



OS I-12

## The survival and growth of planted tree seedlings in EAB-impacted floodplain forests depend on restoration methods and microsite factors

Kathleen S. Knight<sup>1\*</sup>, Rachel Hefflinger<sup>2</sup>, Robert Ford<sup>3</sup>, Kelly Baggett<sup>1</sup>, James M. Slavicek<sup>1</sup>

<sup>1</sup>USDA Forest Service Northern Research Station

<sup>2</sup>Metroparks of the Toledo Area

<sup>3</sup>The City of Columbus Division of Fire

We planted a restoration experiment to study methods of reforestation for ash-dominated floodplains impacted by emerald ash borer (EAB, *Agrilus planipennis*) through plantings of native tree species. Three floodplain restoration sites in Ohio were chosen to encompass a gradient of EAB infestation duration and canopy openness. Containerized tree seedlings of three species were planted on a randomized grid in replicated plots in each floodplain in 2011. Sycamore (*Platanus occidentalis*) and pin oak (*Quercus palustris*) were from local seed sources. American elm (*Ulmus americana*) tree seedlings were generated from a cross between two DED-tolerant selections. The effects of restoration design and microhabitat on the survival and growth of the tree seedlings were examined. The elm seedlings performed better than the locally-adapted sycamore and oak seedlings. All three species tolerated severe flooding, surviving complete submersion in flood waters. Restoration design factors tested included deer protection, planting stock size, and tree species. Deer protection, using woven wire cages placed around individual trees, had a positive effect on seedlings of all species at all sites. The effect of planting stock size varied among different sites. Microhabitat effects measured for each planted seedling included canopy openness, moisture index, and herbaceous competition from native and invasive herbaceous species. Canopy openness had a positive effect on seedling survival, with the most pronounced effects on sycamore seedlings and moderate effects on elm seedlings. Understanding differences among tree species in their responses to restoration design and microhabitat variables will allow managers to customize planting strategies to maximize restoration success.

**Presenting Author:** [ksknight@fs.fed.us](mailto:ksknight@fs.fed.us)

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