Biology 2e
Unit 8: Ecology
Chapter 47: Conservation Biology and Biodiversity

Visual Connection Questions
1. Scientists measured the relative abundance of fern spores above and below the K-Pg boundary in this rock sample. Which of the following statements most likely represents their findings?

a. An abundance of fern spores from several species was found above the K-Pg boundary, but none was found below.

2. The Svalbard Global Seed Vault is located on Spitsbergen island in Norway, which has an arctic climate. Why might an arctic climate be good for seed storage?
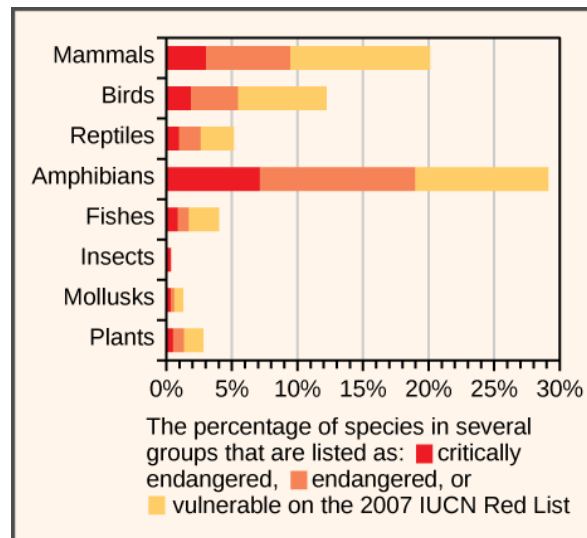

The ground is permanently frozen so the seeds will keep even if the electricity fails.

3. Converting a prairie to a farm field is an example of _____.
b. habitat loss

4. Which of the following statements is not supported by this graph?

The percentage of species in several groups that are listed as: ■ critically endangered, ■ endangered, or ■ vulnerable on the 2007 IUCN Red List

c. Within each group, there are more critically endangered species than vulnerable species.

Review Questions

5. With an extinction rate of 100 E/MSY and an estimated 10 million species, how many extinctions are expected to occur in a century?
c. 100, 000

6. An adaptive radiation is_____.
a. a burst of speciation

7. The number of currently described species on the planet is about _____.
c. 1.5 million

8. A mass extinction is defined as _____.
d. a loss of 50 percent of species

9. A secondary plant compound might be used for which of the following?
b. a new drug

10. Pollination is an example of _____.
c. an ecosystem service

11. What is an ecosystem service that performs the same function as a pesticide?

d. predators of pests

12. Which two extinction risks may be a direct result of the pet trade?
c. overharvesting and exotic species introduction

13. Exotic species are especially threatening to what kind of ecosystem?
c. islands

14. Certain parrot species cannot be brought to the United States to be sold as pets. What is the name of the legislation that makes this illegal?
c. CITES

15. Which measures can protect biodiversity?
d. all of the above

16. About what percentage of land on the planet is set aside as a preserve of some type?
c. 11 percent

17. Converting a prairie to a farm field is an example of _____.
b. habitat loss

Critical Thinking Questions

18. Describe the evidence for the cause of the Cretaceous–Paleogene (K–Pg) mass extinction.
The hypothesized cause of the K–Pg extinction event is an asteroid impact. The first piece of evidence of the impact is a spike in iridium (an element that is rare on Earth, but common in meteors) in the geological layers that mark the K–Pg transition. The second piece of evidence is an impact crater off the Yucatán Peninsula that is the right size and age to have caused the extinction event.

19. Describe the two methods used to calculate contemporary extinction rates.
Extinction rates are calculated based on the recorded extinction of species in the past 500 years. Adjustments are made for unobserved extinctions and undiscovered species. The second method is a calculation based on the amount of habitat destruction and species-area curves.

20. Explain how biodiversity loss can impact crop diversity.
Crop plants are derived from wild plants, and genes from wild relatives are frequently brought into crop varieties by plant breeders to add valued characteristics to the crops. If the wild species are lost, then this genetic variation would no longer be available.

21. Describe two types of compounds from living things that are used as medications.
Secondary plant compounds are toxins produced by plants to kill predators trying to eat them; some of these compounds can be used as drugs. Animal toxins such as snake venom can also be used as drugs. (Alternate answer: antibiotics are compounds produced by bacteria and fungi which can be used to kill bacteria.)

22. Describe the mechanisms by which human population growth and resource use causes increased extinction rates.

Human population growth leads to unsustainable resource use, which causes habitat destruction to build new human settlements, create agricultural fields, and so on. Larger human populations have also led to unsustainable fishing and hunting of wild animal populations. Excessive use of fossil fuels also leads to global warming.

23. Explain what extinction threats a frog living on a mountainside in Costa Rica might face.

The frog is at risk from global warming shifting its preferred habitat up the mountain. In addition, it will be at risk from exotic species, either as a new predator or through the impact of transmitted diseases such as chytridiomycosis. It is also possible that habitat destruction will threaten the species.

24. Describe two considerations in conservation preserve design.

Larger preserves will contain more species. Preserves should have a buffer around them to protect species from edge effects. Preserves that are round or square are better than preserves with many thin arms.

25. Describe what happens to an ecosystem when a keystone species is removed.

When a keystone species is removed many species will disappear from the ecosystem.