



# MAINE INVASIVE PLANTS

## Garlic Mustard

*Alliaria petiolata*  
(Mustard Family)

### Threats to Native Habitats

Garlic mustard is rapidly becoming one of the most common forest herbs in the northeastern United States. It grows in dense colonies, outcompeting most native herbaceous plants. It is tolerant of a wide variety of growing conditions, including wet to relatively dry soils and both shaded and somewhat sunny conditions. It is especially aggressive in forested areas with moist soils, such as floodplains and upland forests with calcium-rich soils. These forest types typically support a wide variety of native wildflowers, including some of our rarest plants. Garlic mustard is a blight on these habitats, changing the vegetation composition, reducing species diversity and diminishing their value to our native wildlife.

### Description

Garlic mustard is a moderately tall (up to three feet) biennial herb with small white flowers. In the first year, the plant grows as a vegetative rosette close to the ground and has broad, kidney-shaped, round-toothed leaves. Early in the growing season of the second year, the plants produce an erect flowering stem with numerous quarter-inch-wide four-petal flowers clustered at the top. Leaves on the erect stem are alternate and more triangular and serrated than those of the basal rosette. Each flower may produce an oblong capsule called a silique that may be up to four inches long. An individual plant can produce thousands of seeds. By midsummer the leaves have mostly died back and only the drying stems with many papery capsules remain. Crushed stems and leaves of garlic mustard give off a distinct odor of garlic.

### Habitat

Garlic mustard can grow almost anywhere, but is most aggressive in rich, moist, shady locations. Garlic mustard spreads quickly and is easily established along roadsides, flooded stream banks, forest understories and trail edges. Although garlic



*Garlic mustard (photo courtesy of the New England Wild Flower Society)*

mustard is extremely tolerant of many environmental factors, it cannot tolerate highly acidic soils, including muck and undrained peat.

### Distribution

Garlic mustard is native to Asia and Europe. In North America it is now commonly found from Canada to Georgia and as far west as Kansas and Nebraska. The first record of garlic mustard in the U.S. dates back to 1868 on Long Island, NY. Most likely it was introduced by settlers for food or for medicinal purposes, though it easily could have been introduced by accident. Garlic mustard is rapidly invading southern New England and is slowly working its way into Maine. In 2002 there were less than a dozen documented locations known in Maine, though more are reported each year. Dispersal of this plant is augmented by human activities and wildlife.

## Control

**Mechanical control:** Eliminate small infestations by hand-pulling plants early in the season, when the plants are young and the soil is moist. Remove as much root mass as possible, as root fragments remaining in the soil may eventually resprout. Tamp the soil after pulling plants to limit further growth. Complete plant removal before flowering starts, or at least before plants produce seed. If some seeds develop and stay on site, they can remain viable for at least five years, so control methods should continue at least five years for the desired results. When hand-pulling is not possible, cut flower stems close to the ground, before seed formation. This method is less effective than hand-pulling, because plants can resprout from the roots and develop thicker, heavier branching.

**Chemical control:** For severe infestations of garlic mustard, an application of one percent solution of a glyphosate-based herbicide is effective, although repeat applications will probably be necessary to deal with dormant seeds. The herbicide may be applied at any time of the year, including to rosettes in winter, as long as the temperature is above 50 degrees F and there is no rain for eight hours after application. In winter most native species are dormant and less likely to be damaged from an herbicide application. When applying during the growing season, take care not to get herbicide on native plants. Use herbicides responsibly and follow manufacturer's directions. Contact the Maine Department of Agriculture for information on restrictions that apply to the use of herbicides. Consult a licensed herbicide applicator before applying herbicides over large areas.



This fact sheet was researched and written by Ryan Pratt, a student in the Plant and Soil

Technology Program at Southern Maine Community College. Additional editing by Don Cameron, Maine Natural Areas Program.

## References:

Josselyn Botanical Society. *Checklist of the Vascular Plants of Maine, Third Revision*. Orono, ME: Maine Agricultural and Forest Experiment Station bulletin 844, 1995.

Gleason, H.A. and A. Cronquist. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada, Second Edition*. New York: New York Botanical Garden, 1991.

Kenny, J., G. Fell and V. Nuzzo. "Garlic mustard." *Vegetation Management Guideline 1(10)*. Illinois Nature Preserve Commission, 1990.

Fernald, M.L. *Gray's Manual of Botany, 8th edition*. New York: American Book Co., 1950.

Harvill, A., et al. *Atlas of the Virginia Flora*. Burksville: Virginia Botanical Associates, 1992.

Nuzzo, V. "Experimental control of garlic mustard in northern Illinois using fire, herbicide and cutting." *Natural Areas Journal* 11, no. 3 (1991):158-167.

Cavers, P.B., M.I. Heagy and R.F. Kokron. The biology of Canadian weeds. 35 *Alliaria petiolata*. Cavara and Grande. *Canadian Journal of Plant Sciences* 59 (1979): 217-229.

**For more information or for a more extensive list of references on invasive species contact:**

**Don Cameron**  
**Maine Natural Areas Program**  
**Department of Conservation**  
**#93 State House Station**  
**Augusta, ME 04333-0093**  
**(207-287-8044)**

or

**Lois Berg Stack**  
**University of Maine Cooperative Extension**  
**495 College Avenue, Orono, ME 04469**  
**(800-870-7270)**

*Materials developed by the Maine Natural Areas Program for use by University of Maine Cooperative Extension. This fact sheet was made possible by a gift from the Maine Outdoor Heritage Fund and New England Grows.*



***A Member of the University of Maine System***

Published and distributed in furtherance of Acts of Congress of May 8 and June 30, 1914, by the University of Maine Cooperative Extension, the Land Grant University of the state of Maine and the U.S. Department of Agriculture cooperating. Cooperative Extension and other agencies of the U.S.D.A. provide equal opportunities in programs and employment. 3/04