

FUELS MANAGEMENT AND FIRE BEHAVIOR

RESPONSES OF LONG-UNBURNED COASTAL SCRUBBY FLATWOODS TO PRESCRIBED BURNING

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ABSTRACT

Although prescribed burning is an important management tool for ecosystem restoration in Cedar Key Scrub State Reserve (CKSSR), this is the first study that analyzes the effect of prescribed burning on plants. In addition, this is the first research carried out on plant community response to prescribed fire in coastal scrubby flatwoods on the west side of Florida. The objective was to document recovery modes and structural and compositional changes in the post-burn community. To achieve this objective, a site analysis was needed to determine if treatment and control sites were ecologically similar before burning. The experimental design consisted of two treatment and two control sites that were sampled before and after burning from December 2003 to August 2006. Pre-burn vegetation samples were conducted one time in all sites, and post-burn vegetation samples were carried out every 3 months for a 12-month period. Fifty quadrats (each 4 m²) per site were assessed in each sampling. A cluster analysis in combination with an ordination technique and a *F*-ratio test (with the respective multiple comparison test) was used to carry out a site analysis. Statistically, treatment and control sites in CKSSR were ecologically similar, and they were compared to determine prescribed burning effects. Resprouting was the main way of surviving and recovering from fire by the majority of the species, and almost all of the dominant species reached pre-burn levels during the 12-month period. This fast recovery of the vegetation after burning has been reported in the literature but not in 1 year. The Detrended Correspondence Analysis showed that woody species had structural and compositional changes during the first 3 months post-burn, but there were more compositional than structural changes after that. According to the Multi-response Permutation Procedure, the structural changes were significant; therefore, there were significant changes in absolute densities in treatment sites between pre- and 12-month post-burn and between control values and 12-month post-burn as a consequence of prescribed burning. These results will provide guidance to managers in prescribed burning plans to establish a fire return interval according to the recuperation of the vegetation.

Keywords: prescribed fire, recovery modes, scrubby flatwoods, structural and compositional changes.

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