

Eagle Scout Leadership Service Project

Final

Maxwell Montalto

Troop 3 Westwood

10/1/2013

My Eagle Scout Leadership Service Project

10/1/2013

Hi, my name is Maxwell Montalto and for my Service Project I wanted to help contribute to maintaining the natural beauty of The Blue Hills. One might ask, "What on earth could make the already beautiful Blue Hills even better?" Well, I thought the same thing when setting off on my Service Project quest. I knew that I wanted to do something centered around The Blue Hills because I spend a lot of time walking around them and enjoying their beauty. For the answer to my question, I sought help from the Friends of the Blue Hills, more specifically a woman named Ms. Judy Jacobs, their director. The organization helps maintain the Reservation and is an advocate for policies that protect the park from inappropriate development. Early on, we talked about several projects. One that included a science experiment sounded very interesting to me.

For an Eagle Service Project proposal to be approved, one must have a clear vision of what a successful project will look like, figure out the steps to get there and complete those steps one at a time. It also requires planning, developing and providing leadership to others so the collective efforts benefit a worthy group.

In talking to Ms. Jacobs, she asked me to lead a project team in looking at ways to control an invasive species, called the Garlic Mustard plant, from certain areas in the Blue Hills Reservation, and replacing it with native plant species.

Garlic Mustard – Biology and Spread

According to websites devoted to invasive plants, I learned that Garlic Mustard's success in taking over an area is a result of a chemical compound it produces, known as Sinigrin. Garlic Mustard releases this chemical into the soil whenever the plant is damaged, killing the fungi that help native plants extract nutrients from the soil. Garlic Mustard requires different nutrients, so without other plants to block the sunlight, it quickly takes-over an area.

(See "University of Georgia Study – Co-evolution between Invasive, Native Species" (attached) for more information.)

Additionally, a single plant can produce thousands of seeds, which scatter as much as several meters from the parent plant. Depending upon conditions, garlic mustard flowers either self-fertilize or are cross-pollinated by a variety of insects. Self-fertilized seed is genetically identical to the parent plant, enhancing its ability to colonize an area.

Although water may transport seeds of garlic mustard, they do not float well and are probably not carried far by wind. Long distance dispersal is most likely aided by human activities and wildlife. Additionally, because white-tailed deer prefer native plants to garlic mustard, large deer populations may help to expand it by removing competing native plants and exposing the soil and seedbed through trampling.

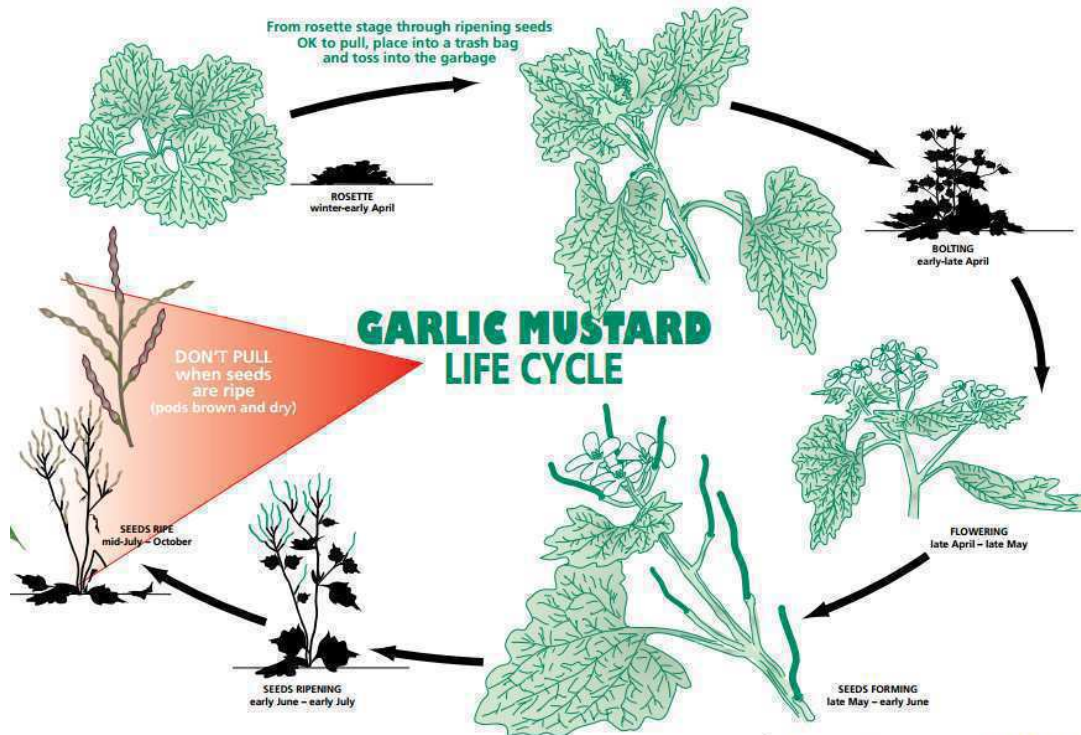
After spending the first half of its two-year life cycle as a rosette of leaves, garlic mustard plants develop rapidly the following spring into mature plants that flower, produce seed and die by late June. In the mid-Atlantic Coastal Plain region, seeds are produced in erect, slender, four-sided pods, called siliques, beginning in May. Siliques become tan and papery as they mature and contain shiny black seeds in a row. By late June, most of the leaves have faded away and garlic mustard plants can be recognized only by the dead and dying stalks of dry, pale brown seedpods that may remain and hold viable seed throughout the summer.

