Chapter 3 Review

Make Your Own Summary

Summarize the key concepts of this chapter using a graphic organizer. The Chapter Summary on the previous page will help you identify the key concepts. Refer to Study Toolkit 4 on pages 566–567 to help you decide which graphic organizer to use.

Reviewing Key Terms

1. The current accelerated rate of extinction is known as _____. (1.3)

2. Human actions that protect and restore ecosystems for future inhabitants of the biosphere are examples of _____. (1.4)

3. The technique that purposely introduces an alien organism into an area to control an undesirable species is an example of _____. (1.4)

4. A series of ecosystem changes in a particular area over time is known as ecological _____. (1.2)

5. _____ is a technique used to remove soil toxins at sites that have been environmentally damaged by human activities. (1.4)

6. Taking individuals of threatened or endangered species into a breeding facility to increase their population sizes is known as _____. (1.2)

7. The number and variety of organisms found within a specific region is _____. (1.1)

Knowledge and Understanding K/U

8. Why is maintaining biodiversity on Earth important?

9. List and describe three methods that scientists use to measure biodiversity.

10. What is a biodiversity hotspot? Where are the most significant biodiversity hotspots found?

11. Explain how the birth rate and death rate of a species are relevant to the issue of extinction.

12. When was the most recent mass extinction, according to the fossil record? What organisms especially suffered at that time?

13. The dinosaur extinction has been linked to evidence that an asteroid hit Earth, causing climate change. What do scientists think caused the greatest mass extinction of all time?

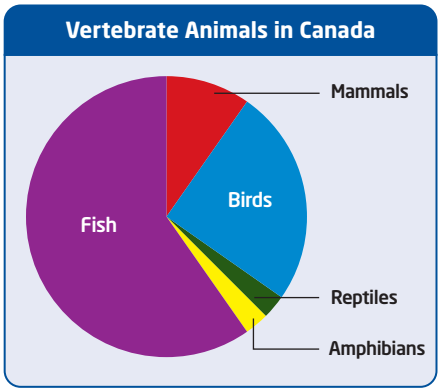
14. Is it possible to protect a species in trouble without regard to the community that it belongs to? Explain your answer.

15. Why is a place like Langara Island suitable for nesting sea birds, and why did their populations suffer losses?

16. Why is deforestation a threat to biodiversity?

Thinking and Investigation T/I

17. The circle graph below shows the proportion of animal species with backbones in Canada. Which group has the greatest biodiversity?



18. Elk eat aspen trees and other vegetation. Wolves eat elk (and other animals). Imagine a situation in which the wolves were eliminated long ago.

a. What impact might this have on the growth of new aspen trees that are needed to replace the old aspen trees?

b. What affect do you predict the re-introduction of wolves might have on aspen trees?

19. Imagine the same situation as in question 18. Prior to the re-introduction of the wolves, the number of beavers in this ecosystem dropped to zero. Beavers also eat aspen trees. Once the wolves were re-introduced, beavers started appearing in the area. Explain why the number of beavers increased after the wolves were re-introduced.

20. Should biocontrol methods that increase the numbers of predators or parasites in ecosystems be used against native species?

21. How could wildfires in forests have an effect on an ecosystem similar to the effects of organisms that are ecosystem engineers?

Communication C

22. BIG IDEAS Ecosystems are dynamic and have the ability to respond to change, within limits, while maintaining their ecological balance. Through the process of evolution, species change over long periods of time, and the communities and niches that they occupy must also change. Assume that no more alien species will be introduced into a particular ecosystem. Predict what might happen to the alien species already in this ecosystem over a long period of time.

23. BIG IDEAS People have the responsibility to regulate their impact on the sustainability of ecosystems in order to preserve the ecosystems for future generations. Choose an ecosystem or species that you like or value. What might you be willing to do as steward for this ecosystem or species?

24. The province is considering closing the Natural Heritage Information Centre, which maintains a database of the distribution and status of Ontario's biodiversity. As a concerned environmentalist, take a stand against this action. Identify three reasons why the centre should not be closed.

25. How would you make an argument for stewardship, based on ethics?

26. How would you make an argument for stewardship, based on practical issues?

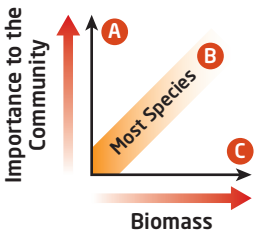
27. By making reference to the trophic pyramid from Chapter 1, explain why dominant species have to be primary producers.

28. The rivet analogy is used to explain why humans should be concerned about losing biodiversity. Provide another analogy to explain this concept.

Application A

29. Captive breeding programs are expensive. Are they worth it, in your opinion? Explain why or why not.

30. Where on the graph below would you argue that a keystone species fits: location A, B, or C? Explain your answer.



31. Biocontrol of purple loosestrife involves releasing several types of beetles that eat the leaves and new growth of the plants, destroy the roots, or interfere with seed production. Scientists believe that biocontrol can reduce the amount of purple loosestrife by 80 percent, but this takes 10 to 20 years. In cases where there is a high density of purple loosestrife covering a large area, biocontrol is the only option for removing the plants. Why do you think it is the only option?

32. Ships use ballast to adjust how they sit in the water. If you were involved in reducing the problems associated with unintentional introductions of alien species by ballast water, what would you propose?