

Biology Chapter 3 Test: Communities, Biomes, and Ecosystems**True/False**

Indicate whether the statement is true or false.

- _____ 1. The main abiotic distinction between temperate grassland and tropical savanna is temperature, not rainfall.
- _____ 2. The range of tolerance of an organism is used to define its aggressiveness in conflicts.
- _____ 3. Lichens make good pioneer species because they can secrete acid that breaks down rock.
- _____ 4. Data documenting the slowing of the northward spread of Africanized honeybees, commonly known as "killer bees," support the conclusion that cold temperature is a limiting factor to this species.
- _____ 5. The colonization of the stone walls of a building by mosses and lichens is classified as secondary succession.

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 6. A student notices that her guppies reproduce most when her fish tank water is slightly alkaline. They stop reproducing if the water becomes acidic or if the water becomes too alkaline. This is an example of ____.
- | | |
|-------------------------|---------------------|
| a. secondary succession | c. communities |
| b. zones of tolerance | d. intertidal zones |

Ling feeds her guppies one-half teaspoon of fish food every day. The average guppy population in her aquarium over a four-month period is 38 guppies. She increased the food to one teaspoon per day. After a four-month period, the average population is 53 guppies.

- _____ 7. Which of the following statements is supported by these data?
- The size of the aquarium was a limiting factor.
 - Food was a limiting factor.
 - As long as Ling keeps adding more food, the guppy population will continue to grow.
 - Guppies reproduce rapidly.

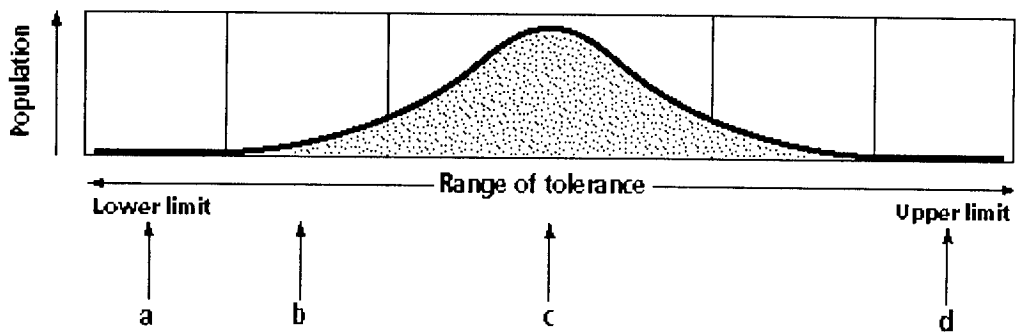


Figure 3-1

8. In Figure 3-1, where will you most likely find the greatest diversity?
- a. A
 - b. B
 - c. C
 - d. D
9. What type of succession is most likely to happen in Figure 3-2?

