Garlic mustard

Alliaria petiolata

Fact Sheet

NH Department of Agriculture, Markets & Food, Division of Plant Industry, 29 Hazen Dr, Concord, NH 03301
(603) 271-3488

Common Name: **Garlic mustard**
New Hampshire Invasive Species Status: **Prohibited** (*Agr 3800*)

Latin Name: ***Alliaria petiolata***
Native to: **Europe**

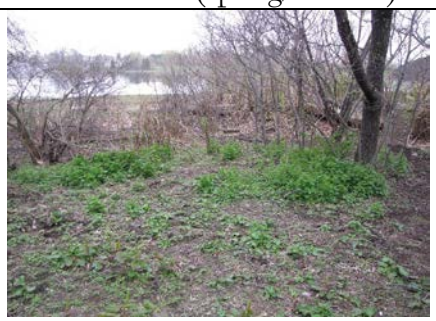

leaves (summer)

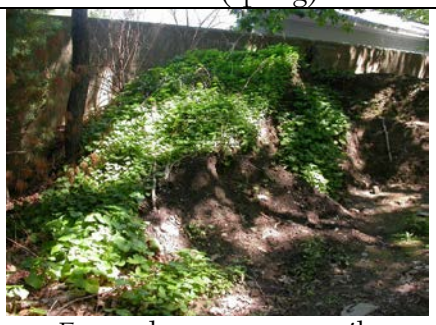

Garlic mustard – Portsmouth, NH


Basal rosette (spring/summer)


Flowers (spring)


Pods called siliques (late summer)


Spring emergence


Escaped onto compost pile


Clump form (summer)


Seed set (late summer)

Description: Biennial, 2nd year plants flower and reach 2-3$^{1}/_{2}$' tall. **Leaves:** Triangular, coarsely toothed, heart-shaped. **Flowers:** Umbel, small, 4-petals, white, April-May. **Fruit:** Pods, seeds turn black when mature. **Zone:** 4-8. **Habitat:** Prefers moist shaded floodplains, forests and roadsides, adaptable to most soil and light conditions. **Spread:** Seeds spread by water and wildlife. **Comments:** Plants spread quickly into natural areas leading to competition and displacement of native species. **Controls:** Small populations can be hand pulled while large populations can be continuously cut back to prevent flowering and seed production. Herbicide treatments are also effective.

General Considerations

Garlic mustard is herbaceous biennial developing a rosette of leaves the first growing season and maturing into a tall, 4' (1.22 m) high, erect plant the second year. Crushing the stems will release the scent of garlic, hence its name. Rosettes produce a single flowering stem, but on occasion can produce multiple stems. Flowers are white with 4-petals and clustered in racemes. Seeds are produced in erect, slender, four-sided pods, called siliques, beginning in May. Each silique contains between 12-19 seeds, and the number of siliques per plant can vary greatly from 1 to more than 200. Seeds are oblong to nearly cylindrical and about 0.12 inch (3 mm) long. The shiny black seeds mature in June and as the siliques turn from green to tan they will collapse and expel the seeds up to 6' (2 m) away. Seeds remain viable for up to 6 years,

however, seed bank viability drops off substantially after the 1st growing season following stratification. By late June, the above ground portions of the plants start dying off.

Seed dispersal is linked to transport on muddy boots or pant cuffs. Seed dispersal may also be facilitated by roadside mowing, as well as on mud-encrusted automobile tires. Animals, especially white-tailed deer, may promote seed dispersal and spread of garlic mustard. Deer are thought to provide an important seed dispersal vector over short distances by transporting seeds in their fur.

Garlic mustard can have a wide range of negative impacts to both the environment and to wildlife. When their populations gain ground and form dense monocultures they can outcompete native herbaceous species by robbing them of light, nutrients and soil moisture. Their rooting systems and decaying leaf litter release allelopathic chemicals into the soil. These chemicals inhibit the germination and growth of native herbaceous plants, and they also negatively affect the soil borne mycorrhizal fungi. The fungi is essential for nutrient uptake by our native hardwoods. In addition, Garlic mustard has a toxic affect to the development of butterfly eggs when laid on the foliage or stems.

Control Options

See the following control guides: Control of Invasive Species by Numbers

Alliaria petiolata *Garlic mustard*	
Plant Type	Herbaceous - Biennial
Habitat Type	Forests, fields, waste places, roads
USDA Hardiness Zone	4-8
Rooting Structure	Tap
Environmental Impacts	Phytotoxin interrupts mycorrhizal activity.
Wildlife Impacts	Prevents butterfly larvae from maturing
Leaf arrangement	Alternate, deltoid
NWI Ranking	UPL
Soil Type	Sand, loam or clay-based soils
Soil pH Range	6.1 to 7.8
Light Requirements	Prefers full sun, but grows in light shade.
Growing Season	
Growth Rate	
Mature Height	3-4' (90-120 cm)
Life Span	2-years
Reproductive Age	2 years
Flowering Period	April - May
Flower Type	Monoecious
Pollination	Open-pollinated - insects
Seed Set	May-June
Seed Per Plant	1,600 seeds
Scarification Required	Yes
Cold Stratification	Yes
Seed Longevity	4-6 years
Seed Germination Rate	88%
Seedling Density	20,000/m^2
Other Propagules	Root fragments
Dispersal Vectors	Small mammals, water

Sources

Mehrhoff, L., 2001. Invasive Plant Atlas of New England, Catalog of Species, *Alliaria petiolata:* http://www.eddmaps.org/ipane/ipanespecies/herbs/Alliaria_petiolata.htm

USDA Forest Service invasive species website: http://www.fs.fed.us/database/feis/plants/forb/allpet/all.html

Invasives.org: http://www.invasive.org/browse/subinfo.cfm?sub=3005