A PORTABLE BURN DEVICE FOR CONDUCTING FIRE EFFECTS STUDIES

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ABSTRACT

We have developed a portable burn device that simulates the characteristics of natural fires with precise control over fire intensity (the amount of heat individual plants receive). The device consists of a propane-fueled, 21-centimeter-diameter furnace mounted to a tripod assembly with adjustable height settings. Thermocouple probes attached to a data logger and a computer are used to record and display time and temperature data. Maximum temperature and duration of fire treatments are manipulated using the burn tool to generate time and temperature curves that replicate those observed in natural fires. Statistical comparisons of heat treatments can be made by analyzing mean time and temperature integrals. With this equipment, researchers can control for fire intensity while conducting fire effects studies on individual species. We are using the burn device to study how time of fire and fire intensity interact to influence culm production of wiregrass (*Aristida stricta*), a dominant ground cover species in longleaf pine (*Pinus palustris*) communities of the southeastern United States. We applied high-intensity (maximum fire temperature 500–600°C) and low-intensity (maximum fire temperature 200–250°C) burn treatments to individual wiregrass clumps in July and August 1997 and observed significantly greater numbers of culms among plants burned in July. There was no significant difference in culm production between fire-intensity treatments. We hypothesize that extended drought conditions following the August burn led to lower culm yields.

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AN EXPERIMENTAL APPROACH TO ASSESS THE EFFECT OF CORRIDOR WIDTH ON FIRE MOVEMENT ACROSS NORTH FLORIDA LANDSCAPES

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ABSTRACT

Much has been written about the role of corridors in the movement of animals through landscapes. However, this focus fails to capture the essence of other ecological processes critical to ecosystem function. Little attention has been paid to the role of corridors with respect to other ecological processes, such as energy flow and disturbance. The objective of this research is to explore the relationship between spatial configuration and process conveyance. In the southeastern United States, fire is an important ecological process affecting the composition and distribution of many forest types.

An experiment was conducted in north Florida to determine the influence of corridor width on the spread of fire in longleaf pine sandhill landscapes. Each experimental unit consisted of a central patch with radiating corridors of different widths. We are hypothesizing that fire conveyance in experimental landscapes will be faster and sustain a greater extent of burn in wider corridors.

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