

3.3 and 3.4 Energy Flow in Ecosystems

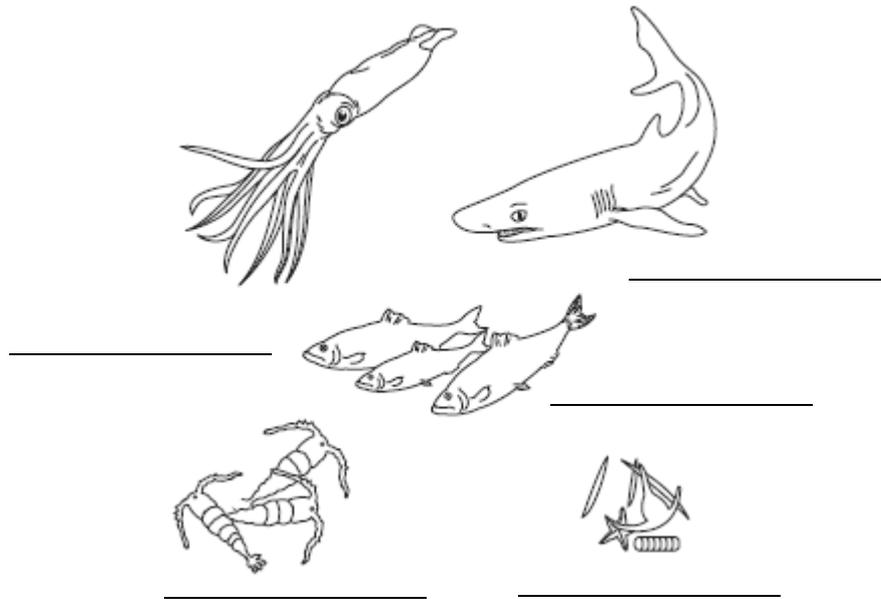
Food Chains and Food Webs

1. Complete the table about feeding relationships.

Feeding Relationships	
Relationship	Description
Food Chain	
Food Web	

Use the food chain to answer Questions 2–4.

2. Draw arrows between the organisms to show how energy moves through this food chain. Write *producer*, *herbivore*, or *carnivore* under each organism.



3. Explain how energy flows through this food chain. _____

4. What would happen to this food chain if a disturbance caused a serious decline in the shark population? _____

Trophic Levels and Ecological Pyramids

Write True or False on the line provided.

- _____ 6. Primary consumers always make up the first trophic level in a food web.
- _____ 7. Ecological pyramids show the relative amount of energy or matter contained within each trophic level in a given food web.
- _____ 8. On average, about 50 percent of the energy available within one trophic level is transferred to the next trophic level.
- _____ 9. The more levels that exist between a producer and a given consumer, the larger the percentage of the original energy from producers is available to that consumer.

Match the organism with its trophic level. A trophic level may be used more than once.

Organism

- _____ 10. algae
- _____ 11. grasshopper
- _____ 12. marsh grass
- _____ 13. marsh hawk
- _____ 14. plankton-eating fish
- _____ 15. ribbed mussel
- _____ 16. shrew
- _____ 17. zooplankton

Trophic Level

- A. primary producer
- B. first-level consumer
- C. second-level consumer
- D. third-level consumer

For Questions 19–21, complete each statement by writing the correct word or words.

18. A pyramid of _____ illustrates the relative amount of living organic matter available at each trophic level in an ecosystem.
19. A pyramid of _____ shows the relative numbers of individual organisms at the trophic levels in an ecosystem.
20. A pyramid of _____ shows the relative amounts of energy available at the trophic levels of a food chain or food web

Recycling in the Biosphere

For Questions 1–3, write True if the statement is true. If the statement is false, change the underlined word or words to make the statement true.

- _____ 1. The four elements that make up over 95 percent of the body in most organisms are oxygen, sulfur, nitrogen, and hydrogen.
- _____ 2. Matter moves through an ecosystem in cycles.
- _____ 3. Chemical and physical processes include the formation of clouds and precipitation, “burning” food, and the flow of running water.
28. If a nutrient were in short supply in an ecosystem, how might it affect an organism?
- _____

29. When is a substance a limiting nutrient?
- _____
- _____