

Eat the Invaders

6th Science Outdoor Spring Lesson

Prep time: 30 min

Lesson Time: 60-75 minutes

Overarching question: How do humans impact the environment?

Key Question: How can we control the spread of invasive species?

Key Words:

Background

Garlic mustard (*Alliaria petiolata*) has invaded the woodlands of the Midwest and Upper Peninsula of Michigan. Garlic mustard was first recorded in the United States around 1868, from Long Island, New York, and was likely introduced by settlers for food and medicinal purposes. Half of all invasive plants started as imported ornamentals; then they hopped the fence and went wild. Garlic mustard releases compounds from its roots which prevent the growth of grass, herbs and seedlings. It can advance across the forest floor at a rate of 20 ft. per year, therefore there is generally very low species diversity on the forest floor in areas that have been colonized by garlic mustard.

This lesson works best if there is a patch of garlic mustard established on or near school property, but could also be conducted as part of a field trip to a preserve or state park. Students need to be able to identify garlic mustard before this lesson can be taught. [This](#) is a great pre-lesson from Pennsylvania's Department of Conservation and Natural Resources, complete with a garlic mustard fact sheet and worksheet. For a general lesson on the impact of invasive species on local ecosystems, check out [this](#) lesson from the New York Times. Brain Pop has an [Invasive Species Lesson Plan](#) with loads of links to lessons and activities that would be a great accompaniment to this lesson.

[More information on garlic mustard](#)

Materials

- three large bins (for washing the garlic mustard)
- hose (for filling the wash bins)
- 1 or more salad spinner
- cutting board
- garlic press
- cheese grater
- bread knife
- mortar and pestle
- spoon, for serving
- recipe ingredients
- large trash bags for harvest and disposal

Review: *What Is an Invasive Species?*

How can we help eliminate or control an invasive?

Control programs can include manual, mechanical, chemical, biological and cultural components.

- spray herbicides, pesticides
- hand-pulling (describe harvest techniques needed for effective removal)

- Take care to remove the entire root, and be careful not to spread seeds- Garlic Mustard seeds can germinate up to five years after they are produced. Plant must be bagged and removed from site, not added to compost piles or used as mulch.

- prescribed fire

- regulation

One of the earliest laws to address invasive species was the Lacey Act, first passed in 1900. Focused on trade, the law prohibited the intentional introduction of fruit bats, mongoose, meerkats, starlings, and English sparrows.

Why is it good to eat an invasive species? What are the benefits of harvesting invasives for human consumption over other methods of invasive species control?

Garlic mustard is not eaten by wildlife like the native plants so it often replaces them in great quantity. We're the only ones who will eat it—even white-tailed deer won't touch it—so forage away. By using the plant as food, we reduce waste, nourish ourselves (garlic mustard is high in fiber, Vitamin C, carotenoids and minerals).

What is foraging?

Foraging Tips

Avoid toxic areas. Never forage for wild edible plants near busy roads or where herbicides and/or pesticides have been sprayed. Most plants absorb lead and other heavy metals from toxic exhaust. These toxins tend to settle in the soil even if the traffic no longer exists or the area has not been sprayed recently.

When foraging wild water plants, know the water source. This is especially important if you're planning to eat the wild edible raw. Eating plants that have grown in contaminated water is the same as drinking contaminated water.

Chemical and heavy metal pollution are also concerns that can't be removed by cooking.

Only forage plants that appear to be healthy. Plants can be afflicted by disease, fungi, pests or pollution. Harvesting healthy plants minimizes the risk of illness and also means you're getting more nutritious food.

Get permission to forage. Most landowners will be happy to see weeds pulled away from their land, but it's always polite to ask.

Food safety review

triple wash system

Prepare garlic mustard pesto

- review definition of invasive species, how to combat the spread (eat them!), foraging guidelines, how to ID garlic mustard, harvest techniques

- harvest garlic mustard!

- review food safety techniques, wash garlic mustard

- prepare garlic mustard pesto

- brainstorm other recipes or other invasives

Recipe

3 cups garlic mustard leaves, washed, dried, packed in a measuring cup

2 large garlic cloves, peeled and pressed or chopped

1 cup olive oil

1 ¼ cup parmesan cheese

1 tsp salt (plus more to taste)

½ tsp pepper (plus more to taste)

2 medium baguettes, for serving

Have all students wash hands following the garlic mustard harvest. Review food safety techniques before preparing garlic mustard pesto. Create stations and have students rotate through all tasks.

Suggested stations:

Leaf separation (5-8 students)

- separate garlic mustard leaves from stems, roots and flowers. Place leaves in first wash bin. Discard all other plant parts in a large trash bag.

First wash (2-3 students)

- using wash tub, remove soil and any other debris from garlic mustard leaves.

Second Wash (2-3 students)

- using wash tub, remove any remaining debris, and shred leaves into small chunks

Third wash (2-3 students)

- wash shredded leaves

Salad Spinner (2 students per spinner)

- spin garlic mustard leaves until dry
- dispose of water after each spin cycle
- place dried leaves in mortar

Garlic Pressing (1 student)

- using a garlic press, press garlic cloves and add to mortar

Cheese Grating (1-2 students)

- grate parmesan cheese to be used in recipe, measure and place in mortar

Pesto Prep (2 students)

- add remaining ingredients to the mortar (measure olive oil, add salt and pepper)
- using pestle, grind ingredients together to form a smooth paste

Bread Slicing (1-2 students)

- slice baguette into $\frac{1}{8}$ " slices for serving

Pesto Assembly (1-2 students)

- using a spoon, place 2 tsp of prepared pesto on baguette slices

Preparation:

Print garlic mustard worksheets, if using. Set up stations for garlic mustard pesto. Review what an invasive species is with students to set up the lesson.

Extensions:

[Invasion!!](#) is a free online game created by a Carnegie Mellon University Entertainment Technology Center (ETC) student project called "Bridges," sponsored by the MacArthur Foundation. Working in partnership with the Field Museum of Chicago, the game explores the goal of preventing Asian carp from invading the waters of Lake Michigan.

[Invader Rangers Activity Booklet](#)

Develop an argument about the most effective means of controlling an invasive species.

Lesson Links

Soil Erosion:

Kudzu- a now infamous invasive species- was originally recommended for planting by farmers as a means to prevent soil erosion in the 1930's and 40's. -

Additional Resources:

Map of garlic mustard invaded territory

Recipe handouts for garlic mustard pesto

Teacher's Guide to Cooking with Kids

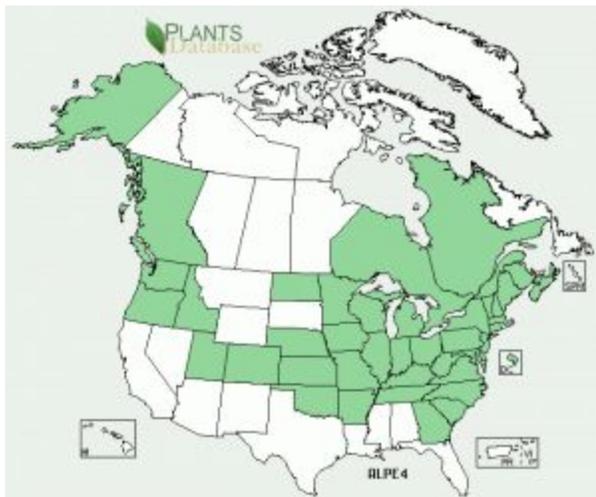
[Guide to Basics of Foraging](#)

[The Forager's Harvest: A Guide to Identifying, Harvesting and Preparing Edible Wild Plants](#)

[Wild Edibles App](#)

[FAQs on eating invasive species](#)

[Nutritional Composition of Garlic Mustard](#)



Garlic mustard
Alliaria petiolata

Seed pods and flowers, eaten raw, are a pungent addition to salads.



Flowers have four small white petals.

Leaves have edges with coarse teeth; if crushed, they smell like garlic.

The native plant **sweet cicely**, leaf at left, is sometimes mistaken for garlic mustard. Its leaves are divided into leaflets — and they don't smell like garlic.

Older leaves are more rounded — and more bitter.

Taproots can be grated into vinegar and used in place of horseradish.

