

# PROCEEDINGS of the Third Longleaf Alliance Regional Conference



## FOREST FOR OUR FUTURE

Restoration and Management of Longleaf Pine Ecosystems: Silvicultural, Ecological, Social, Political and Economic Challenges



Hosted by The Longleaf Alliance, USDA Forest Service, and US Geological Survey  
Alexandria, Louisiana  
October 16-18, 2000



Longleaf Alliance Report No. 5  
July 2001



## **LONGLEAF PINE REGENERATION DYNAMICS IN ARTIFICIALLY CREATED GAPS IN THE APALACHICOLA NATIONAL FOREST, FLORIDA**

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**ABSTRACT:** The group selection system has gained popularity as a means for developing and maintaining uneven-aged structure in longleaf pine stands. Few studies documenting longleaf pine seedling development within canopy gaps are available as a basis for management decisions. The objectives of this study were to test whether seedling survival and growth varied in relation to canopy gap position and site resource availability. Four, 0.2-ha circular gaps were cut in a previously unmanaged 70-yr-old natural longleaf pine stand. Within each gap, four plots were established at each of three positions representing different levels of edge effect competition (i.e., center of the gap (C1), middle (C2), and edge (C3)). Each plot was subdivided and two treatments were randomly assigned (control vs. fertilizer + hand weeded) to examine the interactions between canopy gap position and site resource availability on regeneration dynamics. Containerized longleaf pine seedlings were planted in 25 tree plots (n=24 plots per gap) in February 1999 and monitored for survival and root collar diameter (RCD). PAR levels and soil moisture were determined throughout the growing season. After one growing season, differences in within-gap survival (23% (C1) to 51% (C3)) and RCD growth (2.6 mm (C1) to 1.6 mm (C3)) were apparent. A negative treatment effect was observed on survival (41% control, 31% treated); the opposite was true for growth (RCD = 1.7 mm control, 2.9 mm treated). Although no differences in soil moisture were found among gap positions, PAR levels were highest in C1 (96% of incident) and lowest in C3 (72% of incident).