(See "Plant Conservation Alliance – Fact Sheet: Garlic Mustard" (attached) for more information.)

Garlic Mustard – Control



Garlic mustard spreads exclusively by seed. Hikers, animals and road maintenance equipment spread the seeds. Wind dispersal is minor, but flowing water in stream corridors can spread the seeds. Clean your shoes after walking in areas of known garlic mustard infestations so you don't spread seed to yards and parks. Keep dogs on leash and on trails.



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What You Can Do

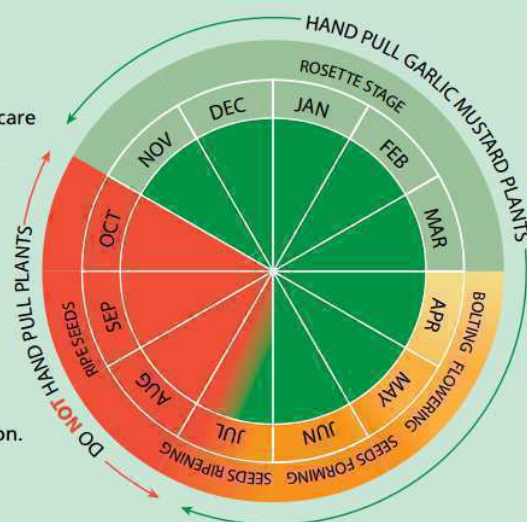
How to Control Garlic Mustard

HAND-PULLING: Hand-pulling garlic mustard requires care and persistence, and thoughtful disposal of the plants. When pulling garlic mustard, be sure to get as much of the root as possible. Roots left in the soil typically re-flower as shorter plants, making the infestation harder to manage. Mowing presents the same risks. A small percentage of newly-sprouted plants flower in May or June, requiring additional hand-pulling.

PLANT DISPOSAL: Put pulled plants in trash bags and put bags in your garbage. Yard debris bins or composting may not fully kill the plants, risking spread to new locations. Be sure to tie the bags tightly so pieces don't fall out and start a new infestation.



MONITORING: It's critical to watch for new plants to prevent formation of more seeds. Garlic mustard plants flower for several weeks, and then green seeds ripen for several more weeks. You can safely pull ripening plants until the seed pods begin to dry and seeds turn black. Then the risk of spreading new seed outweighs the benefit of pulling the plants.



See "How to Control and Contain Garlic Mustard" brochure (attached) for more information.

