

No magic borders

(http://www.cce.org/resources/learning_centre/classroom_activities/magic_borders.asp)

Time:

Two to three hours

Materials:

- Map of your region showing parks and other public lands
- Piece of tag-board
- Photographs or articles about the effects of pollution on wildlife (optional)
- A long piece of string or twine
- Plastic or paper cut-out shapes of animals and plants
- Four chalkboard erasers full of chalk
- Two large pleated paper fans

Overview

Governments all over the world have protected natural areas of particular value or beauty. Various regulations determine what is allowed and what is prohibited in these areas. Yet, for a number of reasons, regulations may not be enough to protect wild areas and the resources within them. For example, neither exotic plants entering our communities nor polluted air from industrial areas observe borders. An arbitrary line on a map will not keep wildlife such as grizzly bears, wolves, or birds from leaving a protected area in search of food or force wildlife to follow a traditional migration pattern.

Objectives

Students will:

- Explain the terms:
 - pollution
 - borders, and
 - boundaries
- Understand the purposes and limitations of political boundaries and borders; and
- Identify some of the causes and effects of pollution.

Geographic Skills

- Asking Geographic Questions
- Acquiring Geographic Information
- Organizing Geographic Information
- Answering Geographic Questions
- Analyzing Geographic Information

Suggested Procedure

Opening:

Begin by discussing with your students what they know about pollution. What is pollution? What causes it? What is the effect of pollution on flora and fauna (for example, acid rain kills trees and may render lakes lifeless)? What kinds of pollution are problems in your area (for example, exhaust from cars and trucks, industrial smoke, dust and runoff from agriculture, soil erosion from construction)?

Ask them if they know of measures people take to protect wildlife and plants from pollution. Write their responses on the board or overhead. Then ask them if they think wildlife can be

protected from pollution by establishing protective borders and boundaries. Why or why not? Explain that neither pollution nor wildlife observes boundaries. Boundaries are social constructs created by humans and drawn on maps. Culturally and politically we need them, but biologically we need to treat them as if they aren't there. (Use the plight of the trans-boundary North American grizzly bear to explain this concept. Tell the students that in the United States, grizzlies are protected by the Endangered Species Act. In Canada, the far-roaming carnivores have no such legal protection. British Columbia has been undergoing a debate recently about the number of grizzlies in the province and if hunting should be allowed. Bears do not recognize the boundary between the two countries and can wander in and out of protected environments.) Continue by explaining that, just as the grizzly bear wanders without regard for country boundaries, pollution knows no political boundaries either

Ask students to identify forms of pollution that can infiltrate protected areas (noise, water, and air pollution; pesticides; weeds and predatory animals). How do these pollutants get there? What are some possible effects on animals and plants (growth abnormalities, reduced numbers, sickness)?

Development:

Explain to students that they will be simulating how pollution knows no boundaries. Have the students look at a map of your region and choose a park or 'protected' public space. Have students note any boundaries around the area.

Ask one student to write the name of the park or parcel of land on a piece of tag-board and stand, holding the sign, in the middle of the room. Encircle an area around the student with the string. Place plastic or paper shapes of animals and plants within the 'park.' Have two students, each with two chalky erasers, stand outside the boundaries. These are pollution sources. Designate two more students to play the role of wind and give them the fans. Have them stand so that the pollution lies between them and the boundary. When everyone is ready, have the students with fans wave them vigorously while the students with the erasers create pollution by clapping the erasers together

Did the boundary protect the plants and animals from pollution? What other forms of pollution can pass into protected areas? In what other ways, in addition to wind, do pollutants move from place to place?

Closing:

Discuss specific pollution-related threats to animal populations. This could include oil spills, dumping of chemicals and garbage, pesticides, and jet engine fumes. Ask students what actions they can take to reduce their own polluting, such as carpooling, riding bikes, taking the bus, conserving water and electricity, or using environmentally safe fertilizers.

Suggested Student Assessment

Have students design another simulation about the spread of pollution to perform for students in other classes or for parents. The simulation should show how noise, water, or air pollution spreads without regard for man-made or natural boundaries. Have them write the main points of their lesson on poster board to show their audiences.

Extending the Lesson

Lead a discussion about what can happen when animals wander out of protected areas. For example, wolves may kill livestock, and bison can carry diseases that are dangerous to cattle.

If your classroom has a guinea pig or gerbil, release it into the 'protected' area you created earlier with string, to demonstrate how animals observe no borders.

Identify exotic species that exist in your community and discuss the ways in which these species probably got there (for example, by wind; seeds or spores tracked in on shoes or tires; attached to ships).