ± 113	729 ± 118	52.9 ± 1.4

