

Fuel Consumption During Prescribed Fires in Big Sage Ecosystems¹

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Introduction

Fuel consumption was evaluated for a series of operational prescribed fires in big sage (*Artemisia tridentata*) ecosystems throughout the interior West. Pre-burn fuel conditions (composition, loading, arrangement, and moisture content) and day-of-burn environmental conditions (temperature, relative humidity, wind, and time-since-rain) dictate fire behavior and subsequent fuel consumption. The amount of fuel available to burn, which is influenced by season of burn, site productivity, time-since-last-fire, grazing, and environmental conditions, is the most important factor controlling consumption. Fuel consumption can be manipulated to some degree, and poor burning conditions can be mitigated in some cases, by adjustments to firing techniques.

Methods

Relationships gleaned from these fuel consumption data will be incorporated into a predictive model and built into the software program CONSUME 3.0 (currently under development), a fire management and planning tool that predicts fuel consumption and emissions during prescribed and wildland fires.

Discussion

Future research will seek to refine, test, and expand on previous observations. New experiments will be designed to address questions about the effects of small changes in environmental conditions and season of burn on fuel consumption. Future work will also evaluate the effects of prescribed fire in shrub-type ecosystems composed of different species.

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