

CONTROL OF PEST SPECIES

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The Effects of Honeysuckle Removal on Urban Woodland Vegetation (Indiana)

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An Amur honeysuckle (*Lonicera maackii*), a non-native shrub that has invaded many forests in the eastern United States, tends to out-compete native understory vegetation due to its dense growth and early leaf-out (Woods 1993, Deering and Vankat 1999). Although significant funds and effort have been invested in clearing honeysuckle, little is known about the effect of honeysuckle removal on the natural reestablishment of understory vegetation (but see Luken and others 1997). For our study, we removed honeysuckle and monitored understory richness and cover compared to areas where honeysuckle was still dominant in order to assess the effects of honeysuckle removal on understory vegetation.

In the spring (May 15-30) and fall (September 1-20) of 2002 through 2004, we collected data from an 8-acre (3-ha) honeysuckle-dominated lowland area on the campus of Marian College in Indianapolis. This area is adjacent to a 10-acre (4-ha) area where 95 percent of honeysuckle had been removed from a 40-years-old lowland forest. The honeysuckle removal was completed in fall 2001, so we consider spring 2002 to be the first full, post-removal growing season. Each shrub had been cut at the base, stump-treated with an 18-percent solution of glyphosate, and all cut material was completely removed from the site.

We surveyed 15 randomly placed, 100-ft (30.5-m) transects that were centered on, and perpendicular to, the edge of the removal area such that half of each transect was in the treated area and the other half was in the area still dominated by honeysuckle. We recorded the species of all plants less than 3.3 ft (1 m) in height at 1,200 equally spaced points along each transect to estimate cover and species richness in the area where honeysuckle had been removed and where it was still dominant. We used a paired t-test to compare coverage and species richness within years. All statistical analyses were done using Statview 5.0 (SAS Institute Inc. 1998).

In areas where honeysuckle was removed, total plant cover was significantly greater than in areas where honeysuckle was still pervasive. This was the case for three years following honeysuckle removal during both the spring and fall. Mean native plant cover increased in the honeysuckle-removal areas from 9.3 percent in 2003 to 18 percent in spring 2004. During that same period, mean native species richness increased from 3.5 to 8

species per transect, and included Jack-in-the-pulpit (*Arisaema triphyllum*), cutleaf toothwort (*Cardamine concatenata*), Mayapple (*Podophyllum peltatum*), jewelweed (*Impatiens capensis*), Virginia creeper (*Parthenocissus quinquefolia*), and sugar maple (*Acer saccharum*). However, native plant cover and richness were not significantly greater until fall 2002 (Figure 1).

As we expected, this increase in native understory cover and richness is not what other researchers and restorationists have found regarding the effects of honeysuckle invasion (Woods 1993, Hutchinson and Vankat 1997, Medley 1997, Collier and others 2002). Apparently, removing the dense honeysuckle canopy released native species in the seedbank at our site. This effect may, however, be limited because the seedbank is likely to degrade with time (Collier and others 2002).

Despite the increase in native species, non-native species still made up a large portion of the total plant cover throughout the study—56 percent in 2002, 60 percent in 2003, and 43 percent in 2004. Non-native species cover continued to be significantly greater in cleared versus uncleared areas until fall 2004. More important, the removal of honeysuckle provided prime conditions for garlic mustard (*Alliaria petiolata*), a highly invasive plant that has been known to completely take over lowland and other forest types (Meekins and McCarthy 2001).

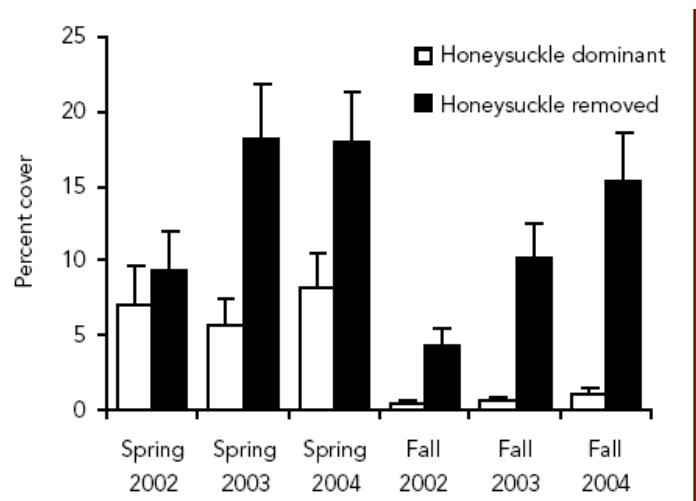


Figure 1: Percent cover of native understory vegetation in areas where Amur honeysuckle (*Lonicera maackii*) was removed by fall 2001 and where honeysuckle is still dominant in an urban lowland forest in Indianapolis, Indiana. All comparisons of honeysuckle-removed to honeysuckle dominant are significant ($p < 0.05$), except for Spring 2002.

In our study, as with others, very few plants were able to survive under the canopy of honeysuckle. This effectively leads to a loss of forest character and perhaps function. Our study indicates, however, that removing honeysuckle can help restore native understory species composition, but may also release other exotics, such as garlic mustard.

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