

Invasive Plant Survey

Time: 1 class period

National Benchmarks: Benchmarks 5A: Diversity of Life; 5D Interdependence of Life; 5E: Flow of Matter and Energy; 9B:Symbolic Relationships; 9D:Uncertainty; 12B:Computation and Estimation; 12D:Communication Skills; 12E:Critical-Response Skills.

National Science Content Standards: *Science as Inquiry: A; Life Science: C:* Biological Evolution; The Interdependence of Organisms; Matter, Energy, and Organization in Living Systems; *Science and Technology: E:* Abilities of Technological Design; Understandings about Science and Technology; *Science in Personal and Social Perspectives: F:* Population Growth; Natural Resources: Environmental Quality; Natural and Human-induced Hazards; Science and Technology in Local, National, and Global Challenges

New York State Standards: 1, 2, 4, 5, 6, 7

Objective: Students will know what invasive plants exist in their area and will be able to identify at least three invasive plants along a trail or transect.

Lesson Outline:

1. Students brainstorm invasive plants that they know about.
2. Students work in groups to identify invasive plants along a trail or transect.
3. Students estimate abundance & infestation rates in a quadrant along a transect.
4. Students explore herbivory rates on invasive plant leaves and compare it to native plant herbivory rates.
5. Students share their results.

Materials: Laminated sets of invasive plant cards (the cards on this website are suitable for the Mid-Hudson Valley; plants may need to be added or removed depending on your geographic location); copies of student lab sheet; measuring tapes, transparency sheets cut into 4x6 inch cards with 1cm square grid.

Engage: Ask students to share as many invasive plants as they can think of; most students know at least one plant, even if it is not from their local area. Make a list on the board.

Explore: In groups, students will receive a copy of the invasive plant cards, along with the student handout. They should have enough time to explore a trail or forest edge near the schoolyard. Remind students about poison ivy and general safety in the field.

Set up a transect along which students can measure out small quadrants. Depending on the size of your class, you may want to have more than one transect, or a longer transect. You can have students investigate one quadrant, or more than one, depending on how much time you have available. In each quadrant, students identify the invasive plants present (if any), estimate the abundance of the invasive plant, and identify the habitat type.

Finally, students estimate the percent herbivory of invasive and native plants by collecting ten leaves from different native and invasive plants. Taking the leaves back to the classroom, the students use the transparency sheets with the grids to estimate how much herbivory has taken place. Any herbivory should be counted, but fungal damage should not.

Explain: Invasive plants are a problem throughout the world, and New York harbors a large number due to the high volume of shipping traffic in the state. Although some invasive plants

continue to be sold in garden centers and nurseries, awareness is helping reduce the incidence of accidental introductions. Invasive plants tend to be successful because they reproduce in high numbers, can tolerate a range of soil types and weather conditions, and generally are free of natural predators found in their native range. While there is some evidence that native predators eventually learn how to eat invasive plants, some species are well protected (such as Japanese barberry, which has lots of thorns) or are toxic to competitors (such as Tree of Heaven, which emits toxins through its roots). Generally, native plants suffer higher rates of herbivory than invasive species. Different areas in New York have different invasive plant problems, but invasive plants continue to spread into new areas.

Extend: Students can divide into groups and research the main invasive plants in the area. They could also conduct the transect survey in other sites in local parks.

Evaluate: Collect student lab sheets.

Comments: