




6.3 Biodiversity

Lesson Objectives

-  Define biodiversity and explain its value.
-  Identify current threats to biodiversity.
-  Describe how biodiversity can be preserved.

Lesson Summary

The Value of Biodiversity The sum of all the genetic diversity among all the organisms in the biosphere is called **biodiversity**. There are three general types of biodiversity:

- ▶ **Ecosystem diversity** is the variety of habitats, communities, and ecological processes in the biosphere.
- ▶ **Species diversity** is the number of different species in an area or in the biosphere.
- ▶ **Genetic diversity** is the total of all genetic information carried in living things.

Biodiversity benefits humans through its contributions to medicine and agriculture and through the provision of ecological goods and services.

Threats to Biodiversity Human activities threaten biodiversity.

- ▶ Development splits ecosystems into pieces, resulting in **habitat fragmentation**. The smaller the pieces of a habitat, the less likely that species in the habitat can survive.
- ▶ Other threats to biodiversity include hunting, introduced species, pollution, and climate change.

Conserving Biodiversity Conservation efforts are focused on three things:

- ▶ Protecting single species is the focus of groups such as the Association of Zoos and Aquariums (AZA), which oversees species survival plans (SSPs).
- ▶ Protecting habitats and ecosystems is the main thrust of global efforts. Biologists are particularly concerned about **ecological hot spots**, which are places where significant numbers of habitats and species are in immediate danger of extinction.
- ▶ Considering local interests is part of developing plans to replace harmful activities with ones that conserve environments and biodiversity.

The Value of Biodiversity

1. What is biodiversity?

2. Why is biodiversity one of Earth's greatest natural resources?

3. Complete the table to define the types of biodiversity.

| Diversity in the Biosphere | |
|----------------------------|------------|
| Type of Diversity | Definition |
| Ecosystem diversity | |
| Species diversity | |
| Genetic diversity | |

Threats to Biodiversity

For Questions 4–8, write *True* if the statement is true. If the statement is false, change the underlined word or words to make the statement true.

- _____ 4. The current rate of species loss is 10 times the typical rate of extinction.
- _____ 5. The smaller a habitat “island,” the larger the number of species that can live there.
- _____ 6. Habitat fragmentation increases the impact of hunting on endangered species.
- _____ 7. Endangered species can become invasive and threaten biodiversity.
- _____ 8. The increased concentration of carbon dioxide in air is making oceans more acidic and putting stress on coral reefs.

9. What are five ways that human activity reduces biodiversity?

10. Identify three reasons why endangered species are hunted.

11. How can introduced species lead to economic losses?

12. How does climate change threaten biodiversity?

Conserving Biodiversity

13. What is the main purpose of biodiversity conservation today?

14. Why have ecologists identified ecological hot spots?

15. What are some of the challenges that conservationists face?

16. What are some strategies that encourage conservation? Provide an example of one of these strategies.

Apply the Big idea

17. Why is preserving entire ecosystems a better idea than protecting single species from extinction?
