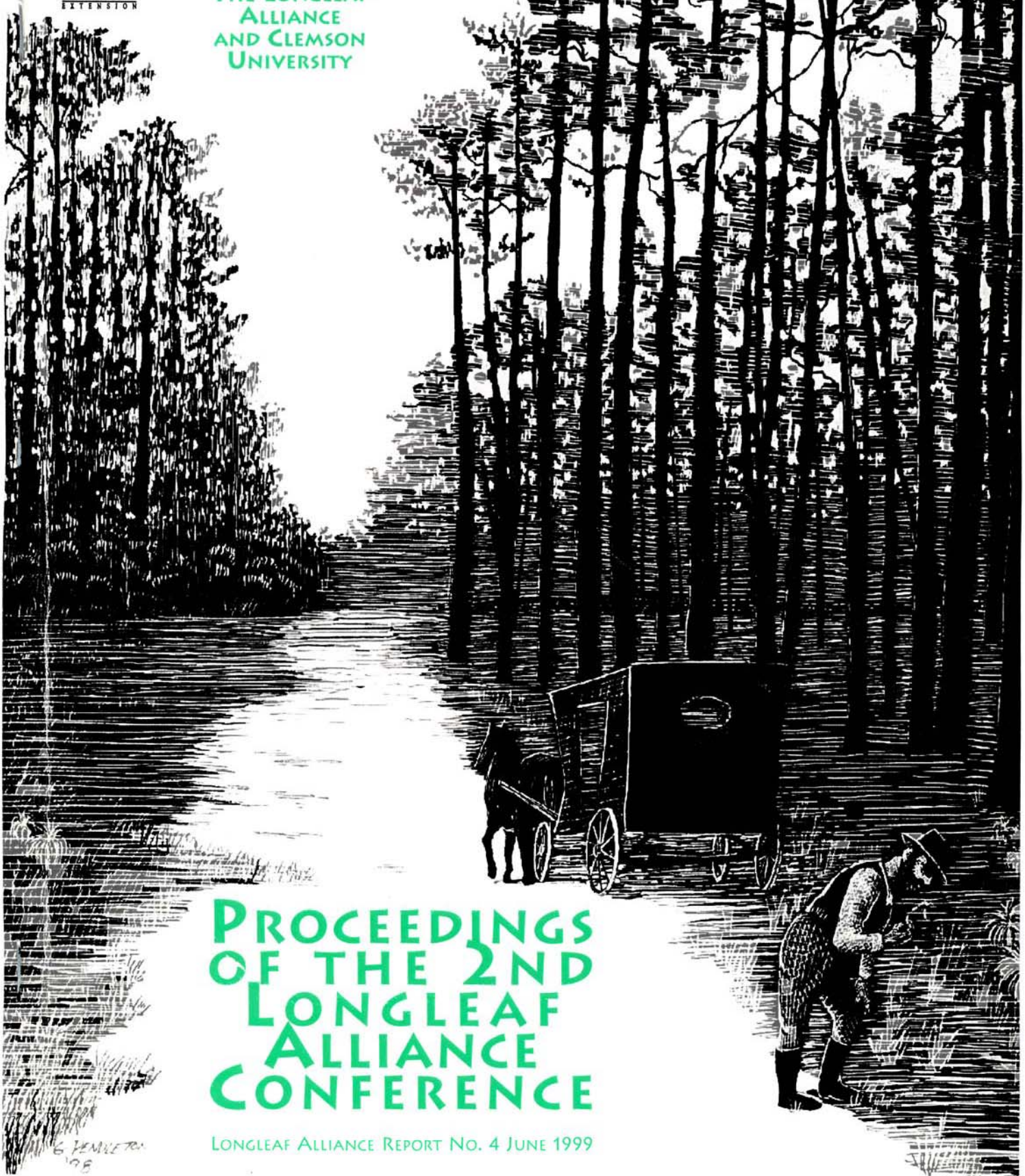




THE LONGLEAF ALLIANCE

CLEMSON  
EXTENSION

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# PROCEEDINGS OF THE 2ND LONGLEAF ALLIANCE CONFERENCE

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## Effects of understory composition and prescribed fire on wildlife species richness and abundance in longleaf pine forests

