

LESSON #7: The Importance of Plant Conservation

Objective: To review why plant conservation is important.

Introduction to Activity: In this activity, students will have an opportunity to reflect upon, apply, and share what they have learned from the module about plant conservation. Teachers will reinforce the key “take home” messages regarding the importance of plant diversity and the need for its conservation.

Materials Needed:

- copy of Key Ecological Reasons for Protecting Plant Diversity (cut up into individual cards)
- poster board or butcher paper
- markers

Activity:

Begin the activity by summarizing the three broad reasons for conserving plant diversity:

- Practical reasons (medicines, food, etc.)
- Ecological reasons (pollination, fruit dispersal, providing habitat)
- Personal and aesthetic reasons (the world would be duller without the beauty of flowers; I like flowers and would miss them, etc.)

Explain to your students that they will be working in small groups to discuss and answer key questions related to what they have learned in the module. Each group will receive a question that it should try to answer in a short class presentation (2 minutes or so). Each presentation should include an answer to the question(s), a specific or hypothetical example, and a large diagram or related drawing. (The drawing can be done quickly and does not need to be “perfect.”)

Divide your students into small groups of three or four students each. There are six different questions, so six groups will work best. However, if your class is large, you can assign each question to more than one group. Give each group a copy of the assigned question(s), and a sheet of butcher paper and markers. Allow the groups to discuss their questions and prepare a quick diagram or drawing to illustrate their answers. Then, ask each group to make a very short presentation.

In between presentations, be sure to add details or important examples that they may happen to miss. Once all presentations are finished, make the following concluding points:

- Many living things have developed intricate relationships with plants, their pollinators and their fruit dispersers. Thus, losing one plant, one pollinator, or one fruit disperser can send a chain reaction of effects through an ecosystem that impacts MANY other species.
- In short, protecting the entire diversity of plants (and their pollinators and fruits dispersers) in an ecosystem is essential for maintaining healthy habitats for many other species including herbivores, carnivores, and scavengers.
- When a forest, wetland, or prairie is cut down, filled in, or bulldozed for development, it is obvious to us that habitat is being lost. However, not all is necessarily well even within intact natural habitats like forests, marshes, and pastures. These habitats may not be at all healthy if they have lost the full diversity of native plants that used to live in them.

Tell the students that many people and organizations are working on these issues. Botanic gardens, in particular, are playing an important role in plant conservation through research, education and on-the-ground conservation projects. Tell them about the upcoming trip to your local botanic garden and that they will learn more about how botanic gardens are working to protect plant diversity, both locally and globally.

Final note: For students and teachers who have the inclination and time to go further with their interest and concern about protecting plant diversity, a list of possible action projects is provided later in the curriculum module.

Key Ecological Reasons for Protecting Plant Diversity

Plants and their pollinators are dependent upon each other. Explain and give an example. What will happen if either one is substantially reduced in number or goes extinct?

If plants aren't pollinated, what steps in their reproduction don't take place? What can they not produce? What would be the impacts of this on the plant and other living things? Give a hypothetical example.

Plants and their fruit dispersers are dependent upon one another. Explain and give an example. What will happen if either one is substantially reduced in number or goes extinct?

Tropical and temperate forests would not exist as we know them without the plant/pollinator and plant/disperser relationships that exist within them. Explain and provide an example.

Trees and other plants support animal diversity in a variety of ways. Describe at least four important ways that plants provide critical habitat to animals.

One individual plant can provide food resources for a wide variety of animals. What parts of the plant are sources of food and what kinds of animals might rely on different parts of the plant?

Answer Sheet: Key Ecological Reasons for Protecting Plant Diversity

1. Plants and their pollinators are dependent upon each other. Explain and give an example. What will happen if either one is substantially reduced in number or goes extinct?

Answer: Plants can't reproduce without being pollinated. Animal pollinators are often dependent on the plants they pollinate for food (nectar or pollen) and scents that some pollinator insects use to attract mates. For example, hummingbirds that rely on the nectar of Heliconia flowers for food, will decline if the habitat in which Heliconia lives is cut down. If hummingbird populations go down, there will be fewer hummingbirds to pollinate other Heliconia flowers, and Heliconia flowers may be reduced in number. The reduction in population of the plant or the pollinator will result in a reduction in population of the other.

2. If plants aren't pollinated, what steps in their reproduction don't take place? What can they not produce? What would be the impacts of this on the plant and other living things? Give a hypothetical example.

Answer: If plants aren't pollinated, they can't be fertilized. Thus, seeds and fruits won't develop. Without seeds to be dispersed, this plant can't reproduce. Also, without fruits developing, the animals that might rely upon them will be affected.

3. Plants and their fruit dispersers are dependent upon one another. Explain and give an example. What will happen if either one is substantially reduced in number or goes extinct?

To reproduce, plants need their seeds to be transported from the parent plant. The fruits of many plants are designed to be transported by specific animal dispersers. If the disperser is reduced significantly in number—say, by hunting, then the plant will have a more difficult time reproducing. Similarly, if the plant is reduced in number, for example due to disease or habitat loss, the animal disperser will lose a significant source of food. That animal will need to find an alternate source of food, if available, or it will also decline in number.

4. Tropical and temperate forests would not exist as we know them without the plant/pollinator and plant/disperser relationships that exist within them. Explain and provide an example.

Answer: Much of the mass of a forest is found in the trees. For a forest to exist, trees must be able to reproduce successfully. This means they must be pollinated and the seeds must be successfully dispersed. Many trees in tropical regions rely on insects and birds to pollinate the flowers, and animals such as monkeys, parrots, and fish to disperse the seeds.

5. Trees and other plants support animal diversity in a variety of ways. Describe at least four important ways that plants provide critical habitat to animals.

Answer: Trees provide homes, food, nesting places, and protection for many animals. Examples include holes for squirrels, owls, raccoons; roosting perches for bats; nesting places in the trunk and on branches for birds; food for a wide variety of creatures; and hiding places for birds and other animals that are hiding from predators.

6. One individual plant can provide food resources for a wide variety of animals. What parts of the plant are sources of food and what kinds of animals might rely on different parts of the plant?

Answer: The leaves, stem, bark, trunk, fruit, and roots all can provide food for animals. Leaves might be consumed by herbivorous mammals and a wide variety of insects; a soft stem might be visited by sap-sucking insects; insects eat the bark and trunks of trees and these insects, in turn, provide food for other animals such as insect-eating birds; many mammals and insects rely on fruits as a key source of food in their diet; and grubs, nematodes, and cicadas are among the many things that rely on plant roots for food.