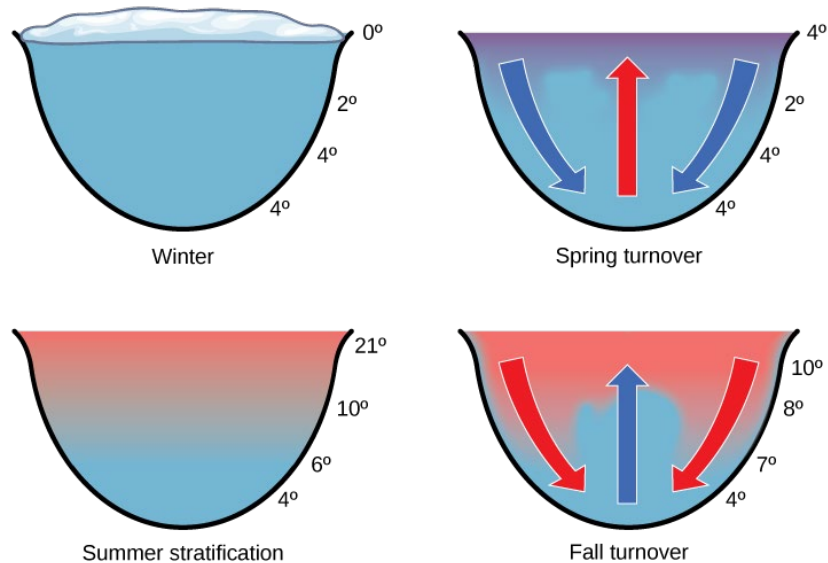


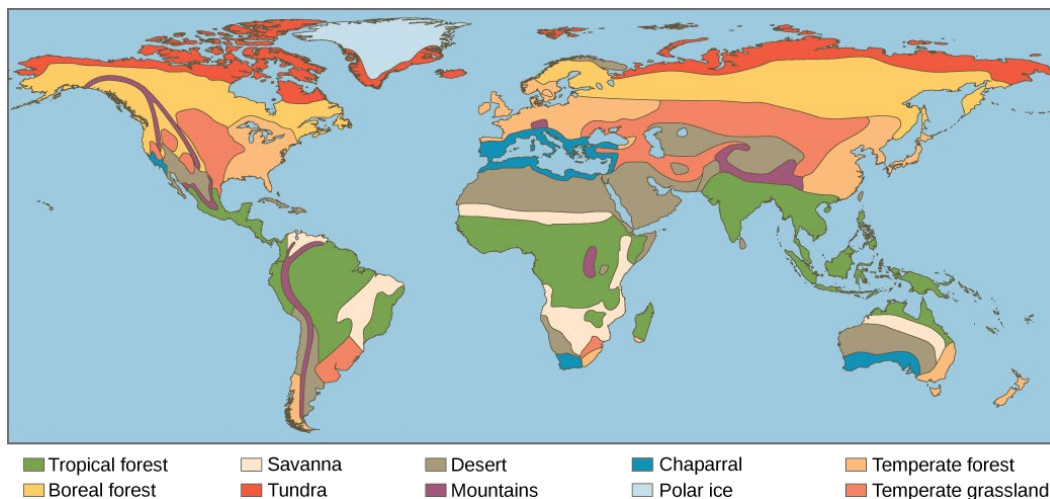
Biology 2eUnit 8: **Ecology**Chapter 44: **Ecology and the Biosphere****Visual Connection Questions**

1. How might turnover in tropical lakes differ from turnover in lakes that exist in temperate regions? Think of the variation, or lack of variation, in seasonal temperature change.



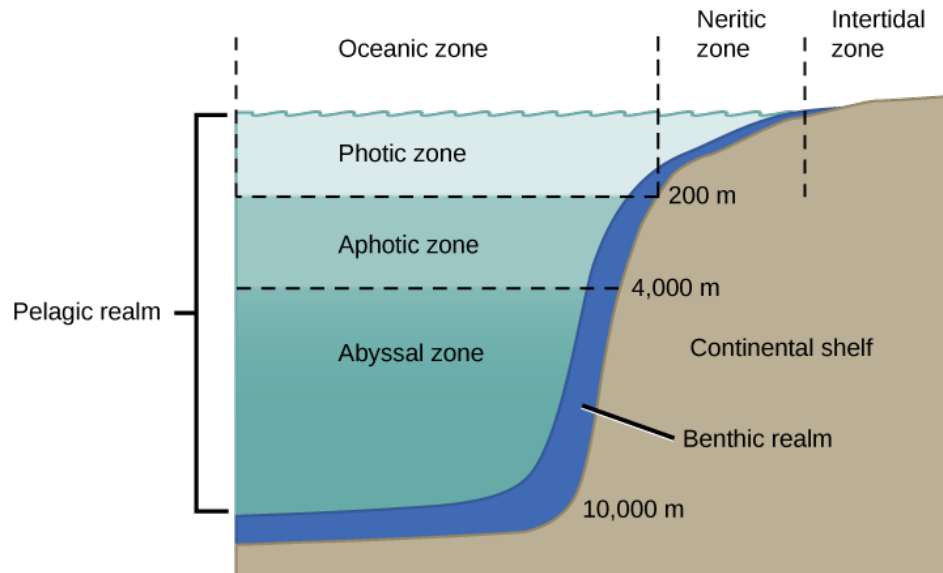
Tropical lakes don't freeze, so they don't undergo spring turnover in the same way temperate lakes do. However, stratification does occur, as well as seasonal turnover.

