

A NEEDLE IN A HAYSTACK: THE EFFECT OF ALIEN PLANTS ON HOST FINDING

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ABSTRACT

This study was designed to test several possible hypotheses concerning what might happen to the insect community on a native plant when it is surrounded by a non-native plant. We established four randomized complete blocks on land at Tyler Arboretum in Media, PA. Each block was comprised of four 8-m-diameter treatment plots consisting of a cluster of at least three focal plants, milkweed (*Asclepias syriaca* L.) surrounded by a matrix of one of four possible treatments. The matrix was mowed ("empty"), planted with a non-native plant (yarrow, *Achillea millefolium* L.), planted with a native plant (goldenrod, *Solidago rugosa* Mill.), or planted with milkweed ("conspecifics"). Weekly beginning July 6, we sampled the insect community on three randomly selected focal plants. We counted the number of leaves on each plant and counted and identified the insects on each plant. For each plot on each sample date, the number of herbivores and total insects per leaf were calculated. The maximum value for each plot among all 6 sample dates was used in the statistical analyses. The log transformed values were analyzed using Proc GLM in SAS, and post-hoc multiple comparisons were made using Tukey's test.

These results are a preliminary analysis of the data collected from one summer. The mean number of herbivores per leaf for each treatment is as follows: conspecifics, 0.6647; natives, 0.3095; empty, 0.1457; and non-native, 0.1331. The GLM reported significant differences between these treatments with a $p < 0.05$. Tukey's test showed that the number of insects per leaf on conspecifics was significantly different from the empty and alien treatments, and the native treatment was significantly different from non-native treatments. These results suggest that large patches of milkweed attract a greater number of insects per leaf and that native plants surrounding milkweed are less likely to obscure the host than milkweed surrounded by non-natives. However, given this first year of data, there is insufficient support for the notion that non-native plants are obscuring the host by means of associational resistance, because there was no difference between that treatment and focal plants surrounded by mowed ground. In the following year, we may find a different trend, because the yarrow plants in this year were very small due to vertebrate herbivory and perhaps not sufficiently different from the empty plots.