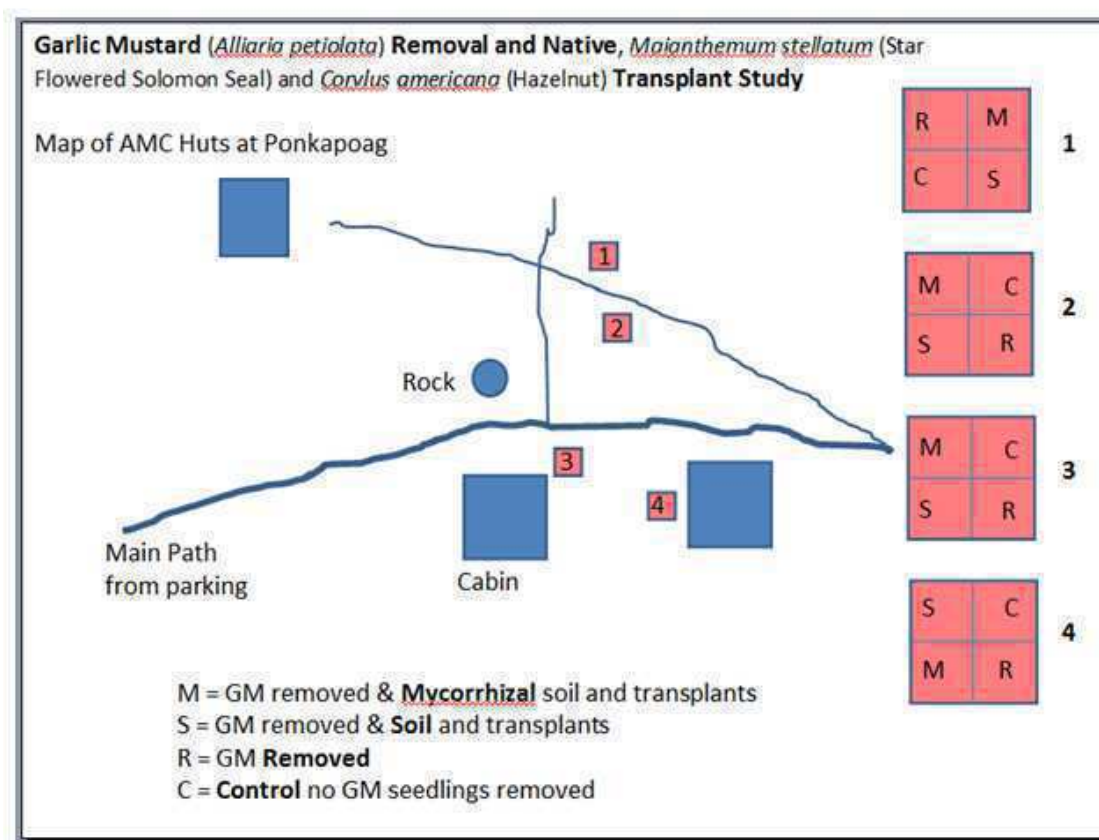
The Team

To help me learn more about this problem and develop ways to control it, PhD. Rick Kesseli, UMass Boston – Biology Dept., teamed up with me. We developed a science experiment to see which strategy hopefully keeps it from spreading.

Using a volunteer work crew (Boy Scouts from Troop 3 Westwood and Friends of the Blue Hills), we started this exercise by weeding a large area near the AMC cabins at Ponkapoag Pond of all the visible Garlic Mustard.

We then marked four sections or areas of land nearby. Each section is about 2 meters x 2 meters (4 m²) and contains four smaller plots, each 1 m². See Attachment A for map of the area.

Attachment A



*Location		
Area	Paces	Direction
#1	22	13° N
#2	18	16° N
#3	9	65° NE
#4	21	93° E

*From the stair case landing at Cabin #3 (Duncan)

Prepared by:
Mr. Rick Kesseli
Professor of Biology at UMass Boston
6/13/2013

Experiment

The plan is to compare:

- Plot 1 - Untouched (control)
- Plot 2 - Cut & removed GM

Comparing 1st and 2nd plots tells us the impact of clearing; does it really reduce the GM?

- Plot 3 - Cut & removed GM + added fertilized soil + added one herbaceous native plant and one woody native bush. The intent is to see if the existing soil conditions can sustain plant growth.
- Plot 4 - Cut & removed GM + added fertilized soil with a special fungus (Mycorrhizal soil) + added one herbaceous native plant and one woody native bush. The intent is to replace any fungi the GM plants may have previously killed.

Comparing 3rd and 4th plots allows us to see if the fungus helps natives survive with GM

Rain Barrel Watering System

To help the newly planted native plants take root, we needed to water them. Unfortunately, however, I learned there was no running water at the AMC huts. We did the best we could by taking water from Ponkapoag Pond, but it wasn't convenient. So I designed and the Boy Scouts made a plant watering system that collects rain water from the roof of AMC Hut #3 (Duncan). I also made a second unit as a spare.



