Prescribed Fire Effects on Northeast Florida Upland Plant Biodiversity and Abundance

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Main Questions or Issues That You Addressed

The effects of fire on local scale mean plant species diversity were compared by examining burned and unburned portions of three fire-dependent communities in northern Florida to determine if there is an effect of prescribed fire on alpha (local level) biodiversity.

Location and Ecosystem Investigated

The study area was located within Pumpkin Hill Creek Preserve State Park, a 1577-ha state park located in Duval County, Florida. Twenty-one different natural communities, as defined by the Florida Natural Areas Inventory (FNAI) are found within the park boundary, three of which were evaluated during this study: sandhill, mesic flatwoods, and scrubby flatwoods.

Key Findings of Your Research

Alpha biodiversity was not significantly different ($p=0.433$) between burned and unburned fire-dependent plant communities, suggesting that prescribed fire does not affect plant species diversity in these communities. However, the application of prescribed fire did result in changes in abundance of a few species, particularly with species such as *Dicanthelium acuminatum*, *Quercus myrtifolia*, and *Vaccinium myrsinites*, that respond positively to fire.

How Did You Answer the Main Questions or Inform the Issues?

The three upland habitats evaluated during this study (sandhill, mesic flatwoods and scrubby flatwoods) were selected because they are fire-dependent, relatively common throughout Florida, and the preserve includes both burned and unburned portions of each community located within the study area. Fire disturbance was based upon whether or not the unit has experienced fire (either wildfire or prescribed fire) at least once within the natural fire return interval as defined for the respective community type. Vegetation species composition data were collected using randomly established 25-m line transects (Sutherland 1996). Each plant that intersected a transect was recorded to the species level, if possible, and to the genus level at a minimum. Two indices of alpha diversity were used to compare treatment plots, Simpson's and Shannon-Weiner.

How Might/Will It Influence Fire Management Decisions or Practices?

Areas within the preserve have not experienced fire beyond recent prescribed fire application in the last forty years, well outside the natural fire return interval. The lower available initial species composition may have

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influenced the results of this study, suggesting restoration of unburned fire-dependent communities will require repeated fire application.

Who Is the Main End-user of Your Research?

Land managers

Congress Session

Fire Ecology and Effects