2. Which of the following statements about biomes is false?



c. Boreal forests are dominated by deciduous trees.

3. In which of the following regions would you expect to find photosynthetic organisms?



b. the photic zone, the intertidal zone, the neritic zone, and the oceanic zone

Review Questions

4. Which of the following is a biotic factor?

b. disease-causing microbe

5. The study of nutrient cycling through the environment is an example of which of the following?

d. ecosystem ecology

6. Understory plants in a temperate forest have adaptations to capture limited _____.

d. sunlight

7. An ecologist hiking up a mountain may notice different biomes along the way due to changes in all of the following except:

c. latitude

8. Which of the following biomes is characterized by abundant water resources?

d. tropical wet forests

9. Which of the following biomes is characterized by short growing seasons?

c. Arctic tundra

10. Where would you expect to find the most photosynthesis in an ocean biome?

d. intertidal zone

11. A key feature of estuaries is:

b. salt water and fresh water

12. Which of the following is an example of a weather event?

c. A windstorm blew down trees in the Boundary Waters Canoe Area in Minnesota on July 4, 1999.

13. Which of the following natural forces is responsible for the release of carbon dioxide and other atmospheric gases?

b. volcanoes

Critical Thinking Questions

14. Ecologists often collaborate with other researchers interested in ecological questions.

Describe the levels of ecology that would be easier for collaboration because of the similarities of questions asked. What levels of ecology might be more difficult for collaboration?

Ecologists working in organismal or population ecology might ask similar questions about how the biotic and abiotic conditions affect particular organisms and, thus, might find collaboration to be mutually beneficial. Levels of ecology such as community ecology or ecosystem ecology might pose greater challenges for collaboration because these areas are very broad and may include many different environmental components.

15. 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?

It is beneficial to consider a population to be all of the individuals living in the same area at the same time because it allows the ecologist to identify and study all of the abiotic and biotic factors that may affect the members of the population. However, this definition of a population could be considered a drawback if it prohibits the ecologist from studying a population's individuals that may be transitory, but still influential. Some species with members that have a wide geographic range might not be considered to be a population, but could still have many of the qualities of a population.

16. Compare and contrast ocean upwelling and spring and fall turnovers.

Ocean upwelling is a continual process that occurs year-round. Spring and fall turnover in freshwater lakes and ponds, however, is a seasonal process that occurs due to temperature changes in the water that take place during springtime warming and autumn cooling. Both ocean upwelling and spring and fall turnover enable nutrients in the organic materials at the bottom of the body of water to be recycled and reused by living things.

17. Many endemic species are found in areas that are geographically isolated. Suggest a plausible scientific explanation for why this is so.

Areas that have been geographically isolated for very long periods of time allow unique species to evolve; these species are distinctly different from those of surrounding areas and remain so, since geographic isolation keeps them separated from other species.

18. 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?

Fire is less common in desert biomes than in temperate grasslands because deserts have low net primary productivity and, thus, very little plant biomass to fuel a fire.

19. In what ways are the subtropical desert and the arctic tundra similar?

Both the subtropical desert and the arctic tundra have a low supply of water. In the desert, this is due to extremely low precipitation, and in the arctic tundra, much of the water is unavailable to plants because it is frozen. Both the subtropical desert and the arctic tundra have low net primary productivity.

20. 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.

Bogs are low in oxygen and high in organic acids. The low oxygen content and the low pH both slow the rate of decomposition.

21. Describe the conditions and challenges facing organisms living in the intertidal zone.

Organisms living in the intertidal zone must tolerate periodic exposure to air and sunlight and must be able to be periodically dry. They also must be able to endure the pounding waves; for this reason, some shoreline organisms have hard exoskeletons that provide protection while also reducing the likelihood of drying out.

22. Compare and contrast how natural- and human-induced processes have influenced global climate change.

Natural processes such as the Milankovitch cycles, variation in solar intensity, and volcanic eruptions can cause periodic, intermittent changes in global climate. Human activity, in the form of emissions from the burning of fossil fuels, has caused a progressive rise in the levels of atmospheric carbon dioxide.

23. Predict possible consequences if carbon emissions from fossil fuels continue to rise.

If carbon emissions continue to rise, the global temperature will continue to rise; thus, ocean waters will cause the rising of sea levels at the coastlines. Continued melting of glaciers and reduced spring and summer meltwaters may cause summertime water shortages. Changes in seasonal temperatures may alter lifecycles and interrupt breeding patterns in many species of plants and animals.