A Call to Boston Area Boy Scouts

The Blue Hills Reservation is a very, very special place for locals to enjoy its natural beauty, diverse natural habitats and many recreational opportunities.

I know that my contributions will not stop the spread of Garlic Mustard overnight, but it's a start! So it's my desire that other Boy Scouts and other volunteers assist in collecting Native Plant Size Data (Attachment B) and Garlic Mustard Density Data (Attachment C) for future analysis, experimentation and corrective action by Mr. Kessili and Friends of the Blue Hills.

I urge you to contact Ms. Judy Lehrer Jacobs, Executive Director - Friends of the Blue Hills, (781)-828-1805, if you are interested in learning more about volunteer opportunities in the Blue Hills.

Yours in Scouting,
Maxwell Montalto
Eagle Scout Candidate
Troop 3, Westwood MA

10/1/2013



FACT SHEET: GARLIC MUSTARD

Garlic Mustard

Alliaria petiolata [Bieb] Cavara & Grande
Mustard family (Brassicaceae)

NATIVE RANGE

Europe

DESCRIPTION

Garlic mustard is a cool season biennial herb with stalked, triangular to heart-shaped, coarsely toothed leaves that give off an odor of garlic when crushed. First-year plants appear as a rosette of green leaves close to the ground. Rosettes remain green through the winter and develop into mature flowering plants the following spring. Flowering plants of garlic mustard reach from 2 to 3½ feet in height and produce buttonlike clusters of small white flowers, each with four petals in the shape of a cross.

Recognition of garlic mustard is critical. Several white-flowered native plants, including toothworts (*Dentaria* spp.), sweet cicely (*Osmorhiza claytonii*), and early saxifrage (*Saxifraga virginica*), occur alongside garlic mustard and may be mistaken for it.

Beginning in May (in the mid-Atlantic Coast Plain region), seeds are produced in erect, slender pods and become shiny black when mature. By late June, when most garlic mustard plants have died, they can be recognized only by the erect stalks of dry, pale brown seedpods that remain, and may hold viable seed, through the summer.

ECOLOGICAL THREAT

Garlic mustard poses a severe threat to native plants and animals in forest communities in much of the eastern and midwestern U.S. Many native wildflowers that complete their life cycles in the springtime (e.g., spring beauty, wild ginger, bloodroot, Dutchman's breeches, hepatica, toothworts, and trilliums) occur in the same habitat as garlic mustard. Once introduced to an area, garlic mustard outcompetes native plants by aggressively monopolizing light, moisture, nutrients, soil and space. Wildlife species that depend on these early plants for their foliage, pollen, nectar, fruits, seeds and roots, are deprived of these essential food sources when garlic mustard replaces them. Humans are also deprived of the vibrant display of beautiful spring wildflowers.

Garlic mustard also poses a threat to one of our rare native insects, the West Virginia white butterfly (*Pieris virginiensis*). Several species of spring wildflowers known as "toothworts" (*Dentaria* spp.), also in the mustard family, are the primary food source for the caterpillar stage of this butterfly. Invasions of garlic mustard are causing local extirpations of the toothworts, and chemicals in garlic mustard appear to be toxic to the eggs of the butterfly, as evidenced by their failure to hatch when laid on garlic mustard plants.



DISTRIBUTION IN THE UNITED STATES

Garlic mustard ranges from eastern Canada, south to Virginia and as far west as Kansas and Nebraska.

HABITAT IN THE UNITED STATES

Garlic mustard frequently occurs in moist, shaded soil of river floodplains, forests, roadsides, edges of woods and trails edges and forest openings. Disturbed areas are most susceptible to rapid invasion and dominance. Though invasive under a wide range of light and soil conditions, garlic mustard is associated with calcareous soils and does not tolerate high acidity. Growing

season inundation may limit invasion of garlic mustard to some extent.

BACKGROUND

Garlic mustard was first recorded in the United States about 1868, from Long Island, New York. It was likely introduced by settlers for food or medicinal purposes.

BIOLOGY & SPREAD

After spending the first half of its two-year life cycle as a rosette of leaves, garlic mustard plants develop rapidly the following spring into mature plants that flower, produce seed and die by late June. In the mid-Atlantic Coastal Plain region, seeds are produced in erect, slender, four-sided pods, called siliques, beginning in May. Siliques become tan and papery as they mature and contain shiny black seeds in a row. By late June, most of the leaves have faded away and garlic mustard plants can be recognized only by the dead and dying stalks of dry, pale brown seedpods that may remain and hold viable seed throughout the summer.

A single plant can produce thousands of seeds, which scatter as much as several meters from the parent plant. Depending upon conditions, garlic mustard flowers either self-fertilize or are cross-pollinated by a variety of insects. Self-fertilized seed is genetically identical to the parent plant, enhancing its ability to colonize an area. Although water may transport seeds of garlic mustard, they do not float well and are probably not carried far by wind. Long distance dispersal is most likely aided by human activities and wildlife. Additionally, because white-tailed deer prefer native plants to garlic mustard, large deer populations may help to expand it by removing competing native plants and exposing the soil and seedbed through trampling.



MANAGEMENT OPTIONS

Because the seeds of garlic can remain viable in the soil for five years or more, effective management requires a long term commitment. The goal is to prevent seed production until the stored seed is exhausted. Hand removal of plants is possible for light infestations and when desirable native species co-occur. Care must be taken to remove the plant with its entire root system because new plants can sprout from root fragments. This is best achieved when the soil is moist, by grasping low and firmly on the plant and tugging gently until the main root loosens from the soil and the entire plant pulls out. Pulled plants should be removed from site if at all possible, especially if flowers are present.

Mechanical

For larger infestations of garlic mustard, or when hand-pulling is not practical, flowering stems can be cut at ground level or within several inches of the ground, to prevent seed production. If stems are cut too high, the plant may produce additional flowers at leaf axils. Once seedpods are present, but before the seeds have matured or scattered, the stalks can be clipped, bagged and removed from the site to help prevent continued buildup of seed stores. This can be done through much of the summer.

Chemical

For very heavy infestations, where the risk to desirable plant species is minimal, application of the systemic herbicide glyphosate (e.g., Roundup®) is also effective. Herbicide may be applied at any time of year, including winter (to kill overwintering rosettes), as long as the temperature is above 50 degrees F and rain is not expected for about 8 hours. Extreme care must be taken not to get glyphosate on desirable plants as the product is non-selective and will kill almost any plant it contacts. Spray shields may be used to better direct herbicide and limit non-intentional drift.

Fire

Fire has been used to control garlic mustard in some large natural settings but, because burning opens the understory, it can encourage germination of stored seeds and promote growth of emerging garlic mustard seedlings. For this reason, burns must be conducted for three to five consecutive years. Regardless of the control method employed, annual monitoring is necessary for a period of at least five years to ensure that seed stores of garlic mustard have been exhausted.

Biological

Researchers are investigating potential biological control agents for garlic mustard which may greatly improve the control of this insidious weed.

USE PESTICIDES WISELY: Always read the entire pesticide label carefully, follow all mixing and application instructions and wear all recommended personal protective gear and clothing. Contact your state department of agriculture for any additional pesticide use requirements, restrictions or recommendations.

NOTICE: mention of pesticide products on this page does not constitute endorsement of any material.

CONTACTS

For more information on the management of garlic mustard, please contact:

- Cornell University, Biological Control of Weeds--Garlic Mustard; <http://www.invasiveplants.net>
- Tennessee Exotic Pest Plant Council; <http://www.tneppc.org/>
- Victoria Nuzzo, Cornell University, Ithaca, NY (vnuzzo@earthlink.net)
- Virginia Natural Heritage Program Fact Sheet--Garlic Mustard; <http://www.state.va.us/~dcr/dnh/invallia.htm>

OTHER LINKS

- <http://www.invasive.org/search/action.cfm?q=Alliaria%20petiolata>
- <http://nbii-nin.ciesin.columbia.edu/ipane/icat/browse.do?specieId=15>

AUTHORS

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PHOTOGRAPHS

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Olivia Kwong, Plant Conservation Alliance, Washington, DC

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Garlic mustard spring flowers



Garlic mustard in winter



Fringecup



Piggy-back



Wild ginger

Garlic mustard - *Alliaria petiolata*

Garlic mustard is a cool season herb, native to Eurasia, that European settlers brought to North America as a garden herb. In its introduced range, garlic mustard's greatest threat is to native woodland wildflowers. It dominates and displaces most native understory species, reduces plant diversity and decreases forage for native wildlife, such as the Columbian black-tailed deer. Garlic mustard that invades road rights-of-way reduces visibility and significantly increases invasive vegetation control costs.