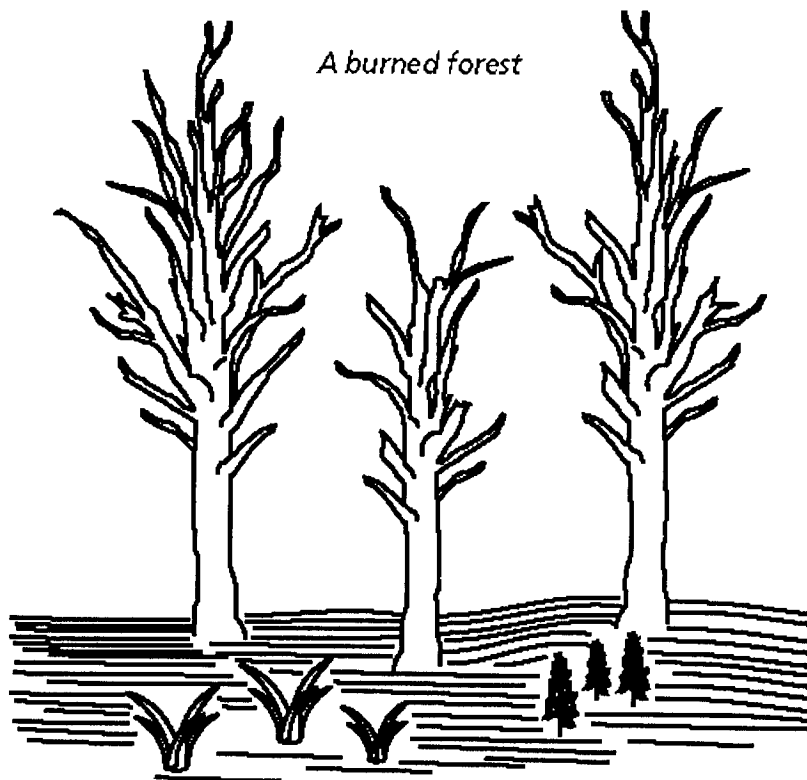


Figure 3-2

- a. primary
- b. secondary
- c. tertiary
- d. climax

10. At which stage in Figure 3-3 are the most pioneer species found?

Succession in a Plant Community

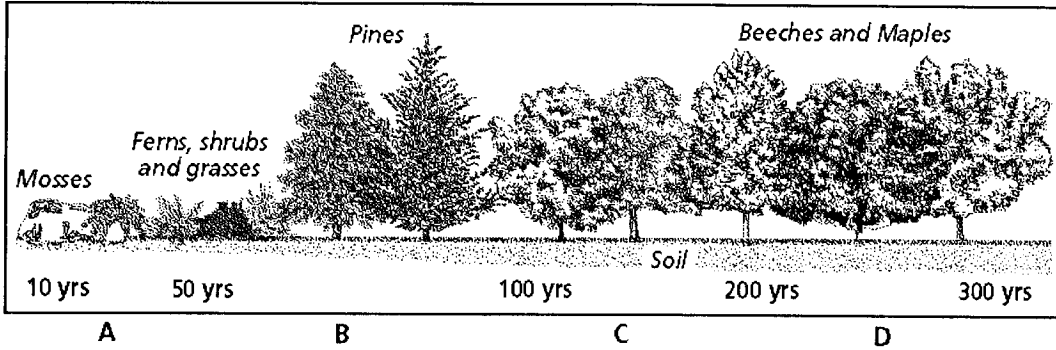


Figure 3-3

- a. A
- b. B
- c. C
- d. D

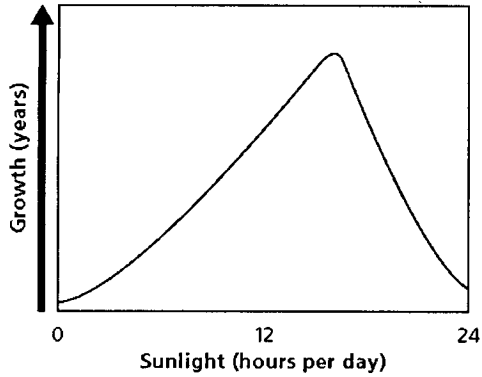


Figure 3-4

11. Look at the graph in Figure 3-4. What does this graph tell us about this species of plant?

- a. Too much sunlight can hurt them.
- b. They thrive in a lot of sun.
- c. Heat is damaging to them.
- d. They need plenty of water.

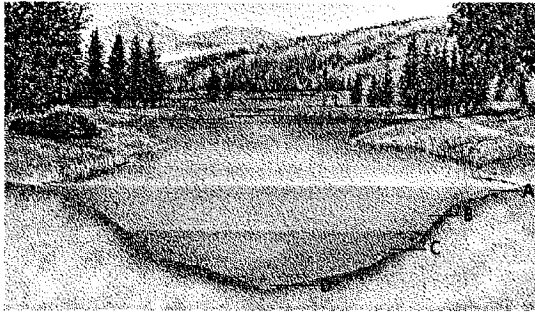


Figure 3-5

- _____ 12. What type of species would be most likely found in the area labeled D in Figure 3-5?
- one that requires plenty of oxygen
 - plants that require light
 - amphibians that need a warm habitat
 - decomposers that feed on dead organisms
- _____ 13. If fire were suppressed on a temperate grassland, what species do you think would increase in number?
- trees
 - grasses
 - herbs
 - bison
- _____ 14. Which of the following effects on the climate would you infer would result from an increase in altitude?
- the same as an increase in precipitation
 - the same as a decrease in precipitation
 - the same as a decrease in latitude
 - the same as an increase in latitude

Imagine you are an ecologist called in to investigate a problem with a lake in a city park. The lake was once clear but is now eutrophic, with green slime floating on it and a fetid odor.

- _____ 15. Personnel from the parks department have investigated the problem and present you with the following theories. Weigh the evidence and decide which is the best explanation for the problem.
- An unusually warm spring resulted in a delayed overturn of the lake so nutrients in the water are limited.
 - Native carp in the lake are stirring up the bottom with their feeding activities, making the water cloudy.
 - Fertilizer from park lawns has run off into the water, adding too many nutrients to the system.
 - Algae are overgrowing in the water because it is warmer than usual this year.
- _____ 16. Which of these species would you classify as a profundal zone organism?
- frog
 - plankton
 - crayfish
 - floating water plants

A team of ecologists measured the salinity of the water in an estuary at various distances from the river mouth. They also sampled populations of two species of clam worm, *Nereis occidentalis* and *Neanthes succinea*, at each point. The results are tabulated below.