Mike Conner (Joseph W. Jones Ecological Research Center, Route 2 Box 2324, Newton GA 31770)  
Bruce Plowman (Joseph W. Jones Ecological Research Center, Route 2 Box 2324, Newton GA 31770)  
Steve Jack (Joseph W. Jones Ecological Research Center, Route 2 Box 2324, Newton GA 31770)

**ABSTRACT:** Longleaf (*Pinus palustris*) restoration efforts often emphasize establishment of wiregrass (*Aristida* spp.) dominated understories, but the role of wiregrass to wildlife is unclear. Therefore, we evaluated the relative influence of wiregrass and old-field dominated understories on small mammal and avian species richness and abundance. Because wiregrass is important for its pyrogenic properties, we also evaluated effects of 2 fire treatments on avian and small mammal species richness and abundance. Species richness did not vary among treatments. However, northern bobwhite (*Colinus virginianus*), gray catbirds (*Dumetella carolinensis*), indigo buntings (*Passerina cyanea*), and cotton mice (*Peromyscus gossypinus*) were more abundant in recently burned areas, whereas cotton rats (*Sigmodon hispidus*) were less abundant in these areas. Bachman's sparrow (*Aimphila aestivalis*) was the only species to show a preference for wiregrass.

### INTRODUCTION

Because longleaf pine forests have declined drastically from their historical range (Myers 1990, Stout and Marion 1993), much recent consideration has been given to restoring this forest type. Current longleaf restoration efforts emphasize the importance of wiregrass in the understory (Brockway and Lewis 1997, Streng et al. 1993). The primary justification for wiregrass is operational: wiregrass burns more uniformly and under more diverse weather conditions than does other understory vegetation (Noss 1989, Myers 1990). Unfortunately, wiregrass restoration is costly, and its functional and ecological importance to wildlife is unclear. Therefore, the objectives of this study were to evaluate the relative ecological importance of wiregrass and old-field understories to avian and small mammal communities. Further, because prescribed fire has long been recognized as a wildlife management tool, we also evaluated each understory type under 2 different prescribed fire treatments: first and second growing seasons following prescribed fire.

### METHODS

We evaluated 4 understory-prescribed fire combinations: (1) old-field understory, second growing season following prescribed fire (OF2); (2) wiregrass understory, second growing season following prescribed fire (WG2); (3) old-field understory, first growing season following prescribed fire (OF1); and wiregrass understory, first growing season following prescribed fire (WG1). All sites were burned between February and May during either 1997 or 1998. Mature longleaf pines dominated the overstory of all sites.

We used fixed radius (50 m) point counts to census birds. We placed 30 points in wiregrass and 30 points in old-field dominated understories. To minimize observer bias, each point was visited 4 times by  $\geq 3$  different observers. All points were sampled within 3 hours of sunrise. Upon arriving at a sample point, observers waited 3 minutes and then counted all birds for 5 minutes. Point sampling took place between 20 May and 9 June 1998.

We placed 4 small mammal trapping-grids within each treatment type. Each grid contained 100 Sherman live traps placed at 15 m intervals. Traps were baited with rolled oats and run for 4 consecutive days in each sample area (i.e., there were 400 trap-nights for each sampled area). We recorded species, sex, age (juvenile or adult), capture status (initial capture or recapture), condition of animal (dead or alive) and trap number for each capture. Small mammal trapping occurred between 8 June and 8 August 1998.

We determined if species richness (i.e., number of species present) differed among treatments using a factorial analysis of variance on rank-transformed data. Individual species presence or absence among treatments was tested using a chi-square test of independence. We assessed differences in abundance of individual species among treatments using a factorial analysis of variance on rank transformed data.

### RESULTS

We detected 40 bird species, but 16 species accounted for 88.3% of all bird observations (Table 1).