

Weed Information Sheet:

garlic mustard

Alliaria petiolata

Identification:

Brassicaceae (Mustard Family)

Abundant Biennial forb

Height: 8" to 60" **Width:**

Leaf Arrangement:

Flower: White

Blooms: Mid-spring

Fruit: Silique

Fall Color: n/a

Garlic mustard gets its name from the garlic-like smell produced by crushed leaves. The seedlings of this biennial species sprout in late-winter or early-spring. These seedlings are not visually distinctive, but few other plants will be sprouting this early, and when crushed, the seedlings will release the distinctive odor.

By late-spring these plants develop into small basal rosette less than 6" high with rounded, kidney shaped, yellowish-green leaves with scalloped edges and embossed veins (Image 3). These rosettes grow through the summer and fall and remain green through the following winter.

By mid-spring of its second year the plants begin to bolt, sending up a flowering stalk 2 to 5' high (Image 2). The leaves on these bolting plants are triangular with more sharply toothed margins. Small, white, four-petaled flowers develop in clusters at the top of the stems by late April to May.

After flowering, the plant dies from the roots upwards, drawing nutrients upwards as it goes to put its remaining energy into seed production. By early summer long, skinny seed pods called siliques form (Image 4). By mid-summer the dead plant dry out and the seeds disperse when the plants are disturbed by animal contact, wind or rain. The seeds can then be spread by water, in animal fur, or your clothing or shoes.





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NR-40 Restricted

AKA: n/a

Description & Impact:

This European plant, introduced for food or medicine in the mid 19th century, now threatens woodlands throughout the eastern half of North America. Garlic mustard forms dense monocultures, displacing and eliminating native plant species and the wildlife that feed on them. Mature plants can produce up to 800 seeds, and these seeds can stay viable in the seed bank for 5-10 years. Garlic mustard releases multiple allelopathic chemicals. Some of these inhibit the germination of other plants. Others kill soil fungi. Native plants rely on mutualistic relationships with these fungi for help extracting nutrients from the soil. By killing the fungi, the garlic mustard also weakens the native plants.

Note that a garlic mustard infestation is a sign of poor woodland health as much as it is a problem in its own right. Woodlands with a history of cattle grazing have often lost most of their herbaceous plant species, leaving a void for invasive plants to fill. Most woodlands today are not maintained with regular prescribed fires and are choked by invasive brush and weedy, fire-intolerant trees. In this dark shade, the fact that garlic mustard stays green when most native plants are dormant gives it an advantage in gathering light over native woodland wildflowers and grasses. Garlic mustard is not palatable to grazing animals, so high deer or rabbit populations can give garlic mustard a competitive advantage over more palatable native plants.

Control Methods:

Most people wait until garlic mustard is blooming to start pulling them, and then find themselves overwhelmed by the task. If you consider the plants entire life cycle you realize you have over a year to control garlic mustard *before* the flowering stage. **Seedlings** often occur in dense patches, these can be burned with a propane torch or even crushed with a rake. Early-spring prescribed burns will kill many.

Best Practices: The best time to treat large populations of garlic mustard is when native plants are dormant in late fall into early-winter and again in early-spring. Herbicide will be effective any time in this period when the ground is not frozen and the air temperatures are above 40° F, particularly if it is sunny. Glyphosate (Round-Up®, etc.) is effective, or use the amine formulation of triclopyr (Garlon® 3A, Vastlan® etc.), where there is a risk of injuring native sedges or grasses. Consider using a high-concentration, low volume application (6.5oz/ga of glyphosate, as described on the product label) at this time, targeting either the center of the rosette or prominent, vital-looking leaves.

Continue spraying as needed as the rosettes mature up to the time the plants begin to bolt, taking care not to harm native plants as they emerge. Reduce the concentration of herbicide to a more moderate level as recommended on the product label (2.5-3oz/ga for glyphosate and 1.25-2oz/ga for triclopyr). If you accidentally get herbicide on desirable plants, remove the effected leaves to prevent absorption. Always read herbicide labels carefully before use and apply according to the instruction on the product label. Do not use hard water to mix with glyphosate! Treat hard tap water with a water softener, or use distilled or rain water.

Hand pulling is most effective when the soil is moist. Start pulling well-before the flowering period, as soon as the plants develop a central stem at about 8" in height. Grab the plant as close to the ground as-possible and pull steadily. Keep a tool such as a hori-hori, dandelion digger or even a large, flat-baded screwdriver handy to extract roots if the stem breaks-off. If the plants are pulled before flower, or early in the flowering period, simply pull the plants, bend the stem until it 'snaps', both right above the roots and right below the flower head, to prevent flowering, then simply discard. If the plants are well into the flowering period (as see in Image 1) or developing seeds, they should be bagged and disposed of in the trash to prevent seed dispersal. However, you can cut-off just the flower/seed head and remove only that portion of the plant to reduce the volume and weight of what you need to carry.

Mowing: For populations that are too large for hand pulling, using a weed whip or mower to *obliterate* the plants late in their flowering period will greatly reduce seed production. Mowing must be carefully timed for after most of the petals have dropped off of the flowers but before any seed pods swell and mature.

Prescribed burns can reduce the density of this species by killing some of the first year rosettes and impacting the seed bank. Over time, clearing of invasive brush and weedy mesophytic trees and regular prescribed burns are the best way to restore a healthy woodland, invigorate our native plants and allowing them to out-compete garlic mustard.

Citations: <https://extension.psu.edu/garlic-mustard-a-ubiquitous-invasive-weed>
<https://www.canr.msu.edu/resources/about-garlic-mustard>