

SPIDER (ARANEAE) RESPONSES TO FUEL REDUCTION IN A PIEDMONT
FOREST IN UPSTATE SOUTH CAROLINA

A Thesis

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by

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ABSTRACT

Prescribed burning and mechanical thinning are common forest-management practices. During 2002, pitfall traps were used in Upstate South Carolina to sample spider populations to determine if the forest-management practices of burning, thinning, and if populations had recovered by 1 yr post burning and thinning combined led to changes in population levels. Control areas were established to allow comparisons of the three different treatments with areas that were not impacted by these practices. The burn only plots were burned during April 2001. Thinning in both thin only and thin and burn plots was conducted during 2001. Burning in the thin and burn treatment occurred in March 2002. Sampling was conducted every two months for one year beginning in January 2002. Spider families collected were Agelenidae, Araneidae, Atypidae, Clubionidae, Gnaphosidae, Hahniidae, Linyphiidae, Lycosidae, Oxyopidae, Pisauridae, Salticidae, Theridiidae, and Thomisidae. Within these families the genera *Agelenopsis* (Agelenidae), *Cicurina* (Agelenidae), *Coras* (Agelenidae) *Cybaeus* (Agelenidae), *Wadotes* (Agelenidae), *Gladicosa* (Lycosidae), *Hogna* (Lycosidae), *Pirata* (Lycosidae), *Schizocosa* (Lycosidae), and *Varacosa* (Lycosidae) were abundant enough to allow analysis. Only one species, *Gnaphosa fontinalis* Keyserling, was analyzed at the species level.

Results indicate that by 1 year post-treatment, spider populations had recovered following the initial burning and thinning in 2001. However in 2002, when first post-

burn samples were compared to pre-burn samples in the thin and burn plots, three taxa, Agelenidae, Linyphiidae, *Wadotes* (Agelenidae), and *Varacosa* (Lycosidae) exhibited a decrease in the mean numbers of spiders collected after the burn in March 2002. After, the first post-burn sample, the mean number of spiders in three of the taxa, Agelenidae, *Wadotes*, and *Varacosa*, remained low during the remaining five sampling periods when compared to the control plots. Linyphiid mean numbers during March/April were also significantly lower than those in the control plots, but during August through December, no significant differences were found between thin and burn, and control plots.

These four taxa, Agelenidae, Linyphiidae, *Wadotes* (Agelenidae, and *Varacosa* (Lycosidae) were the only taxa to show detectable responses to the treatments in this study. They, therefore, represent the best candidates for us as indicator taxa in future studies of management-related disturbances.