

## Lesson Plan

### Understanding Ecosystems

**Book:** *The Great Barrier Reef*

**Series:** Natural Wonders of the World

**Level:** Navigator

### Objective

To help students explore the ways that different species of plants and animals in an ecosystem interact and affect one another.

### Supplies

- *The Great Barrier Reef*
- Paper and pencils

### Before the Activity

Read through *The Great Barrier Reef*, or assign it to students to read on their own.

### Activity

Ask students to turn to Chapter 3 (“Plants and Animals”). Choose a student to read page 17 out loud. Then ask the following questions:

- The book says, “The Great Barrier Reef provides habitats for numerous life-forms.” What does the word *habitats* mean? (Answer: The types of places where plants or animals normally grow or live.)
- The book also says, “Living among the animals are algae, seaweeds, and plankton. Each contributes to the reef ecosystem.” What does the word *ecosystem* mean? (Answer: The collection of living things in a natural area.)
- What is the difference between these two words? (*Habitat* describes a place, while *ecosystem* describes the living things in that place.)

Today, students will take a closer look at the living things that make up a coral reef ecosystem, focusing on the ways these creatures interact with one another. Choose a student to read the first paragraph on page 18 out loud. Then ask the following questions:

- How do corals and algae interact? (Answer: The algae live inside the corals.)
- How does this relationship help the corals? (Answer: The algae give them food and help them grow.)
- How does this relationship affect the reef? (Answer: Algae make it possible for corals to create limestone skeletons and join them together to create the reef.)

To learn more about this relationship, have students turn to page 12. Choose one student to read the “Working Together” sidebar out loud. Then ask the following questions:

- How does this relationship help the algae? (Answer: The corals provide a home for the algae.)
- How does this relationship help other animals? (Answer: The corals also serve as a food source for other animals, which helps those animals survive in tropical waters where there are few nutrients.)

The algae help the corals grow, and the corals provide a place for the algae to live. Both organisms benefit from this relationship. This kind of relationship, in which both life-forms benefit, is known as symbiosis.

Read the students the following definition of *symbiosis*:

- symbiosis: the relationship between two different kinds of living things that live together and depend on each other

source: *English Language Learners definition from Merriam-Webster online dictionary: <https://www.merriam-webster.com/dictionary/symbiosis>*

Ask students to look through the rest of The Great Barrier Reef book and find another example of symbiosis. They should write a paragraph (five to six sentences) that explains how the plants or animals in this relationship interact. Students should make sure to explain how each plant or animal benefits from the relationship.

Give students a few minutes to write their paragraphs. Then come back together as a class. Explain that in addition to being in a symbiotic relationship with algae, corals interact with many other plants and animals in the coral reef ecosystem. Ask students to list a few ways that corals are helpful to other living things. (Possible answers: The structure of the reef provides homes for animals such as fish. The coral reef provides food for animals.)

Ask students to search through the book and find two other examples of plants or animals that provide food or shelter for other living things. They should write a short paragraph (three to five sentences) that explains each example and how it contributes to the coral reef ecosystem.

### **Evaluation**

Collect the students’ paragraphs at the end of the activity and use the attached answer key to score them. Give students 4 points for the long paragraph and 2 points for each short paragraph, for a total of 8 points.

### **Standards**

This lesson may be used to address the Common Core State Standards’ reading informational texts standards, grades 4 and 5 (RI 4.3; RI 5.3), and the National Science Education Standards’ Content Standard C, grades K–4 and grades 5–8.

## ANSWER KEY

### 1. Symbiosis (4 points)

Sea anemones are soft animals with poisonous tentacles. However, a clownfish's mucus coating allows it to swim in and out of the anemone's tentacles without being stung. As a result, the clownfish can live inside the anemone. The anemone's sting protects the clownfish from predators. The clownfish also eats pieces of leftover food the anemone catches. In return, the clownfish lures fish that the anemone can eat and defends the anemone from fish that want to eat it. (pp. 22–23)

### 2. Food and shelter (2 points for each paragraph)

Students should write two paragraphs, choosing any two of the following three examples:

- Plankton are tiny plants and animals. Plankton is an important source of food for other creatures that live on the reef. Algae is a kind of plankton. (pp. 18–19)
- Mangrove trees grow along the shore. They protect it from wind and waves. They help corals, too. Mangroves filter sediment so it does not smother the corals. And their shade can help corals grow. (p. 19)
- Seagrass grows along the coast. It provides hiding places for small fish. It also provides food for some animals. (pp. 19–20)