

Graduate Research Opportunity – Silviculture/Forest Ecology

A graduate research assistantship (Ph.D.) is currently available for the following research project. If you are interested, please contact: Dr. Geoff Wang, Department of Forestry and Natural Resources, 261 Lehotsky Hall, Clemson University, Clemson, SC 29634-0317 (Phone: 864-656-4864; Email: gwang@clemson.edu). For information about Clemson University, visit www.clemson.edu

Project Title: Managing declining pine stands for the restoration of red-cockaded woodpecker habitat

Funding Agency: DoD Fort Benning Army Installation

Co-PI: Joan L. Walker

Project Description: Across the southeast, DoD land managers share the challenge of restoring longleaf pine (LLP) forests to support red-cockaded woodpeckers (RCW) and associated species of concern, while retaining critical habitat features, including mature trees. Restoring longleaf pine is readily accomplished if existing trees are clearcut and seedlings planted. However, managers need alternative protocols that restore longleaf on sites where canopy pines are retained. The need for such protocols are critical at Fort Benning, Georgia, where as many as 70% of the active RCW cavities are located in mature loblolly pine (LBP) stands with trees that are senescing at an alarming rate. Because LLP seedlings do not thrive under closed canopies, restoration protocols most likely will indicate partial canopy removal. The overall goal of the project is to develop protocols for restoring LLP to stands currently occupied by declining LBP. We will conduct field experiments to develop an optimal silvicultural system that allows best LLP restoration while at the same time retaining mature trees and enhancing the herbaceous ground layer. There are four specific objectives:

- (1) Quantify the effects of the amount and spatial arrangement of residual (after management thinning) LBP trees on (a) survival and growth of residual canopy LBP and of planted LLP, (b) ground-layer vegetation composition and structure (which comprise fine fuels), and (c) resource availability (light, foliar nutrients) to planted pines and ground-layer vegetation.
- (2) Quantify cultural treatment effects on the survival and growth of planted LLP and on ground layer structure and composition. [“Cultural treatments” refer to treatments that may improve growth responses of planted seedlings.]
- (3) Quantify the effects of canopy gap size on resource availability (light, soil moisture, available nitrogen) and growth of planted LLP along a north-south transect within experimental gaps.
- (4) Quantify the effects of canopy and cultural treatments on fine fuel production, fire behavior, and short-term fire effects.