

Department of Environmental Protection  
Environmental and Geographic Information Center  
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Invasive Plant Information Sheet

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Garlic Mustard *Alliaria petiolata* Mustard Family  
(Brassicaceae/Cruciferae)

**Ecological Impact:** Garlic mustard is a rapidly spreading woodland herb that dominates the forest floor and displaces native grasses, herbs, and tree seedlings. Many native wildflowers that bloom and set seed in the spring occur in the same habitat. Once established, Garlic mustard outcompetes with native plants and impacts wildlife that depend on these early wildflowers for food. At least one spring wildflower, toothwort (*Dentaria laciniata*), has shown significant population declines when growing with Garlic mustard.

**Control Methods:** The most effective control method for Garlic mustard is to prevent its establishment by annually monitoring for and manually removing all plants. At infested sites, the goal is to prevent seed production. Garlic mustard spreads only by seed and has a short-lived seed bank. Hand pulling and cutting flower stalks is effective for small populations. Fire and herbicide are effective for large populations, however, both have potential side effects.

**Mechanical Control:** Minor infestations can be eliminated by hand pulling at or before the onset of flowering, or cutting flower stalks as close to the soil as possible just as flowering begins. Whichever method is used, the area must be monitored and plants removed yearly. Since seeds remain viable for five years, it is essential that control efforts continue for at least that long. Hand removal is best done when plants are small and the soil is moist. Be sure to remove the entire plant including all roots, since new plants can sprout from root fragments. Pulled plants can be left onsite or removed. Since hand removal disturbs the soil and can damage desirable species, tamp the soil after pulling. When hand pulling is impractical, flowering stems can be cut at ground level. Cutting a couple of inches above ground level is not as effective and cutting before flowering may promote resprouting. Using a weed whip can be helpful, but may also remove native species. Some, like *Trillium*, are severely impacted if cut. Most native species, however, are not severely damaged and can withstand a temporary reduction in growth and reproduction. For large infestations, prescribed burning can be effective if fuel is adequate. Fall burning is recommended since the leaf litter increases the fuel load. Spring burns are possible, but must be conducted early enough to minimize injury to spring wildflowers. First-year plants are killed by fire if the fire is hot enough to remove all the leaf litter. A thin layer of litter, kept moist by spring snowmelt, is sufficient to protect root crowns, which then produce multiple flower stalks, increasing total seed production. Burning should be conducted only when consecutive fires

can be scheduled. A single burn may result in a population increase since bare soil enhances the survival of seedlings that germinate after the fire. Three to five years of burning are required and should be followed by hand pulling or cutting of small populations produced from the seed bank.

**Chemical Control:** Severe infestations can be controlled by applying a 1% solution of glyphosate (Roundup™) and water to the foliage of individual plants and dense patches in late fall and early spring. At these times, most native plants are dormant. Glyphosate is a non-selective herbicide that will kill all vegetation. Semi-evergreen herbs, grasses, and sedges are particularly sensitive. Thus, managers should be cautious not to spray so heavily that herbicide drips off the leaves. To better direct the herbicide and minimize drift, spray shields can be used. Roundup is most suitable in forest areas that have few native herbs or grasses.

**Biological Control:** Currently, no biological control methods are available for widespread use. Several fungal pathogens have been identified on diseased plants. Greenhouse studies using the pathogens have shown significant mortality due to root rot and basal stem rot. Research on field applications is in process.

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