How to Identify Garlic Mustard

Garlic mustard is a biennial herb that forms a basal rosette of kidney-shaped, scalloped leaves in the first year, and an elongated flower stalk in the second year. Its triangular leaves are alternate on the smooth stem and sharply toothed.

Garlic mustard flowers between April and May and forms seeds in early June, which ripen after several weeks. Plants generally have one flowering stem with numerous four-petaled white flowers. Crushed leaves and roots often have a distinct garlic odor. Plant height ranges from 12 to 48 inches, though plants as short as 1 inch or as tall as 72 inches are not unusual. The black, oblong seeds are in rows within a long, narrow pod and can survive in the soil for at least five years.

How to Contain Garlic Mustard

Garlic mustard spreads exclusively by seed. Hikers, animals and road maintenance equipment spread the seeds. Wind dispersal is minor, but flowing water in stream corridors can also spread the seeds. Clean your shoes after walking in areas of known garlic mustard infestations so you don't spread seed to yards and parks.

Garlic Mustard Look Alikes

◀ please don't pull these native plants

Fringecup, *Tellima grandiflora* - watch for hairy leaves and stems

Piggy-back Plant, *Tolmiea menziesii* - watch for hairy leaves and stems

Wild Ginger, *Asarum caudatum* - watch for glossy, dark green leaves

Information source: Oregon Department of Agriculture Garlic Mustard brochure



Garlic mustard spreads exclusively by seed. Hikers, animals and road maintenance equipment spread the seeds. Wind dispersal is minor, but flowing water in stream corridors can spread the seeds. Clean your shoes after walking in areas of known garlic mustard infestations so you don't spread seed to yards and parks. Keep dogs on leash and on trails.

What You Can Do

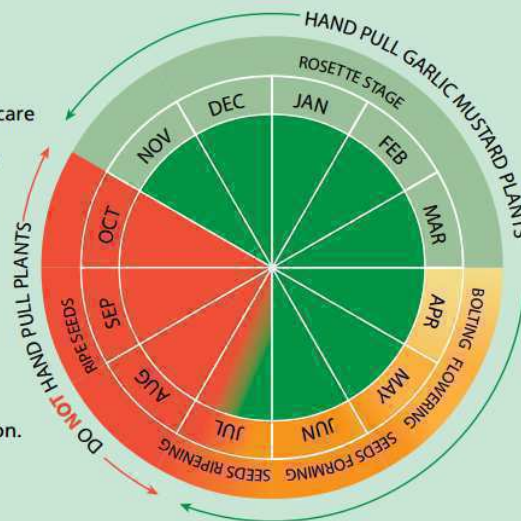
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PLANT DISPOSAL: Put pulled plants in trash bags and put bags in your garbage. Yard debris bins or composting may not fully kill the plants, risking spread to new locations. Be sure to tie the bags tightly so pieces don't fall out and start a new infestation.



MONITORING: It's critical to watch for new plants to prevent formation of more seeds. Garlic mustard plants flower for several weeks, and then green seeds ripen for several more weeks. You can safely pull ripening plants until the seed pods begin to dry and seeds turn black. Then the risk of spreading new seed outweighs the benefit of pulling the plants.



Avoid Pulling Garlic Mustard Look-alikes

Please don't pull these plants:



Fringecup, *Tellima grandiflora*
Watch for hairy leaves and stems



Piggy-back plant, *Tolmiea menziesii*
Watch for hairy leaves and stems



Bittercress, *Cardamine hirsuta*
Grows several inches high,
has lobed leaves and flowers in March

When Removing Garlic Mustard

Do

- **DIG** – Getting the root out reduces the number of re-sprouting plants.
- **BAG** – Be sure your plants don't cause a problem for someone else.
- **HELP** – Neighborhood groups listed here may be sponsoring work parties.
- **WATCH** – Keeping your patch clear prevents new seed from forming, even if the plants are past flowering.

