

Garlic Mustard has invaded Hanover

More than 25 neighborhoods are impacted.

This plant has appeared on:

- Rip Road
- Trescott Road
- Buck Road
- Brook Road
- Pleasant Street
- Hanover Golf Course
- Richmond Middle School, and others



Garlic mustard is an efficient competitor that crowds out native species and suppresses the growth of native wildflowers. It grows fast, produces many seeds, and has no native predators (insect or disease). The plant is capable of dominating the understory of our NH and VT forests.

Fortunately, it is possible to contain this plant with neighborhood effort and frequent monitoring. Through education and prompt control NH and VT woodlands can be protected.

A few facts about the plant:

- It is a biennial: first year plants form a low rosette (like a dandelion): second year plants grow tall, form flowers and make seeds. Leaves are deeply toothed, and first year leaves are rounded, second year leaves are heart-shaped.
- Seeds can remain viable for more than six years in the ground.
- May reach 3' in height, or more.
- Leaves and stems smell like garlic when crushed.
- Flower is white, with four petals in clusters at top of the stalk. Blooms in spring (May).
- The plant tolerates shade, can invade woodlands, and dominate the herb layer.
- The plant is allelopathic, possessing a chemical that reduces regeneration of trees.
- The tap root is white, with "S" curve near the top of the root.
- Seeds ripen in long slender pods, average 100/plant (but can exceed 1000s); seeds are mature by late July or August.

What can you do?

Plants are easy to remove by hand: Remove plants before they form seeds grasping the stem near the ground and pulling the tap root. **DO NOT COMPOST: Place in plastic bags and put into trash (not compost); or let them rot in the plastic bags in the sun.** Large infestations can be spot-treated on one's own property on a warm day with a 2% Roundup solution, *early* in season, before other plants are up or *late* in fall after first frost.

For local assistance with identification or control contact:

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Biodiversity Website: Hanover's Biodiversity Committee has posted background materials about garlic mustard, including a poster showing the plant's life-cycle. With links to other websites: http://www.hanovernh.org/Pages/HanoverNH_BComm/bio/index

Garlic Mustard References

For more background information on this plant:

- An excellent 13-minute video about the plant: <http://vimeo.com/2855779>
- USDA fact sheet, with lots of links to videos, research articles, state websites: <http://www.invasivespeciesinfo.gov/plants/garlicmustard.shtml>
- NH Guide to Upland Invasive Plant Species: http://www.agriculture.nh.gov/divisions/plant_industry/invasive-species.htm
- National Park Service overview: <http://www.nps.gov/plants/alien/pubs/midatlantic/alpe.htm>
- NJ data on population dynamics: <http://www.state.nj.us/agriculture/divisions/pi/pdf/garlicmustard.pdf>
- Comprehensive website at University of Michigan on the population dynamics and control options for garlic mustard: http://www.ipm.msu.edu/invasive_species/garlic_mustard

Bio-control research seems to be closing in on a few insects:

- Evaluation of the potential of bio-controls for Garlic Mustard: http://www.nyis.info/user_uploads/files/Evans%20MSU%202005.pdf
- Powerpoint that outlines possible control agents, and bio-control review process: <http://www.mipn.org/Annual%20Meeting%202007%20presentations/natareaconf07.pdf>

Effect of Garlic Mustard on forests:

The plant seems to suppress the growth of native tree seedlings, by disrupting associations between native canopy tree seedlings and below ground mycorrhizal fungi. It affects both hardwoods and softwoods. See:

- *Invasive Plant Suppresses the Growth of Native Tree Seedlings by Disrupting Belowground Mutualisms* by Kristina Stinson et al.(2006) This article summarizes how seedlings of certain hardwood species have reduced success when growing in a forest with garlic mustard. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1440938/>
- *The Invasive Plant Alliaria Petiolata (garlic mustard) Inhibits Ectomycorrhizal Fungi in its Introduced Range* by BD Wolfe et al (2008), pertaining to softwood trees seedlings. The page has an abstract of the article and you can download entire 7-page article: <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2745.2008.01389.x/abstract>

Recipes for garlic mustard and other invasive plants. We strongly discourage any intentional cultivation of these plants, but just in case you find some good plant materials in your control efforts, here are some recipes from the Mid-Atlantic Exotic Pest Plant Council:

<http://www.maipc.org/weedrecipes.html>