

## Garlic mustard

### *Alliaria petiolata* (Bieb.) Cavara & Grande).

Synonyms: *Alliaria alliaria* (L.) Britt., *Alliaria officinalis* Andrzej. ex. Bieb., *Erysimum alliaria* L., *Sisymbrium alliaria* (L.) Scop.

Other common names: garlic mustard

Family: Brassicaceae

#### Description

Garlic mustard is a taprooted herbaceous biennial with an erect stem, unbranched below inflorescence. It can grow to over 3 feet tall, but is generally between 12 and 18 inches tall. The stem is sparsely hairy below. Basal leaves are kidney-shaped and slender-stalked; the stem leaves are heart-shaped and 2.4 – 4 inches wide. Garlic mustard has short racemes of white, four-petaled flowers. Plants give off a strong garlic odor when crushed (Douglas et al. 1998).



There are a number of white flowered mustards in Alaska, but none have large, well-developed and toothed stem leaves, or are garlic-scented.

#### Ecological Impact

*Impact on community composition, structure, and interactions:* Garlic mustard often dominates the understory in forested areas and outcompetes native species for light, moisture, nutrients, and space. It

readily spreads into undisturbed forests and species-rich sites. Garlic mustard appears to alter habitat suitability for native birds, mammals, and amphibians, and may affect populations of these species. Garlic mustard reduces foraging sites for deer and other large herbivores. Phytotoxic chemicals produced by garlic mustard may interfere with growth of native species. It has no known natural enemies in North America (Blossey et al. 2002, Nuzzo 2000).

*Impact on ecosystem process:* No information was found identifying impacts to ecosystem processes.

#### Biology and Invasive Potential

*Reproductive potential:* Flowers readily self-fertilize in the absence of insect visitation, but can also be cross-pollinated by a variety of insects. Plant can produce from 194 to 8,000 seeds. Seeds may remain viable for four to five years in the soil (Byers and Quinn 1998, Nuzzo 2000).

*Role of disturbance in establishment:* Soil disturbance can create a favorable environment for germination and growth. Continued disturbance promotes greater seed production which in turn promotes larger populations. In the absence of disturbance, garlic mustard gradually declines to a low stable level (Blossey 2003, Luken et al. 1997, Nuzzo 2000, Pyle 1995). Garlic mustard can resprout after removal of aboveground biomass (Wisconsin DNR 2004).

*Potential for long-distance dispersal:* Wind dispersal is limited, and seeds do not float well, although seeds readily attach to moist surfaces. It may be dispersed by rodents, birds, and deer (Nuzzo 2000).

*Potential to be spread by human activity:* The small seeds are transported on boots and clothing, as well as by roadside mowing, automobiles, and trains (Rowe and Swearingen 2003). Garlic mustard has been used as a medicinal remedy (McGuffin 1997).

*Growth requirements:* This species is adapted to sand, loam, and clay soil; it frequently grows in well-fertilized sites with pH of 5-7.2. It is successful in many habitat types. Garlic mustard prefers moist

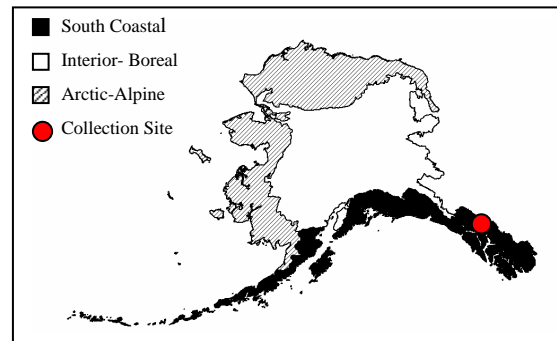
shaded soil, but can do well in open areas. Cold stratification period is required for germination.

*Listing:* Garlic mustard is listed as a noxious weed in Alabama, Minnesota, Vermont, and Washington (Invaders Database System 2003). It is considered to be “Ecologically Invasive” in Wisconsin (USDA 2002). It is listed as a weed on other continents.

### Distribution and Abundance

Garlic mustard was introduced to the United States for food and medical purposes. Later it has escaped from cultivation. The species was first recorded in the United States about 1868, from Long Island, New York. Currently, it is found from Maine to South Carolina, west through the Midwestern states to Washington and Oregon. Garlic mustard is a plant of roadsides, abandoned fields, yards and gardens, wet meadows, and forest. It has been recorded from Juneau in Alaska (Weeds of Alaska Database 2004).

*Native and current distribution:* It is native to Europe, from England to Sweden and south to the Balkans and Italy. Now it is also occurs in North Africa, India, Sri Lanka, New Zealand, and North America.



Distribution in Alaska

### Management

A combination of hand-pulling, cutting, burning, and herbicide treatment can be successful in controlling or eliminating garlic mustard. It is essential that an area be monitored at least five years after the initial control efforts due to recruitment from the seed bank. Studies are being conducted to determine effective biological control agents, which include five European weevils and one flea beetle. If approved by the USDA, these biological control agents may become an option (Driesche 2002).

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**Alaska Natural Heritage Program**  
**Environment and Natural Resources Institute**  
**University of Alaska Anchorage**  
707 A Street, Anchorage, Alaska 99501  
Phone (907) 257-2780 Fax (907) 257-2789

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