

HERBACEOUS DIVERSITY AND SPATIAL PATTERN IN LONGLeAF PINE COMMUNITIES: A COMPARISON OF NATURAL STANDS AND PLANTATIONS

Randall S. Mejeur

Department of Botany, University of Georgia, Athens, GA 30602

Joan L. Walker and Brian P. Van Eerden

U.S. Department of Agriculture, Forest Service, Southeastern Forest Experiment Station, Department of Forest Resources,
Clemson University, Clemson, SC 29634

ABSTRACT

Conversion of natural longleaf pine (*Pinus palustris*) stands to plantations is generally thought to lead to dramatic changes in species composition and structure of herbaceous vegetation. We tested that prediction by quantitatively comparing herbaceous communities on xeric sands in natural stands and 30-year-old pine plantations at the Carolina Sandhills National Wildlife Refuge, Chesterfield County, South Carolina. All individuals of each herbaceous species, excluding northern wiregrass (*Aristida stricta*), were mapped in 6 10 × 10-m plots for each stand type. Spatial structure was analyzed using Ripley's K(t). Species richness and total abundance were analyzed using analysis of variance (ANOVA). In 5 10 × 10-m plots for each stand type, wiregrass cover was also estimated using 40 1-square-meter quadrats and analyzed using ANOVA. Plantations had significantly lower wiregrass cover than natural stands, but were not significantly different in species richness or total individuals. Herbaceous communities in four of the 6 plantations exhibited spatial patterns similar to those of natural stands; significant clumping occurred at the same spatial scales. This result suggests that herbaceous communities found in the xeric sandhills are resilient to the conversion of natural stands to plantations, although rare species and shallowly rooted species such as wiregrass may be lost. It also suggests that restoration of plantations may only require the reintroduction of wiregrass to approach the characteristics of herbaceous communities in natural stands.

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