



Garlic mustard management update

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Background

Garlic mustard (*Alliaria petiolata*) was once considered one of the most problematic plant invaders in eastern temperate forests. Declines in native plant species diversity and deterioration in general forest health were attributed to advancing garlic mustard. The lack of success in controlling the species resulted in the initiation of research to develop a biological control program. While ecological investigations were pursued, chemical, and often physical removal programs continued (including “garlic mustard challenges”). At the same time researchers established long term permanent monitoring plots in preparation for potential insect releases. In these plots the abundance of seedlings, rosettes and adult stems, stem height, reproductive output and herbivory were recorded.

New Evidence

Monitoring of garlic mustard at many sites across the Northeast and Midwest in these permanent plots has shown that over time adult density, rosette density, stem height and the number of siliques is greatly reduced to an extent where garlic mustard, while present, is reduced to extremely low abundance (Fig. 1). These results occur at all sites. Additional work using soil sterilization has shown that these effects are, most likely, explained by negative soil feedback, i.e. the build-up of soil microbial communities that selectively suppress garlic mustard (other plant species appear unaffected). We are currently preparing these results with our collaborators for publication in the peer-reviewed literature.

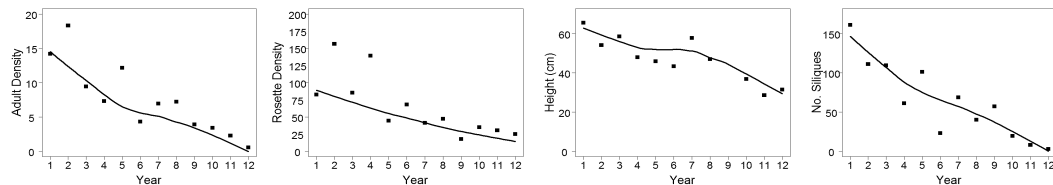


Fig. 1. Garlic mustard adult density, rosette density, stem height and the number of siliques over time (since establishment of monitoring plots). Data are pooled from multiple sites in NY and IL.

Recommendations

We are aware that many organizations and communities are gearing up for another season of garlic mustard removal, often dubbed “garlic mustard challenges”. The most recent ecological work has shown that effects attributed to garlic mustard invasion are more likely effects of invasive earthworms and abundant native white-tailed deer. Garlic mustard will only be able to invade and establish populations in areas, which have been colonized by earthworms. Removing garlic mustard will not help to restore thriving native communities. In fact, removing garlic mustard will set back the “self-inflicted” population declines by preventing negative soil feedback. Only in places where garlic mustard is not controlled will the species decline rapidly (often within 5-10 years after initial invasion, but more observations are needed). We recommend stopping all active garlic mustard removal (unless initial invasions can be stopped by removing a few individuals away from well-established populations) and instead focusing on planting native species. Native species will need to be protected from deer herbivory behind fences or in cages until deer populations are sufficiently reduced. Please be aware that garlic mustard will continue to spread to areas where the species has not occurred previously. The decline in population and vigor is a function of residence time.