

## Garlic mustard (*Alliaria petiolata*)

**History:** Garlic mustard is a biennial herb in the mustard family (Brassicaceae). It's called "garlic" mustard because the leaves have a distinct garlic smell when crushed. Native to Europe, garlic mustard has historically been valued for its medicinal and herbal properties. It was first found in North America in New York in the 1860s. Since then, it has spread to the Northeast, Midwest, and West. It has been documented in nearly 40 of the 50 states and several Canadian provinces.

**Identification:** First-year rosettes have kidney-shaped leaves with scalloped margins (photo, top). The leaves of second-year plants are more heart-shaped with toothed margins and pointed tips. Second-year plants produce single or multiple flowering stems and can range in height from one to four feet (photo, middle right). Characteristic of all mustards, flowers have four petals in the shape of a cross. Flowers are white (photo, middle left), occur in button-like clusters, and mature to produce long, slender capsules called siliques. Although initially green, as siliques mature they turn brown and curve slightly, making them easy to identify. As mentioned above, leaves and stems give off a garlic odor when crushed, another key to identifying this species.

**Impacts:** Garlic mustard forms dense stands, especially in the understory of deciduous forests (photo, bottom). Seedlings emerge early in the spring and form a dense carpet before tree canopy closure. Second-year plants bolt and flower early in the growing season. Early spring growth allows garlic mustard to utilize soil nutrients and light while native species are still dormant, and over time garlic mustard can displace other vegetation. Garlic mustard also produces phytotoxic chemicals that can alter soil biological and chemical properties as well as inhibit growth of tree seedlings.

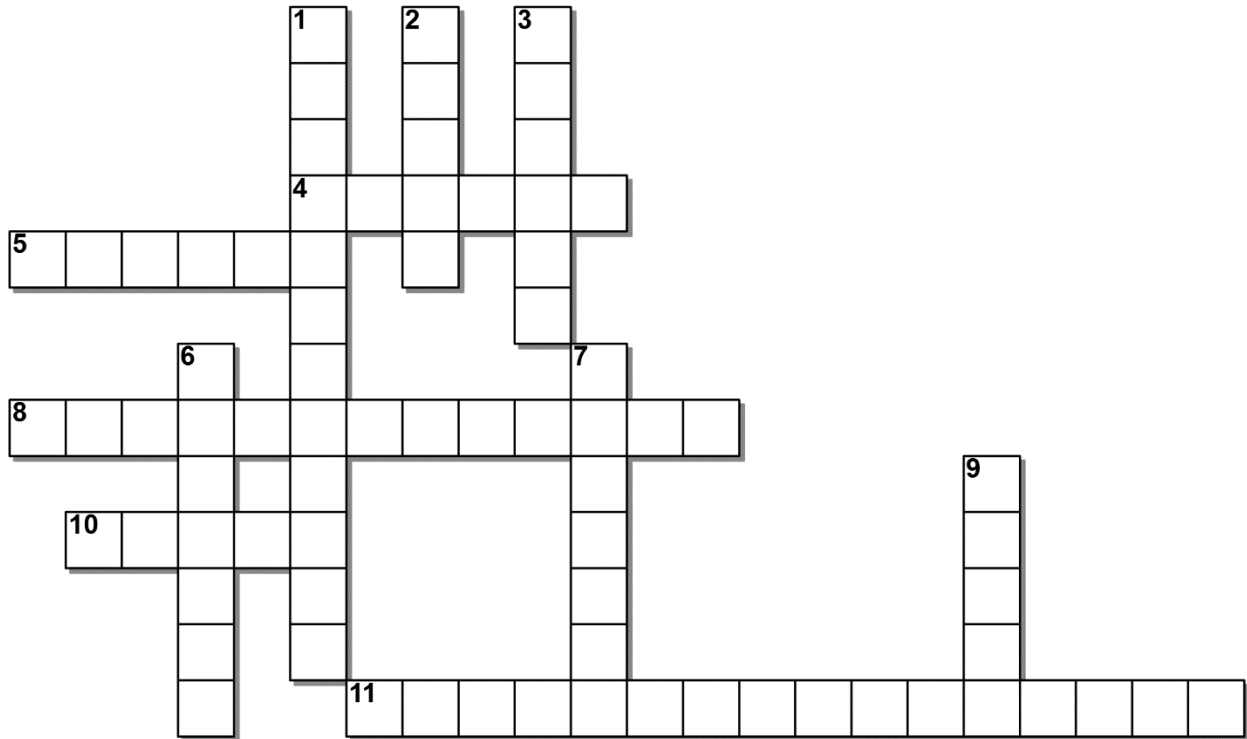
**Habitat:** Garlic mustard tends to thrive in forest understories. However, it can adapt to available light levels and also grow in semi-shaded areas or full sun. Garlic mustard will grow in a variety of soil types, but growth may be limited in peat, mucky, or acidic soils. Plants also have a lower rate of survival and robustness at drier sites.

**Spread:** Garlic mustard spreads by seeds, and each plant can produce hundreds to thousands of seeds. Most seeds fall close to the mother plant, but some may be dispersed farther by water, wildlife, and people. The majority of seeds overwinter and germinate the following spring, but some may remain viable in the seed bank for five years or more.

**Management:** In Montana garlic mustard is not a noxious weed. It was reported for the first time in Daniels County in 2013. In May 2015 it was also found in Lewis and Clark County. Because it is not well-established in Montana (Daniels County infestation was eradicated; Lewis and Clark County infestation is being eradicated), prevention and EDRR are the management priorities for the state. Hand-pulling is effective for small infestations. Mowing second-year plants before seed development is also effective. Spring prescribed fires can be used and are most effective on first-year plants. There are several chemical control options, and the best option depends on the situation. In most cases, applications should be applied at the rosette to bolting stage. For more information on herbicides and garlic mustard in general, see [https://www.stewardshipnetwork.org/sites/default/files/garlic\\_mustard\\_biocontrol.pdf](https://www.stewardshipnetwork.org/sites/default/files/garlic_mustard_biocontrol.pdf).



## Test your knowledge of garlic mustard



**Across:**

- 4 Garlic mustard grows early in this season, thus avoiding the need to compete for light
- 5 Like the smell of garlic? Crush these to get a noseful!
- 8 Montana county where garlic mustard was most recently found
- 10 Garlic mustard flower color
- 11 Habitat where garlic mustard thrives (2 words)

**Down:**

- 1 The mustard family, of which garlic mustard is a member
- 2 Shape of second-year leaves
- 3 Shape of first-year leaves
- 6 The fruit of garlic mustard
- 7 Montana county where garlic mustard was first reported
- 9 Method of reproduction in garlic mustard

Solutions are posted to the MSU Extension Invasive Rangeland Weed website:

<http://www.msuextension.org/invasiveplantsMangold/extensionsub.html>

