

# Biologically Speaking: Ecosystems and the Cycles of Nature

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# Congratulations!

You have chosen a learning program that will actively motivate your students and provide you with easily accessible and easily manageable instructional guidelines and tools designed to make your teaching role efficient and rewarding.

The AIMS Teaching Module (ATM) provides you with a video program correlated to your classroom curriculum, instructions and guidelines for use, plus a comprehensive teaching program containing a wide range of activities and ideas for interaction between all content areas. Our authors, educators, and consultants have written and reviewed the AIMS Teaching Modules to align with the Educate America Act: Goals 2000.

This ATM, with its clear definition of manageability, both in the classroom and beyond, allows you to tailor specific activities to meet all of your classroom needs.

## RATIONALE

In today's classrooms, educational pedagogy is often founded on Benjamin S. Bloom's "Six Levels of Cognitive Complexity." The practical application of Bloom's Taxonomy is to evaluate students' thinking skills on these levels, from the simple to the complex:

1. Knowledge (rote memory skills),
2. Comprehension (the ability to relate or retell),
3. Application (the ability to apply knowledge outside its origin),
4. Analysis (relating and differentiating parts of a whole),
5. Synthesis (relating parts to a whole)
6. Evaluation (making a judgment or formulating an opinion).

The AIMS Teaching Module is designed to facilitate these intellectual capabilities, and to integrate classroom experiences and assimilation of learning with the students' life experiences, realities, and expectations. AIMS' learner verification studies prove that our AIMS Teaching Modules help students to absorb, retain, and to demonstrate ability to use new knowledge in their world. Our educational materials are written and designed for today's classroom, which incorporates a wide range of intellectual, cultural, physical, and emotional diversities.

## ORGANIZATION AND MANAGEMENT

To facilitate ease in classroom manageability, the AIMS Teaching Module is organized in three sections:

### ***I. Introducing this ATM***

will give you the specific information you need to integrate the program into your classroom curriculum.

### ***II. Preparation for Viewing***

provides suggestions and strategies for motivation, language preparedness, readiness, and focus prior to viewing the program with your students.

### ***III. After Viewing the Program***

provides suggestions for additional activities plus an assortment of consumable assessment and extended activities, designed to broaden comprehension of the topic and to make connections to other curriculum content areas.

AIMS Teaching Module written by Pat Davies

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## **FEATURES**

### **INTRODUCING THE ATM**

Your AIMS Teaching Module is designed to accompany a video program written and produced by some of the world's most credible and creative writers and producers of educational programming. To facilitate diversity and flexibility in your classroom and to provide assessment tools, your AIMS Teaching Module features these components:

#### **Themes**

This section tells how the AIMS Teaching Module is correlated to the curriculum. Themes offers suggestions for interaction with other curriculum content areas, enabling teachers to use the teaching module to incorporate the topic into a variety of learning areas.

#### **Overview**

The Overview provides a synopsis of content covered in the video program. Its purpose is to give you a summary of the subject matter and to enhance your introductory preparation.

#### **Objectives**

The ATM learning objectives provide guidelines for teachers to assess what learners can be expected to gain from each program. After completion of the AIMS Teaching Module, your students will be able to demonstrate dynamic and applied comprehension of the topic.

#### **Preparation for Viewing**

In preparation for viewing the video program, the AIMS Teaching Module offers activity and/or discussion ideas that you may use in any order or combination.

#### **Introduction To The Program**

Introduction to the Program is designed to enable students to recall or relate prior knowledge about the topic and to prepare them for what they are about to learn.

#### **Introduction To Vocabulary**

Introduction to Vocabulary is a review of language used in the program: words, phrases, and usage. This vocabulary introduction is designed to ensure that all learners, including limited English proficiency learners, will have full understanding of the language usage in the content of the program.

#### **Discussion Ideas**

Discussion Ideas are designed to help you assess students' prior knowledge about the topic and to give students a preview of what they will learn. Active discussion stimulates interest in a subject and can motivate even the most reluctant learner. Listening, as well as speaking, is active participation. Encourage your students to participate at the rate they feel comfortable. Model sharing personal experiences when applicable, and model listening to students' ideas and opinions.

#### **Focus**

Help learners set a purpose for watching the program with Focus, designed to give students a focal point for comprehension continuity.

#### **Jump Right In**

Jump Right In provides abbreviated instructions for quick management of the program.

#### **After Viewing the Program**

After your students have viewed the program, you may introduce any or all of these activities to interact with other curriculum content areas, provide reinforcement, assess comprehension skills, or provide hands-on and in-depth extended study of the topic.

