

What Do You Remember?

- In your notebook, write the word(s) needed to complete each of the following sentences. **K/U**
 - The solid part of Earth's surface is called the _____. (2.1)
 - Oxygen is required by almost all organisms for the process of _____ and is a by-product of _____. (2.4)
 - The _____ refers to all water on Earth in the solid, liquid, and gas states. (2.1)
 - An ecosystem is _____ if it can continue to function over very long periods of time. (2.2)
 - The population that an ecosystem can support continuously is called its _____. (2.7)
 - _____ ecosystems are another name for salty ocean ecosystems. (2.9)
 - A(n) _____ describes a community of living things and their surrounding physical environment. (2.2)
 - Most of the light that reaches Earth's surface is absorbed by the _____ and the _____. This absorbed light energy is then converted into _____ energy and warms Earth's surface. (2.4)
 - A very small fraction of the light striking Earth is absorbed by living organisms in a process called _____. (2.4)
- Why are decomposers important in the carbon and nitrogen cycles? (2.6) **K/U**
- Compare photosynthesis and cellular respiration using the following criteria. (2.4) **K/U**
 - What raw materials are needed?
 - What are the products?
 - Which occurs in plants?
 - Which occurs in animals?
 - Is light needed?
 - Is energy released?
 - Is energy needed?
 - Is chlorophyll needed?
- Why is sunlight important for the biosphere? (2.4) **K/U**
- In your own words, explain what is meant by the term "trophic level." (2.5) **K/U**

What Do You Understand?

- Match the term on the left with the appropriate example on the right. (2.7) **K/U**

(a) mutualism	(i) burrowing owls nest in abandoned ground squirrel tunnels
(b) parasitism	(ii) robins feed heavily on earthworms
(c) commensalism	(iii) fruit-eating bats feed on figs and spread their seeds
(d) competition	(iv) the winter tick lives and feeds on moose
(e) predation	(v) overcrowding can lead to food shortages and starvation
- Explain the difference between a food chain and a food web. (2.5) **K/U**
- In your own words, define oligotrophic and eutrophic. (2.9) **K/U**
- List four biotic and four abiotic features you would expect to find in
 - a freshwater stream
 - an open grassland
 - the Arctic tundra (2.8, 2.9) **K/U**
- In what ways might individuals of the same species compete with each other if they are
 - herbivores
 - carnivores
 - producers (2.7) **K/U**
- If energy is always being lost from organisms in food webs, where does new energy come from? (2.4, 2.5) **K/U**
- Use the following data to draw a pyramid of numbers showing each trophic level. (2.5) **C**

An ecosystem contains 100 000 grass plants, 30 000 grasshoppers, 5000 snails, 4000 slugs, 80 shrews, 15 moles, and 8 owls. Grasshoppers, snail, and slugs are all herbivores. Shrews and moles are carnivores. Owls are top carnivores.
- Many animal foods like meat and fat are high in energy content. Where did this energy originate? Explain by referring to food chains. (2.4, 2.5) **K/U**

Use Figure 1 to answer questions 14 to 18.

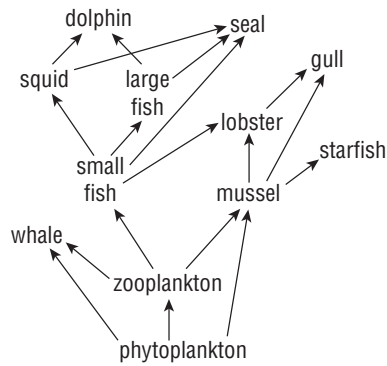


Figure 1 Food web for an estuary ecosystem

14. Classify each organism as a producer, herbivore, carnivore, or omnivore. (2.5) **K/U**
15. Construct a trophic level pyramid, assigning each organism to a trophic level. (2.5) **K/U**
16. Which organisms within the food web would be directly affected by the over-harvesting of large fish? (2.5) **K/U**
17. Predict how the elimination of whales would affect the populations of starfish and squid. (2.5) **K/U**
18. If the seal population increased significantly, how would other populations be affected? (2.5) **K/U**
19. Rank the tundra, boreal forest, deciduous forest, and grassland biomes in descending order according to each of the following abiotic factors. Explain your reasoning. (2.8) **K/U**
 - (a) amount of precipitation
 - (b) average temperature
 - (c) length of growing season
 - (d) biodiversity
 - (e) total biomass
20. Suggest a reason that carbon cycles more slowly through the tundra biome than through the temperate deciduous forest biome. (2.6, 2.8) **T/A**

Solve a Problem

21. Use Figure 2 on page 57 of biomes to complete Table 1. (2.8) **K/U**

Table 1

Precipitation	Temperature	Possible biomes
low	low	
medium	medium	
high	high	

22. If a place has 35–50 cm of precipitation and an average temperature of 10 °C, what biome might it be part of? Why is it difficult to tell? (2.8) **K/U**
23. Recall the Engage in Science reading on page 26. How has the introduction of yellow crazy ants upset the ecosystems on Christmas Island? Are only red crabs affected? Explain. **T/I**

Create and Evaluate

24. As more and more cottages were built around a small lake, people noticed that there was a buildup of green algae in the spring and the water was not as clear as it used to be. They also noticed that fishing was poor. What could account for these environmental changes? (2.7) **A**

Reflect on Your Learning

25. (a) What information in this chapter did you already know before reading it?
 (b) What information in this chapter was completely new to you?
 (c) How might the new information that you learned affect how you think about Earth? **C**
26. Think about the ecosystems in your region. What species live there? How do they interact with each other and with you? **C**

Web Connections

27. Two subspecies of bison live in Canada—the wood bison and the plains bison. Conduct Internet research to determine the historical and current status of these two subspecies. Which has the smallest and most vulnerable population? How are humans responsible for the decline in their numbers? (2.7) **K/U T/I**
28. Using a map, identify freshwater ecosystems in your area. Conduct Internet research to determine whether or not they are considered to be healthy ecosystems. (2.4–2.7, 2.9) **T/I A**



To do an online self-quiz or for all other Nelson Web Connections, **GO TO NELSON SCIENCE**