Don't

- **MOW** – Mowing does NOT effectively control garlic mustard, since flowers and roots are still free to make seed.
- **THROW** – Throwing pulled plants on the ground or street allows them to continue flowering and setting seed.
- **COMPOST** – Putting garlic mustard in compost or yard debris bins risks spreading plants to new locations.

Thursday, Jun. 28, 2012

Writer: **Sam Fahmy**, 706-583-0727, sfahmy@uga.edu

Contact: **Richard Lankau**, 706/542-1870, ralankau@uga.edu

Study provides first evidence of coevolution between invasive, native species

Athens, Ga. - Invasive species such as kudzu, privet and garlic mustard can devastate ecosystems, and, until now, scientists had little reason to believe that native plants could mount a successful defense.

A new University of Georgia study shows that some native clearweed plants have evolved resistance to invasive garlic mustard plants—and that the invasive plants appear to be waging a counterattack. The study, published in the early edition of the journal *Proceedings of the National Academy of Sciences*, is thought to provide the first evidence of coevolution between native and invasive plant species.

"The implications of this study are encouraging because they show that the native plants aren't taking this invasion lying down," said study author Richard Lankau, assistant professor of plant biology in the UGA Franklin College of Arts and Sciences. "It suggests that if you were to take a longer view—a timescale of centuries—that exotic species could become integrated into their communities in a way that is less problematic for the natives."

Garlic mustard (*Alliaria petiolata*) was introduced to the U.S. from Europe roughly 150 years ago first in New York and Virginia and then to the Chicago area. The noxious plant continues to spread rapidly throughout the Northeast, Midwest and Southeast. "It's a pretty well-hated plant," Lankau said, because it can form dense carpets in forest understories and, even after being physically removed from an area, can reestablish itself within a year.

Much of the plant's success is a result of the chemical warfare it wages with a compound known as sinigrin, which kills fungi that help native plants extract nutrients from the soil. The chemical is relatively new to North America, and this novelty gives garlic mustard a huge competitive advantage.

Through a series of greenhouse and field experiments conducted over three years in five states, Lankau has shown that invasive garlic mustard produces more sinigrin in areas where more local plants are present. He found that native clearweed (*Pilea pumila*) plants, which were chosen for the study because they occupy the same forest understory habitat, show higher levels of resistance to sinigrin in areas where the two species have a longer history of coexistence.

"It looks like the native plants have evolved in response to the traits of the invader," Lankau said.

In addition to transplanting clearweed seeds back to their sites of origin, Lankau also planted them in all of the other study sites and monitored their growth. Each site has its unique soil chemistry and climate, and Lankau said he expected the plants to exhibit a home-field advantage. Instead, he

found that native plants resistant to the invader did best in heavily invaded sites, regardless of where they originated. Surprisingly, he found that plants resistant to sinigrin actually did worse than their less-resistant-plant counterparts in areas where there was little or no garlic mustard.

"It's not all good for those populations that are evolving tolerance," Lankau said. "Because they are less successful in the absence of garlic mustard, their resistance to the invasive species comes at a cost."

Taken together, the findings suggest that the native and invasive species could reach equilibrium over a long period of time. Lankau said the study also raises the possibility that humans can help speed the adaptation of ecosystems to invasive species. He explained that removing invasive species and replanting natives often results in failure but replacing invasive species with native plants from an area where the plants have had time to adapt to the invader could be more effective. Rather than replanting clearweed from a recently invaded site in Michigan, for example, land managers could use plants from New York that are more likely to be resistant to garlic mustard.

"When people talk about evolution, it's usually in the past tense," Lankau said. "But one of the important messages from this study is that it's an ongoing process that can happen fast. And this study suggests that we might be able to jumpstart that process through evolutionarily informed management."

The research was supported by the National Science Foundation.

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Plot 1 – 9/29/2013



Plot 2 – 9/29/2013



Plot 3 – 9/29/2013



Plot 4 – 9/29/2013



Attachment B

[illegible]

Garlic Mustard Removal and Native Transplant Study

Attachment C

Garlic Mustard - Density

Red = Formula (Don't Touch)

Data Recorded:	Plot	Actual				Extrapolated
		Length (m)	Width (m)	Area (m2)	Plant Count	Plants / 1m2
6/12/2013	1	0.5	0.5	0.25	196	784
6/12/2013	2	0.5	1	0.5	136	272
6/12/2013	3	0.5	0.5	0.25	154	616
6/12/2013	4	0.5	1	0.5	176	352
	1					
	2					
	3					
	4					
	1					
	2					
	3					
	4					
	1					
	2					
	3					
	4					
	1					
	2					
	3					
	4					