<i>Nereis occidentalis</i> (no. per 100 cm ²)	3	11	19	33	42	61
<i>Neanthes succinea</i> (no. per 100 cm ²)	57	41	36	17	9	3
Distance from river mouth (meters)	0	10	20	30	40	50
Salinity (‰)	0	5	9	14	21	30

Table 3-1

- _____ 17. Which of the following hypotheses is most valuable in explaining the trends seen in the data?
- Nereis occidentalis* outcompetes *Neanthes succinea* at salinities under 14‰.
 - Neanthes succinea* reproduces most rapidly in areas at least 20 meters from the river mouth.
 - Both *Neanthes succinea* and *Nereis occidentalis* can survive at any salinity.
 - Nereis occidentalis* is more resistant to salinity than *Neanthes succinea*.
- _____ 18. Imagine you are listening to a series of student presentations in which the speakers hypothesize about the kinds of marine life they would expect to find in an abyssal marine zone. Which hypothesis do you find most compelling?
- Autotrophic organisms like seaweed and plankton will be common, along with many larger organisms supported by these producers.
 - Coral reefs and high species diversity are expected, with many kinds of fish and invertebrates.
 - Large open-ocean fish will live there, like tuna, marlin, and sharks.
 - Low species diversity is predicted, except around hydrothermal vents where bacteria, fish, and crabs live.
- _____ 19. Some coral reefs off the east coast of South America are starting to die off. Satellite images reveal great plumes of sediment washing out of the mouths of rivers. What can you conclude, if anything, about the relationship between these two factors?
- Although the two factors coincide, they are not likely to be related.
 - Deforestation on land results in lower oxygen levels in the atmosphere, which stresses the reef.
 - Deforestation on land allows erosion to wash away topsoil, which smothers reefs.
 - Burning of the rain forest increases atmospheric carbon dioxide to levels toxic to reefs.

- _____ 20. Analyze each of the sequences in the primary succession of species colonizing a newly formed volcanic island and select the option in the correct order.
- bare rock, small annual plants, lichens, shade-intolerant trees, shade tolerant trees
 - bare rock, lichens, small annual plants, perennial herbs and grasses, shade intolerant trees
 - bare rock, lichens, perennial herbs and grasses, small annual plants, shade intolerant trees
 - bare rock, lichens, small annual plants, perennial herbs and grasses, shade tolerant trees
- _____ 21. Which of these species might be classified as a pioneer species?
- ponderosa pine
 - choke cherry
 - aspen
 - lichen
- _____ 22. What is the distinction between a zone of tolerance and limiting factors?
- Limiting factors are biotic or abiotic factors that limit the growth of a species, while the range of tolerance defines the set of conditions in which an organism can survive.
 - The range of tolerance defines biotic or abiotic factors that limit the growth of a species, while limiting factors define the set of conditions in which an organism can survive.
 - Limiting factors and zones of tolerance are two terms for the same concepts about species survival under various environmental conditions.
 - Limiting factors are biotic features only, such as interactions with other life forms, that limit a species, while range of tolerance is based only on abiotic conditions.
- _____ 23. Compare primary and secondary succession. What is the distinction between them?
- Primary succession is the sequence of species that become established early in a newly colonized area, and secondary succession is the sequence of species that move in later.
 - Primary succession is the establishment of a community in an area with no soil, while secondary succession is the establishment of a new community in an existing ecosystem that was disturbed.
 - Primary succession is the establishment of a new community in an existing ecosystem that was disturbed, while secondary succession is the establishment of a community in an area with no soil.
 - Primary succession is the sequence of plants that colonize a new area, while secondary succession is the sequence of animals that move in later.
- _____ 24. A place at 2° N latitude has an average annual temperature of -6° C. What can you conclude about the environment?
- It is cold, so it must be in the northern polar region.
 - Nothing can be concluded except the information given.
 - It is at a very high altitude.
 - It must be submerged at the bottom of a deep ocean to be equatorial and so cold.
- _____ 25. How would you classify a biome having forest with broad-leaf evergreen trees, mosses, and orchids, 20–25° C temperatures, and where the >200 cm of rainfall per year is seasonal?
- tropical seasonal forest
 - tropical savanna
 - tropical rain forest
 - temperate woodland