

## Invasive Species Introduction

**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 an invasive species is and be able to explain the effects of at least one invasive species on an ecosystem.

### Lesson Outline:

1. Students view a collection of photos of invasive and native plants, making a list depending on their own ideas about which plants are invasive.
2. Students use a powerpoint presentation to learn about invasive species around the world as well as in the Hudson river.
3. In groups, students discuss the possible impacts of an invasive species on a hypothetical ecosystem.

**Materials:** Photos of invasives/natives, powerpoint, handouts for students (*Optional:* samples of invasive and native species such as shells)

**Engage:** Pass out photos of the ‘mystery’ species, and ask students to create a list together of which species they think are invasive, and which are not. Once students have had a chance to view all of the photos, ask for their results and create a class chart. Discuss each of the photos in turn, and encourage students to debate the meaning of ‘invasive’. For instance, with the photo of the goats, students may not realize that certain common species cause a lot of problems if they are in different habitat, such as goats on an island. Another common misconception students have is that any species in abundance is an invasive, which is obviously not the case with migrations or dense native stands. This can lead to a good discussion on what it means for something to be ‘invasive’.

Names of the organisms from the invasive photos from the powerpoint supplied online:

1. Goats (invasive on islands)
2. Purple loosestrife (invasive in North America)
3. Blue mussels from New England (native)
4. Zebra mussels in the Great Lakes (invasive in the Americas)
5. Goldenrod (native in the U.S., invasive in Asia)
6. California wildflowers
7. Kudzu (invasive in the U.S.)

8. Lupine field (native flower to the U.S.)
9. Migrating salmon (U.S.)
10. Red crab migration in Australia (native Australia)

**Explore:** Use the powerpoint presentation to show students different types of invasive species, asking questions throughout. Give time for students to discuss in pairs when looking at data or graphs. It is also useful to have examples of invasive species such as dead zebra mussels, seeds of the water chestnut, and the native unionid mussel shells.

**Explain:** Invasive species have been spread throughout the world, in effect mirroring the movements of humans as global trade has increased. A distinction should be made between alien and invasive species. While an alien species is any species that is moved out of its native range by human activities, an invasive species is considered non-native and aggressive, and displaces native species. In the Hudson River, we have over one hundred alien species, with more arriving every year. In 2007, the DEC put out a notice to watch for the Chinese Mitten Crab, one of which was first caught near the Tappan Zee Bridge in June of that year. Mitten crabs have now been discovered throughout the estuary. Go to <http://www.dec.ny.gov/animals/35888.html> for more information about this new invasive animal. People are concerned that this crab may out-compete the native blue crab, especially since it is aggressive and can survive in freshwater.

**Extend:** Students can research one of the main invasive species in the Hudson River and present their information to the class.

**Evaluate:** Students should write a one-page response to the question: How do invasive species change ecosystems?

**Comments:**