



Biodiversity and Invasive Species: A Garlic Mustard Case Study

Organization:

Title: Biodiversity and Invasive Species: A Garlic Mustard Case Study

Summary: Students will explore the impact of invasive species on biodiversity specifically by looking at garlic mustard. Students will draw a scientific drawing of the plant, play a game to understand how it moves through ecosystems, discover plans on how to eradicate it, and contribute to citizen science.

Inquiry Question: Inquiry Question 4: What are Some Common Threats to Biodiversity?

Duration: 1-2 hours (depending on field trips/walks)

Learning Environment: Indoor and Outdoor classrooms

Season: Spring, Summer

Materials:

- <https://www.invasivespeciescentre.ca/learn/>
- <https://www.cbd.int/undb/media/factsheets/undb-factsheet-ias-en.pdf>
- Writing Tools
- Scientific Drawings of Plants.pdf
- Steps to Make a Scientific Drawing.pdf
- Instructions for Garlic Mustard Tag Game.pdf
- Invasive Species (Garlic Mustard).pptx
- Global Garlic Mustard Field Study.pdf
- Website: garlicmustard.org
- App: iNaturalist

Curriculum Links:

Science and Technology: B2.2, B2.7, A1.1, A1.2, A1.5, B2.1

Meta Data:

Content Type: Activity

Bundle: Gifts of the Earth

Theme: Invasive Species, Biodiversity Crisis

Subject Area: Biology, Environmental Education, Science

Curriculum Focus: 7

Instructions:

a. Invasive species as a Threat to Biodiversity

1. Teacher leads a class discussion regarding how invasive species harm biodiversity.

Guiding information for discussion:



- <https://www.invasivespeciescentre.ca/learn/>
- <https://www.cbd.int/undb/media/factsheets/undb-factsheet-ias-en.pdf>
- Invasive species are also discussed in the Tools Bundle in Learning Activity 11: *Invasive Species*.

2. Teacher starts by discussing invasive species in general and then eventually focuses the discussion on garlic mustard.

3. Students can draw garlic mustard or another invasive species (of their choice) to become familiar with its characteristics and identification. (For instructions refer to **Scientific Drawings of Plants.pdf** and **Steps to Make a Scientific Drawing.pdf**).

4. Students play the garlic mustard invasive species simulation tag game. Instructions included in the **Instructions for Garlic Mustard Tag Game.pdf**.

5. Teacher goes over the field survey methods in the following paper:

Colautti, R., Franks, S., Hufbauer, R., Kotanen, P., Torchin, M., Byers, J., Pysek, P., Bossdorf, O. (2014) The Global Garlic Mustard Field Survey (GGMFS): challenges and opportunities of a unique, large-scale collaboration for invasion biology. NeoBiota 21:29-47. doi: 10.3897/neobiota.21.5242

6. Teacher reviews survey methods using PPT found in **Invasive Species (Garlic Mustard).pptx** and worksheet found in the **Global Garlic Mustard Field Study.pdf**.

Participating in Citizen Science:

7. Students use the same methods as Colautti et al. to determine the presence/characteristics of garlic mustard on their school or on their property/neighborhood and write down observations. Instructions regarding how to track and input observations are included on the website compiled by Dr. Rob Colautti: *garlicmustard.org*. Instructions on how to run activity are included in the **Invasive Species (Garlic Mustard).pptx**.

If school yards don't have garlic mustard, the activity can also be adapted to another invasive species. In Kingston, ON, some invasive species include, wild parsnip, purple loosestrife, phragmites, and dog strangling vine. If teachers are feeling adventurous, they can take their class to Belle Island and contribute to citizen science using the *garlicmustard.org* website or by using the iNaturalist app. The island had lots of garlic mustard the students can track and record!



QUILLS

Queen's University Indigenous Land-Based Learning STEM
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Optional Extension Activity:

1. Students can do research and develop a plan to eradicate garlic mustard (or another invasive species) from the school property, Belle Island or another location they visit.