

# TEST YOUR KNOWLEDGE

## MODULE 3

## ECOLOGY I TEST YOUR KNOWLEDGE

1. All the organisms of one species living in one area are known as a(n):

- (A) community
- (B) population
- (C) species
- (D) ecotype
- (E) detritivore

2. All the organisms living in one area are known as a(n):

- (A) community
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Match the following terms to questions 3–8:

(A) Herbivore | (B) Producer | (C) Primary consumer | (D) Secondary consumer | (E) Decomposer

3. Converts solar energy to chemical bond energy

4. Has the greatest mass in any food chain

5. Fungi are an example of this

6. Contains the most pesticides of any organism on the list

7. A primary consumer is also this

8. Has the least biomass in a food chain

9. All of the following are correct about the food chain EXCEPT:

- (A) Bacteria and fungi act as decomposers that recycle nutrients.
- (B) Producers are always at the bottom of any food chain.
- (C) Energy is lost at each trophic level.
- (D) Food chains never have more than 4 or 5 trophic levels.
- (E) Pesticides tend to be concentrated at the producer level because producers have the largest mass.

Match the following biomes to questions 10–18:

(A) Tropical rain forest | (B) Taiga | (C) Temperate grasslands | (D) Marine | (E) Tundra

10. Called the permafrost

11. Characteristic organisms: large mammals (black bear/elk) and conifer forests

12. Smallest number of species

13. Covers <4% of land surface but produces 20% of Earth's food

14. Largest biome

15. Most diversity of species

16. Rapidly decreasing due to human interaction

17. Most stable biome

18. Provides most of Earth's oxygen

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19. Epiphytes are:

- (A) a climax community of plants in the desert
- (B) photosynthetic plants that grow on trees rather than supporting themselves
- (C) vegetation found in grasslands
- (D) decomposers in the taiga
- (E) animals found in the tundra

20. Eutrophication refers to:

- (A) the process that causes the depletion of the ozone layer
- (B) global warming
- (C) the process that happens to a lake that absorbs too many nutrients
- (D) the invasion of new species that causes damage to an ecosystem
- (E) the process whereby one species outcompetes another species

Match the terms to questions 21–24:

- (A) Mutualism | (B) Parasitism | (C) Commensalism | (D) None of the above | (E) A, B, and C

21. Both organisms benefit:

22. One organism benefits; the other is not affected:

23. Example of symbiosis:

24. Example of Batesian mimicry:

25. The result of the action of decomposers is:

- (A) decrease in ammonia
- (B) increase in transpiration
- (C) nitrogen fixation
- (D) decrease in oxygen
- (E) increase in oxygen

Match the bacteria types to questions 26–29:

- (A) Nitrogen-fixing bacteria | (B) Denitrifying bacteria | (C) Nitrifying bacteria

26. These live in the roots of legumes:

27. Convert the ammonium ion into nitrates:

28. Convert nitrates into free nitrogen in the atmosphere:

29. Convert free nitrogen from the atmosphere into the ammonium ion:

30. Which of the following shows the correct order of the biomes as you move from the equator to the North Pole in the western hemisphere?

- (A) Tropical rain forest—desert—temperate rain forest—taiga—tundra
- (B) Tundra—taiga—temperate deciduous forest—desert—tropical rain forest
- (C) Desert—taiga—tundra—temperate deciduous forest—tropical rain forest
- (D) Tundra—temperate deciduous forest—taiga—desert—tropical rain forest
- (E) Desert—tropical rain forest—temperate deciduous forest—taiga—tundra

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# ECOLOGY I TEST YOUR KNOWLEDGE ANSWER

1. B – Population because it is all organisms of the same species living in the same area.
2. A – Community because it includes all the different organisms (many species) living together in one area.
3. B – Producer because producers convert solar energy into chemical energy through photosynthesis.
4. B – Producer because producers form the base of the food chain and therefore have the greatest biomass.
5. E – Decomposer because fungi break down dead organisms and recycle nutrients.
6. D – Secondary consumer because pesticides increase in concentration at higher trophic levels through biomagnification.
7. A – Herbivore because herbivores eat plants and therefore are primary consumers.
8. D – Secondary consumer because organisms at higher trophic levels have the least biomass in a food chain.
9. E – because pesticides accumulate at higher trophic levels rather than at the producer level.
10. E – Tundra because tundra soil remains permanently frozen, forming permafrost.
11. B – Taiga because it contains conifer forests and large mammals like bears and elk.
12. E – Tundra because extremely cold conditions support the smallest number of species.
13. C – Temperate grasslands because they cover a small land area but produce a large portion of the world's crops.
14. D – Marine because oceans cover most of Earth and therefore form the largest biome.
15. A – Tropical rain forest because it has the highest biodiversity of species.
16. A – Tropical rain forest because deforestation and human activities are rapidly reducing it.
17. D – Marine because oceans change temperature slowly and remain relatively stable.
18. D – Marine because marine phytoplankton produce most of Earth's oxygen through photosynthesis.
19. B – because epiphytes are plants that grow on trees for support while still performing photosynthesis.
20. C – because eutrophication occurs when a lake receives too many nutrients, causing excessive algae growth.
21. A – Mutualism because both organisms benefit from the interaction.
22. C – Commensalism because one organism benefits while the other is not affected.
23. E – A, B, and C because mutualism, parasitism, and commensalism are all forms of symbiosis.
24. D – None of the above because Batesian mimicry is a form of protective resemblance rather than symbiosis.
25. E – Increase in oxygen because decomposers break down organic matter and return nutrients to ecosystems.
26. A – Nitrogen-fixing bacteria because they live in legume root nodules and convert atmospheric nitrogen into ammonia.
27. C – Nitrifying bacteria because they convert ammonium ions into nitrates.
28. B – Denitrifying bacteria because they convert nitrates back into nitrogen gas in the atmosphere.
29. A – Nitrogen-fixing bacteria because they convert atmospheric nitrogen into ammonium compounds usable by plants.
30. A – because moving from the equator to the North Pole the biome pattern generally shifts from tropical rain forest → desert → temperate forest → taiga → tundra.