Chapter 7

Answers to Section 1 Review

1. Answers may vary. Sample answer: temperature and nutrients

2. The littoral zone exists in shallow, sunlit water, while the benthic zone occupies the dark bottom of a lake or pond.

3. Wetlands trap and filter pollutants, which improves water quality downstream. Wetlands also absorb excess water and reduce the likelihood of a flood.

4. Answers may vary. Sample answer: Sewage dumping threatens river ecosystems.

5. Answers may vary. In general, more garbage will have more of a harmful effect on the ecosystem.

6. Sample answer: Rain can wash fertilizers and pesticides off my yard and into a river. Fertilizers can cause an increase in plant growth, and pesticides can kill plants and animals in the river.

Answers to Section 2 Review

1. Estuaries are very productive because they constantly receive nutrients from rivers and from the ocean. Estuaries are vulnerable to pollution because ocean, lake, and river pollutants enter estuaries and because dense human settlements surround most estuaries.

2. Salt marshes are dominated by marsh grasses and develop in estuaries, while mangrove swamps are dominated by mangrove trees and develop in tropical and subtropical areas.

3. Water that is too hot or cold can damage reefs by killing corals. Muddy water can kill the algae that live within corals.

4. Overfishing is destroying some fish populations, and trawl nets can entangle and drown marine mammals, such as sea lions.

5. A 100 m rise in sea level would kill off most of the world's coral reef ecosystems, because the algae in corals need water shallow enough to allow sufficient light through for photosynthesis.

6. Cities are often built on estuaries because estuaries provide protected harbors, access to the ocean, and connection to a river. Building a city on an estuary would reduce populations of many animals through fishing and pollution.

Chapter 7 Review

Using Key Terms

1. Sample answer: A wetland is an area where land is periodically underwater.

2. Sample answer: Mangrove trees grow in mangrove swamps.

3. Sample answer: An estuary is the area where a river meets the ocean.

4. Sample answer: Excess nutrients in a lake can cause an explosion of plant algae and bacteria called eutrophication.

5. Sample answer: Mussels, clams, and barnacles are bottomdwelling animals called benthos.

6. In a pond, the littoral zone is the shallow margin, while the benthic zone is the deep, openwater region.

7. Plankton are organisms that drift. Nekton are free-swimming organisms, such as fish and turtles.

8. A salt marsh is an ecosystem that develops in an estuary and is dominated by marsh grasses. A barrier island is a long, thin island that protects the shore from erosion.

9. A wetland is an area of land covered by water for at least part of the year, while coral reefs are limestone ridges built by corals.

Understanding Key Ideas

10. d

11. c

12. c

13. d

14. d

15. b

16. c

17. d

18. d

Short Answer

19. Answers may vary. Estuaries can be described as the "best of both worlds" because they lie at the interface of rivers and oceans and thus receive nutrients from both.

20. Answers may vary. Plankton are very small plants or animals that live suspended in the water. Nekton are free-swimming organisms, such as fish. Benthos are bottom-dwelling organisms.

21. Answers may vary. Wetlands trap and filter sediments and pollutants, absorb potential floodwater,

and buffer the shorelines against erosion.

22. In a eutrophic lake, high nutrient levels foster plant and algae growth, which supports bacteria that feed on decaying plants and algae. Rising bacterial populations use up the oxygen in the water, which kills oxygen-loving organisms.

23. Mangrove swamps are dominated by mangrove trees.

Interpreting Graphics

24. Of all the coral reefs in the world, 80% are still living.

25 255,300 km^2 _ 0.24 _ 61,272 km^2

26. 255,300 km^2 _ 0.26 _ 66,378 km^2

Concept Mapping

27. Answers to the concept mapping questions are on pp. 715–720.

Critical Thinking

28. Answers may vary. In general, fast flowing rivers will have a high oxygen content and slow flowing rivers will have a low oxygen content.

29. Runoff from the fertilized areas will increase the amount of nutrients in the estuary, which will create eutrophic conditions that can "choke" the estuary.

30. Answers may vary. Estuaries located in populated areas are threatened by development. Many cities are built on estuaries because estuaries provide access to a river and to an ocean. Estuaries are also threatened by pollution. Oceans are threatened by pollution and overfishing. Certain fishing methods such as discarded fishing lines can threaten ocean organisms.

31. Planting trees along a riverbank will decrease erosion and flooding, and the trees will absorb some of the nutrients from the water.

Cross-Disciplinary Connection

32. Answers may vary. As population increases, pollution increases, which can have a negative effect on the estuaries.

Portfolio Project

33. Answers may vary depending on the type of aquatic ecosystem that is studied and the time of year.

Math Skills

34. about 12%; 5%

35. 599 _ 0.39 _ about 234 species

Writing Skills

36. Answers may vary. Overfishing removes fish populations from some estuaries. Marine mammals such as dolphins and seals feed on fish, so overfishing of estuaries drives these animals to look elsewhere for food and probably reduces their populations, too. Overfishing is destroying some fish populations in oceans as well. Destroying fish populations affects entire ecosystems because different fish eat and are eaten by various other organisms at different stages in their lives.

37. Answers may vary.

Reading Skills

1. b

2. b

Standardized Test Prep Answers

1. A

2. G

3. A

4. H

5. B

6. Answers will vary. See Test Doctor for detailed scoring rubric.

7. Answers will vary. See Test Doctor for detailed scoring rubric.

8. G

9. B

10. Answers will vary. See Test Doctor for detailed scoring rubric.

11. G

12. A

13. H