

ABUNDANT ESTABLISHMENT OF *AILANTHUS ALTISSIMA* (TREE-OF-HEAVEN) AFTER RESTORATION TREATMENTS IN AN UPLAND OAK FOREST

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In 2001, three treatments (thin only = T, burn only = B, thin+burn = TB) were applied to a 67 ha site in Tar Hollow State Forest, southern Ohio. The primary objective of the study was to evaluate these treatments as tools for improving oak forest sustainability. After the treatments, the exotic tree *Ailanthus altissima* became established in high densities in some areas. The objectives of our research here were to 1) map the pre-treatment distribution of *Ailanthus* trees 2) quantify post-treatment *Ailanthus* seedling/sapling abundance, and 3) to better understand the establishment of *Ailanthus* in relation to its pre-treatment distribution, treatment type, and light availability.

In 2003 *Ailanthus* abundance (stems ≥ 0.5 m height) was quantified in 5 m radius plots ($n = 280$). Prior to treatments, *Ailanthus* trees (≥ 10 cm DBH) were present but not abundant; in 2003 we located and mapped (with a GPS) only 32 trees or stumps (Fig. 1a). Of the 32 trees, 28 were in the TB unit; only 3 and 1 were located in the T and B units, respectively. Additional data indicates that *Ailanthus* seedlings were also sparse prior to treatments. By 2003, *Ailanthus* stems (0.5 to ~ 3 m height) were widely distributed and abundant in the TB unit, present in 96 percent of plots (mean density = 17.1 stems/100 m² (2179/ha). *Ailanthus* was present in 39 percent of plots (density = 5.8 stems/100 m²) in the T unit and only 13 percent of plots (density = 0.6 stems/100 m²) in the B unit (Fig. 1b). Most seedlings presumably established from seed dispersal though aggressive clonal spread is also common for this species. Open sky (%) and *Ailanthus* abundance were not significantly correlated.

It is possible that the TB treatment created better conditions for *Ailanthus* germination and establishment than the T treatment, by both opening the canopy and causing greater disturbance to the forest floor. However, we conclude that the pre-treatment distribution of *Ailanthus* trees was likely the dominant factor determining post-treatment establishment. Our study shows that even when present at low densities, *Ailanthus* can disperse widely and establish in high densities after forest management activities, which may in turn inhibit in the regeneration of native tree species.

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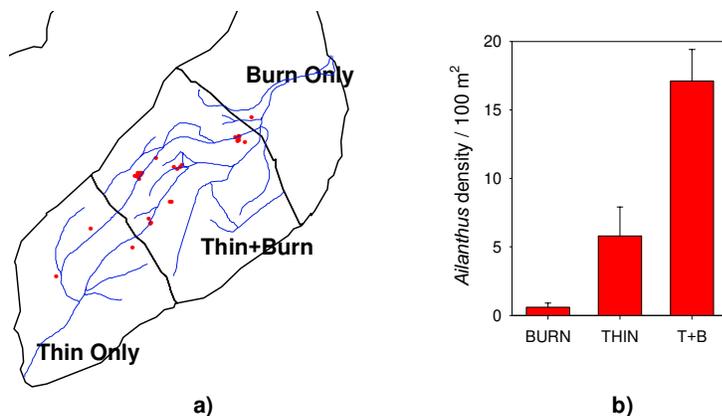


Figure 1.—A) Pre-treatment distribution of 32 *Ailanthus* trees (red dots) among the treatment units. Skid roads are indicated in blue. B) Mean density (± 1 S.E.) of *Ailanthus* stems (≥ 0.5 m height) three years after treatments.

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