Garlic Mustard Removal and Native Transplant Study

Location	AMC Huts at Ponkapoag Pond, Canton, MA
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Initial Team	Max Montalto Judy Lehrer Jacobs Rick Kesseli, PhD Genetics	Eagle Scout Leadership Service Project, Troop 3, Westwood, MA Executive Director, Friends of the Blue Hills Professor and Chair, Biology Dept., UMass Boston
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Natives Used	<i>Maianthemum stellatum</i> (Star Flowered Soloman Seal) <i>Corylus americana</i> (Hazelnut)
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Soil Used	Pro-Mix® BX Mycorrhizae Pro-Mix® BX
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Activities		
6/2/2013	All adults GM plants were removed from the area around the AMC huts	Friends of the Blue Hills & Troop 3 Westwood event
6/12/2013	Four 2m x 2m plots were marked with red flag at center Four treatments (1m ² each) were made for each plot. Control = C Seedlings of GM were not removed Removed = R Seedlings of GM removed with weeding hoe, natives were left Soil = S Seedlings of GM removed with weeding hoe, natives were left Mycorrhiza = M Seedlings of GM removed with weeding hoe, natives were left	Rick, Max and Paul One of each Native transplanted with Potting Soil One of each Native transplanted with Mycorrhizal Potting Soil
8/10/2013	Designed irrigation system	Max, John, Cam DM and Matthew M
8/31/2013	Built irrigation system Installed irrigation system	Max, Dan, Cam DM, Matthew M and John
9/3/2013	Finished installation	Max, Cam DM and Matthew M
9/29/2013	Took plot photos	Max

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The Friends of the Blue Hills is a 1,000-member non-profit organization devoted to preserving and protecting the Blue Hills Reservation's natural beauty, diverse natural habitats and many recreational opportunities.

NEWS

- Help or Run at the Houghton's Pond Trail Race
- Tribute to Judi Houghton
- Friends of the Blue Hills & Merrell at Legacy Place
- Win Dinner on Big Blue and Save the Date of our Annual Celebration!



Friends of the Blue Hills helps maintain the Reservation's 125 miles of trails, control invasive plants that threaten endangered species, and advocate for policies that protect the park from inappropriate development.

[Attend Our Annual Celebration!](#)
[Volunteer Spotlight: Casey Ajalat](#)

Win Dinner on Top of Big Blue! Purchase Raffle Tickets



Name: Casey Ajalat
Town: Pittsford, NY

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Name: Casey Ajalat

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- About the Blue Hills
- FBH Staff & Board
- Boy Scouts





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The Friends of the Blue Hills is a 1,000-member non-profit organization devoted to preserving and protecting the Blue Hills Reservation's natural beauty, diverse natural habitats and many recreational opportunities.

NEWS

- Help or Run at the Houghton's Pond Trail Race
- Tribute to Judi Houghton
- Friends of the Blue Hills & Merrell at Legacy Place
- Win Dinner on Big Blue and Save the Date of our Annual Celebration!

Removing Garlic Mustard:

Near the AMC huts in The Blue Hills, adjacent to Ponkapoag Pond, a small infestation of Garlic Mustard has been terrorizing nearby native plants. So with the help of fellow Scouts, friends, and The Friends of the Blue Hills, I lead teams in picking the plants so that they directly were no longer a harm to the neighboring native plants. Though the immediate problem appeared to have been solved, I learned through research that Garlic Mustard plants can survive and repopulate even after every single visible plants has been removed. To overcome this dilemma, with help from Rick Kesseli, a professor of biology at UMass Boston, we came up with a science experiment to determine which approach of handling the Garlic Mustard would stop it from coming back. We set up four plots and within each plot there we four examples; two had two different species of native plants in them, but one sample had soil with just basic nutrients, and the other sample had a soil with basic nutrients and a fungi that the garlic mustard is known to kill. The other two samples consisted of a sample, where the visible plants were removed, but nothing else was done, and a constant sample where nothing was done to the existing Garlic Mustard plants. We will return at later dates to record the progress of the plots to determine which process has had the best results in keeping the Garlic Mustard away.

