

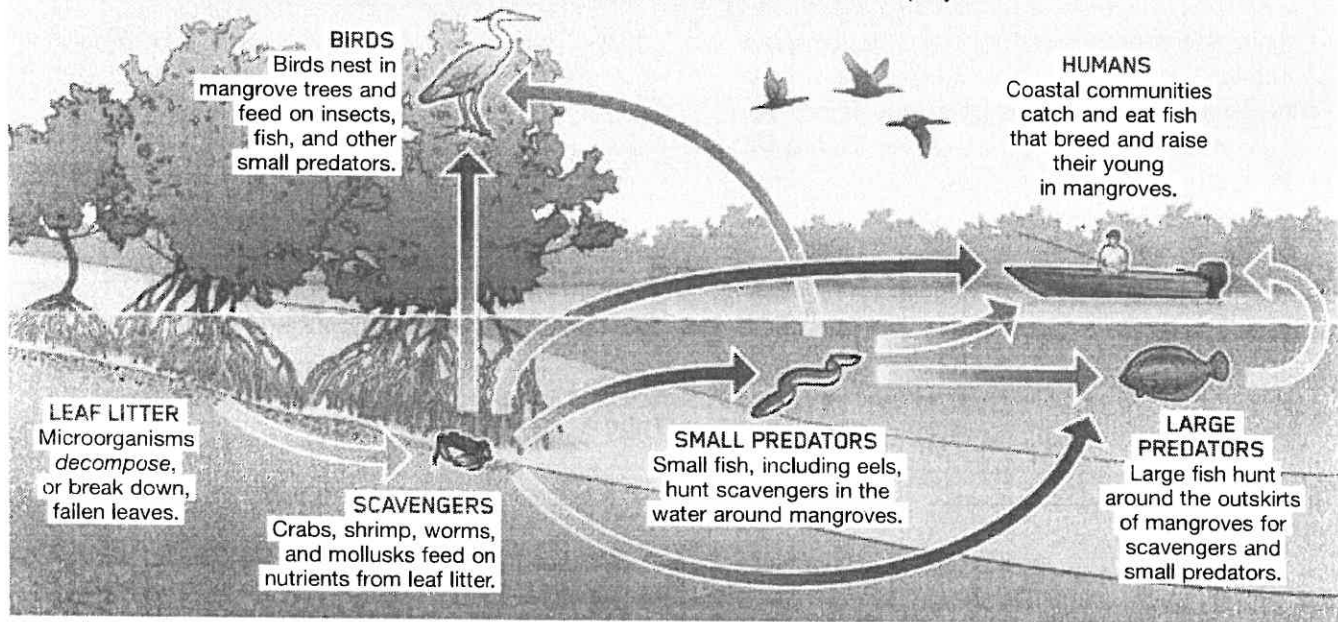
Name: _____

FOOD NETWORK

In "Mapping Mangroves" (p. 20), you read about the importance of coastal mangrove forests. The diagram in the article (also shown below) shows a model of the food web that is supported by this ecosystem. Study the diagram, and then answer the questions that follow.

MANGROVE FOOD WEB

Many species live in and around mangroves. Together, these organisms make up a complex food web in which organisms feed on plants and predators seek out prey.



ANALYZE IT

- How is the flow of energy from one organism to another represented in the diagram?
- How do plants provide energy to the mangrove food web?
- Consumers are organisms that get energy from eating other organisms. Name two types of consumers in the mangrove food web.
- Describe an example of a *food chain*—one sequence or path through which nutrients flow in a food web—in the diagram.
- How would the disappearance of mangrove trees affect populations of predators like large fish? Support your answer with evidence from the diagram.

Name: _____

MIMICKING MANGROVES

In “Mapping Mangroves” (p. 20), you learned about the importance of mangrove forests to many animal species. In the following passage, you’ll learn more about how scientists have designed artificial structures to replace mangroves in areas where they have been removed. Read the passage, and then answer the questions that follow.

FAKE FOREST

Along many developed coasts, engineers have built *seawalls* to protect communities from flooding and erosion from waves. To install these concrete structures, natural coastal defenses like mangrove forests are often destroyed. But many organisms depend on these trees for shelter and food. In an effort to restore this critical habitat, scientists have designed an artificial mangrove structure that can be attached to existing seawalls.

The structure consists of vertical panels made from concrete and oyster shells. The outer surface is molded to resemble the root system of mangrove trees. The structure includes many small spaces where organisms like young fish can hide and live.

Young oyster *larvae* can also attach to the structures. The larvae are naturally attracted to old oyster shells. These *filter feeders* play an important role in the ocean ecosystem. As they feed, they remove impurities from the seawater and help keep the water clean.

Scientists have installed the panels along 6 meters (20 feet) of seawall in Manasota Key on the west coast of Florida. Six months after the artificial mangroves were installed, the scientists have already observed small populations of organisms like crabs and oyster larvae moving in. Biologists say that future seawalls could be designed with these structures already in place.

QUESTIONS

- Which of the following can you *infer*, or conclude, from the information in the passage?
 - The replacement of mangroves with seawalls can cause populations of marine organisms to decrease.
 - Mangroves do not protect the coast from erosion.
 - Oyster larvae will attach only to an artificial mangrove structure.
 - Small spaces in the mangrove root system are the only parts of a mangrove forest that provide habitat to organisms.
- Describe the problem the scientists who designed the artificial mangrove structure wanted to address.
- Explain how scientists are evaluating whether the artificial mangroves are successful.
- How could artificial mangroves affect populations of predators near a seawall? Use evidence from the passage and “Mapping Mangroves” to support your answer.
- In recent years, the waters around Manasota Key have experienced frequent *harmful algal blooms*—periods of rapidly growing *algae* (plant-like aquatic organisms) that can harm animals and people. Harmful algal blooms are caused by sunlight, slow-moving water, and excess nutrients from runoff. How do you think artificial mangroves might affect the occurrence of harmful algal blooms? Support your answer with evidence from the passage and the article.