



## Chapter 44 Exercises

### Review Questions

- Which of the following is a biotic factor?
  - wind
  - disease-causing microbe
  - temperature
  - soil particle size
- The study of nutrient cycling through the environment is an example of which of the following?
  - organismal ecology
  - population ecology
  - community ecology
  - ecosystem ecology
- Understory plants in a temperate forest have adaptations to capture limited \_\_\_\_\_.
  - water
  - nutrients
  - heat
  - sunlight
- An ecologist hiking up a mountain may notice different biomes along the way due to changes in all of the following, except \_\_\_\_\_.
  - elevation
  - rainfall
  - latitude
  - temperature
- Which of the following biomes is characterized by abundant water resources?
  - deserts
  - boreal forests
  - savannas
  - tropical wet forests
- Which of the following biomes is characterized by short growing seasons?
  - deserts
  - tropical wet forests
  - Arctic tundras
  - savannas
- Where would you expect to find the most photosynthesis in an ocean biome?
  - aphotic zone
  - abyssal zone
  - benthic realm
  - intertidal zone
- A key feature of estuaries is \_\_\_\_\_.
  - low light conditions and high productivity
  - salt water and fresh water
  - frequent algal blooms
  - little or no vegetation
- Which of the following is an example of a weather event?
  - The hurricane season lasts from June 1 through November 30.
  - The amount of atmospheric CO<sub>2</sub> has steadily increased during the last century.
  - A windstorm blew down trees in the Boundary Waters Canoe Area in Minnesota on July 4, 1999.
  - Deserts are generally dry ecosystems having very little rainfall.
- Which of the following natural forces is responsible for the release of carbon dioxide and other atmospheric gases?
  - the Milankovitch cycles
  - volcanoes
  - solar intensity
  - burning of fossil fuels

### Critical Thinking Questions

- Ecologists often collaborate with other researchers interested in ecological questions. Describe the levels of ecology that would best lend themselves to collaboration because of the similarities in questions asked. What levels of ecology might be more difficult for collaboration?

12. The population is an important unit in ecology as well as other biological sciences. How is a population defined, and what are the strengths and weaknesses of this definition? Are there some species that at certain times or places are not in populations?
13. Compare and contrast ocean upwelling and spring-and-fall turnovers.
14. Many endemic species are found in areas that are geographically isolated. Suggest a plausible scientific explanation for why this is so.
15. The extremely low precipitation of subtropical desert biomes might lead one to expect fire to be a major disturbance factor; however, fire is more common in the temperate grassland biome than in the subtropic desert biome. Why is this?
16. In what ways are the subtropical desert and the arctic tundra similar?
17. Scientists have discovered the bodies of humans and other living things buried in bogs for hundreds of years but not yet decomposed. Suggest a possible biological explanation for why such bodies are so well preserved.
18. Describe the conditions and challenges facing organisms living in the intertidal zone.
19. Compare and contrast how natural- and human-induced processes have influenced global climate change.
20. Predict possible consequences if carbon emissions from fossil fuels continue to rise.