
Weed Lotto: How Brazen is the Invasion?

Activity Overview

Students will learn how to measure the percentage of their restoration site that is made up of non-native plants.

Objectives

Students will:

- Be able to calculate the percent frequency
- Learn about the visual characteristics of non-native plants

Subjects Covered

Math, Science

Grades

K through 12

Activity Time

1 hour

Season

Spring, summer, fall

Materials

“Weed Lotto Master Guide” (guide template included with this activity), “Weed Lotto Field Sheet: Quadrat Data” worksheet, quadrat construction materials or hula hoops, pens/pencils, clipboards

Modified from Earth Partnership for Schools K-12 Curriculum Guide, University of Wisconsin Board of Regents.

Background

The proliferation of non-native, invasive species in a restoration can lead to native species not having enough space, food, water or sun to flourish. It is useful to determine the frequency of occurrence of non-natives in order to decide upon control measures.

Simple Sampling Tools

A quadrat is a simple scientific tool that allows students to take a sample that is representative of the whole site. Here are two types of sampling devices:

Quadrats: Four dowel rods of equal length form a sampling square. Students then count the number of different species inside the square.

Hoops: Hula hoops of the same size can be randomly (and gently) tossed over the students’ shoulders. Students then take a sampling inside the circle.

Create a “Weed Lotto Master Guide” (guide template included with this activity) that contains pictures and/or descriptions of all of the non-native plants in the site. Make sure the pictures and descriptions fit the current stage of the plant (i.e. early spring - leafy part of plant; late fall - plant going to seed).



Activity Description

1. Form students into groups and demonstrate how to construct quadrats or use hoops. Then assign them two different areas for sampling.
2. Provide Weed Lotto Master Guide and “Weed Lotto Field Sheet: Quadrat Data” worksheet. The left column of the worksheet under “Species Name” should have all of the common, non-native species found in the restoration.
3. Students set up their quadrats (or hoops) in their areas. They identify non-natives by using the Weed Lotto Master Guide and then mark weeds found on their “Wworksheet.”
4. Older students can collect the data from all the groups and their quadrats. Then under the right hand column titled “# Quads” list the number of quadrats in which that species was found. Students should have a completely filled in sheet by the end of the activity. A classroom copy could be displayed on a bulletin board for everyone to see.
5. Individually or as a class, students calculate the frequency at which each species occurs in their site. For each species, divide the number of quadrats in which that species was found by the total number of quadrats sampled and multiply one hundred.

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For example: If white clover is found in six of the twelve quadrats, the percent frequency would be: $6/12 \times 100 = 50\%$

Extensions

- Younger students can figure out percent frequency by listing in order which plant species occurs most frequently.
-  Create an electronic database with all quadrat/hoop data gathered. Translate the percent frequency into a pie chart, graph or other visual aid to give further representation of how much of the restoration site is occupied by non-native plants.
-  Use online invasive plant resource guides to make an educational brochure or pamphlet about the types/impacts of invasive plant species.
- See Earth Partnership for Schools “Young Prairie Check-Up” activity to decide which non-native plants are causing the most problems based on quantity, growing and seeding characteristics.
- Make weed cards for each non-native species. See Earth Partnership for Schools “Weed Cards” activity.

Additional Resources

- Czarapata, Elizabeth J. 2005. *Invasions of the Upper Midwest: An illustrated guide to their identification and control*. Madison: University of Wisconsin Press.
- Royer, France, and Richard Dickinson. 1999. *Weeds of the Northern U.S. and Canada: A guide for identification*. Edmonton: University of Alberta Press and Renton: Lone Pine Publishing.
- Solecki, Mary Kay. 1997. “Controlling Invasive Plants,” in Packard, S. and CF Mutel eds. *The tallgrass restoration handbook*. Washington, D.C.: Island Press.
- “Weeds of the North Central States.” 1981. University of Illinois at Urbana-Champaign. (Available at County Extension Offices.)
- Yatskievych, Kay. 2000. *Field guide to Indiana wildflowers*. Bloomington: Indiana University Press.

Websites

- Indiana Native Plant and Wildflower Society (INPAWS) Invasive Plant Species: <http://www.inpaws.org/Invasive%20Plants%20in%20Indiana.html>
- INPAWS - Common Invasive Plant Species of Indiana Brochure: <http://www.inpaws.org/InvasivePlants.pdf>
- E Nature: http://www.enature.com/native_invasive/invasives.asp
- Purdue University Weed Science: <http://www.btny.purdue.edu/weedscience/>
- Purdue University—Indiana’s “Most Wanted” Invasive Plant Pests: <http://extension.entm.purdue.edu/CAPS/>
- The Nature Conservancy Invasive Species—Indiana: <http://www.nature.org/wherewework/northamerica/states/indiana/howwework/art24965.html>
- National Invasive Species Information Center: <http://www.invasivespeciesinfo.gov>
- Weed Science Society of America: <http://www.wssa.net/weeds/ID/index.htm>

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- Bureau of Land Management Learning Landscapes Invasive Species:
<http://www.blm.gov/education/LearningLandscapes/explorers/lifetime/invasive.html>
- Midwest Invasive Plant Network (MIPN): <http://mipn.org/>
- National Park Service - Alien Plant Invaders of Natural Areas Fact Sheets:
<http://www.nps.gov/plants/alien/fact.htm>
- University of Wisconsin—Weed Identification and Management:
<http://www.weedid.wisc.edu/weedid.php> (Be sure to enter Indiana as the Search Location located in the upper right corner of page.)
- USDA Plants Database from the Natural Resources Conservation Service:
<http://plants.usda.gov/>

Assessments

- Students can write a brief paragraph about which non-native plants might be the most troublesome, least troublesome and why.

Weed Lotto Master Guide
