

# SCIENCE·3D

## SEA TURTLE WORLD

In this packet, sample student answers are provided in **red** and notes to teachers are in **blue**.

In this **Explore Your Backyard** activity, students refresh their understanding of the positive, negative, and neutral interactions that occur among species in ecosystems. Then, they'll explore a local ecosystem to identify the species interactions that occur in their region. This activity can be conducted in the field, in the classroom, online, or at home.



## Activity 1: An Ocean of Interactions

No matter where you live, your local environment has organisms that depend on one another. Sometimes it is for food, shelter, or other necessities. Organisms have different types of dependencies. In some interactions, both organisms benefit. This is called a **mutualism**.

**Commensalisms** are when one organism benefits and the other is not very affected. In several types of interactions, there is a winner and a loser. In **predation**, a predator kills and eats prey. The predator is the winner in that case! In **herbivory**, an herbivore eats a plant. The plant is definitely the loser there! In **parasitism**, a parasite lives off another organism that often is hurt by the interaction. In **competition**, one organism eats food or takes another resource (like plants blocking light) that another organism needs. In many cases, both competitors lose. For example, the competition could result in less food for both competitors or both organisms lose energy. In some contests, one wins, and one loses. For example, the winner gets a nesting spot and the loser has to look elsewhere. A **symbiosis** is an interaction in which two species live in very close association. Symbioses are often mutualisms but can also involve commensalism or parasitism.

1. Table 1 gives examples of interactions in the waters off Abaco, The Bahamas. Fill in the blanks. Use the following terms for the types of interactions:

**mutualism    commensalism    predation    herbivory    parasitism    competition**

**Extend the lesson:** Ask students to identify a symbiosis in the interactions described in the table. Have them describe why it is a symbiosis and whether the interaction is a mutualism, commensalism, or parasitism. Answers should include that the species live in very close association. Examples include: algae living in corals (mutualism), worm living in sea turtles (parasitism), parasites living on sea turtles (parasitism), barnacles living on turtles (commensalism).

Table 1. Interactions in the waters off Abaco, The Bahamas

Description	Type of Interaction	Organism(s) that benefit	Organism(s) harmed	Organism(s) not affected
Green sea turtles eat seagrass.	Herbivory	Sea turtle	Seagrass	None
Barnacle hitches a ride on a turtle's shell.	Commensalism <small>if students think the barnacle hurts the turtle accept parasitism here as long as sea turtle is in the harmed column</small>	Barnacle	None	Sea turtle
A shrimp eats parasites that were attached to a sea turtle's neck.	Mutualism <small>some students might add predation with the shrimp eating the parasite</small>	Sea turtle Shrimp	Parasite	Parasite might be placed here
Fish live around rocks; the nutrients fish excrete are used by seagrass to grow.	Commensalism	Seagrass	None	Fish
A barracuda eats a snapper.	Predation	Barracuda	Snapper	None
A worm lives in the circulatory system of a sea turtle and blocks its blood vessels.	Parasitism	Worm	Sea turtle	None
Two crabs fight over a scrap of food; neither gets the whole piece and both use energy in the fight.	Competition	None	Both crabs	None
Baby fish and crabs live in seagrass to stay safe; they eat other small fish and invertebrates.	Commensalism <small>(see note on next page)</small>	Fish Crabs	None	Seagrass
A fish dies and bacteria decompose the body, returning nutrients to the sediment; seagrasses use the nutrients to grow.	<small>Answers may vary and anything logical should be accepted. The bacteria and seagrass benefit from the fish carcass. Some students may say commensalism because bacteria don't care about seagrass, but seagrass get nutrients.</small>	Bacteria Seagrass	None	Fish
Algae live inside the body of a coral where they are safe; the coral uses the food the algae produce.	Mutualism	Coral Algae	None	None

2. Choose one of the examples from Table 1. **Describe** the interaction and how the organisms benefit, are harmed, or are not affected.

Answers for each example in Table 1 are provided below.

1. The sea turtle gets a meal, and the seagrass loses leaves.
2. The barnacles get food/a ride/safety (any of these are acceptable) and the turtle doesn't really notice. (NOTE: See comment in Table 1)
3. The shrimp gets a meal, and the turtle is cleaned of parasites/the parasites die.
4. The fish are not affected (they are just excreting nutrients), but the seagrass get nutrients to grow.
5. The barracuda gets energy/food, and the fish dies.
6. The worm gets food/place to live, and the turtle's health is hurt.
7. Both crabs lose some food and use extra energy.
8. The fish and crabs have a safe place to live, and the seagrass is not affected.

Students might say that these animals excrete nutrients that benefits the seagrass in a mutualism.

9. Answers may vary and anything logical should be accepted. The bacteria and seagrass benefit from the fish carcass (food and nutrients). Some students may say commensalism because bacteria don't care about seagrass, but seagrass get nutrients.
10. Algae get a safe place to live, and coral get food.

## Activity 2: Interactions in Your Backyard

1. Now it's time to explore your own ecosystem. Your teacher will take you to an ecosystem or give you one to research. Use your observations to fill out Table 2 the same way Table 1 was completed. **Describe** at least five different interactions.

Name of the ecosystem I studied: \_\_\_\_\_

**Table 2. Interactions in my ecosystem**

Description	Type of Interaction	Organism(s) that benefit	Organism(s) harmed	Organism(s) not affected

2. Choose one of the examples you wrote in Table 2. **Describe** the interaction and how the organisms benefit, are harmed, or are not affected.

Answers will depend on the examples students choose.

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3. **Draw** a picture of the interaction you chose. **Label** the organisms.

Answers will depend on the examples students choose.



4. Choose another example you wrote in Table 2. Describe the interaction and how the organisms benefit, are harmed, or are not affected.

Answers will depend on the examples students choose.

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5. **Draw** a picture of the interaction you chose. **Label** the organisms.

Answers will depend on the examples students choose.



**Extend the lesson:** Have students share examples of the interactions they observed with the class. Have them compare and contrast this interaction with a similar interaction listed in Table 1 or another interaction they read about in the **Mission Reader** or saw in the video.