

Influence of Wildlife on Bottomland Hardwood Forest Restoration in Degraded River Basins in East Texas, USA

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Description: Wildlife impact on hardwood seedling growth and establishment is to be quantified through the use of a multi-site experimental design replicated throughout east Texas. Survival and growth of Shumard oak, bur oak, and pecan were tested in various fencing treatments and compared to population densities of white-tailed deer and feral swine.

Abstract: Due to loss and degradation of bottomland hardwoods, there is interest in improving restoration techniques and the success of restoration projects. However, the success of the regeneration and establishment of these forests has been mixed. Past forest restoration efforts have raised questions as to the main variables causing poor survival rates of hardwood seedlings in reforestation and afforestation sites. This study will examine the influence wildlife (e.g., white-tailed deer and feral swine) have on survival and establishment of 1-0 bare-root seedlings. The goal is to identify an effective and economical procedure to mitigate the impacts wildlife have on seedling survival. We will quantify effects of herbivory on seedling survival and growth. Three mitigation techniques (Gallagher portable electric fence, 2.4 m high fence and 0.61 m Tubex® individual tree shelters) are being tested to determine their effectiveness in protecting seedlings of three species (Shumard oak, bur oak, and pecan) from herbivory. We implemented survival tests on four study sites in the Trinity, Sabine, and Sulphur river basins. Beyond herbivory, the randomized block, split-split-plot design includes various site preparation treatments. In the initial two months, herbivory has already had an impact on seedling survival, mainly due to swine uprooting the pecan seedlings in multiple non-fenced plots and in three portable electric fence plots. To date, minimal browse damage by white-tailed deer has been seen. Trail camera surveys are now in progress to determine the relative population densities of deer and swine at each site.