## SUGGESTED ACTIVITIES

The Suggested Activities offer ideas for activities you can direct in the classroom or have your students complete independently, in pairs, or in small work groups after they have viewed the program. To accommodate your range of classroom needs, the activities are organized into skills categories. Their labels will tell you how to identify each activity and help you correlate it into your classroom curriculum. To help you schedule your classroom lesson time, the AIMS hourglass gives you an estimate of the time each activity should require. Some of the activities fall into these categories:

### Meeting Individual Needs



These activities are designed to aid in classroom continuity. Reluctant learners and learners acquiring English will benefit from these activities geared to enhance comprehension of language in order to fully grasp content meaning.

### Curriculum Connections



Many of the suggested activities are intended to integrate the content of the ATM program into other content areas of the curriculum. These cross-connections turn the classroom teaching experience into a whole learning experience.



### Critical Thinking

Critical Thinking activities are designed to stimulate learners' own opinions and ideas. These activities require students to use the thinking process to discern fact from opinion, consider their own problems and formulate possible solutions, draw conclusions, discuss cause and effect, or combine what they already know with what they have learned to make inferences.



### Cultural Diversity

Each AIMS Teaching Module has an activity called Cultural Awareness, Cultural Diversity, or Cultural Exchange that encourages students to share their backgrounds, cultures, heritage, or knowledge of other countries, customs, and language.

### Hands On



These are experimental or tactile activities that relate directly to the material taught in the program. Your students will have opportunities to make discoveries and formulate ideas on their own, based on what they learn in this unit.

### Writing



Every AIMS Teaching Module will contain an activity designed for students to use the writing process to express their ideas about what they have learned. The writing activity may also help them to make the connection between what they are learning in this unit and how it applies to other content areas.



### In The Newsroom

Each AIMS Teaching Module contains a newsroom activity designed to help students make the relationship between what they learn in the classroom and how it applies in their world. The purpose of In The Newsroom is to actively involve each class member in a whole learning experience. Each student will have an opportunity to perform all of the tasks involved in production: writing, researching, producing, directing, and interviewing as they create their own classroom news program.

### Extended Activities



These activities provide opportunities for students to work separately or together to conduct further research, explore answers to their own questions, or apply what they have learned to other media or content areas.

### Link to the World



These activities offer ideas for connecting learners' classroom activities to their community and the rest of the world.

### Culminating Activity



To wrap up the unit, AIMS Teaching Modules offer suggestions for ways to reinforce what students have learned and how they can use their new knowledge to enhance their worldview.

## ADDITIONAL ATM FEATURES

### Vocabulary

Every ATM contains an activity that reinforces the meaning and usage of the vocabulary words introduced in the program content. Students will read or find the definition of each vocabulary word, then use the word in a written sentence.

### Checking Comprehension

Checking Comprehension is designed to help you evaluate how well your students understand, retain, and recall the information presented in the AIMS Teaching Module. Depending on your students' needs, you may direct this activity to the whole group yourself, or you may want to have students work on the activity page independently, in pairs, or in small groups. Students can verify their written answers through discussion or by viewing the video a second time. If you choose, you can reproduce the answers from your Answer Key or write the answer choices in a Word Bank for students to use. Students can use this completed activity as a study guide to prepare for the test.

### Reproducible Activities

The AIMS Teaching Module provides a selection of reproducible activities, designed to specifically reinforce the content of this learning unit. Whenever applicable, they are arranged in order from low to high difficulty level, to allow a seamless facilitation of the learning process. You may choose to have students take these activities home or to work on them in the classroom independently, in pairs or in small groups.

### Checking Vocabulary

The checking Vocabulary activity provides the opportunity for students to assess their knowledge of new vocabulary with this word game or puzzle. The format of this vocabulary activity allows students to use the related words and phrases in a different context.

### Test

The AIMS Teaching Module Test permits you to assess students' understanding of what they have learned. The test is formatted in one of several standard test formats to give your students a range of experiences in test-taking techniques. Be sure to read, or remind students to read, the directions carefully and to read each answer choice before making a selection. Use the Answer Key to check their answers.

### Additional AIMS Multimedia Programs

After you have completed this AIMS Teaching Module you may be interested in more of the programs that AIMS offers. This list includes several related AIMS programs.

### Answer Key

Reproduces tests and work pages with answers marked.

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## JUMP RIGHT IN

### Preparation

- Read **Biologically Speaking: Ecosystems and the Cycles of Nature Themes, Overview, and Objectives** to become familiar with program content and expectations.
- Use **Preparation for Viewing** suggestions to introduce the topic to students.

### Viewing

- Set up viewing monitor so that all students have a clear view.
- Depending on your classroom size and learning range, you may choose to have students view **Biologically Speaking: Ecosystems and the Cycles of Nature** together or in small groups.
- Some students may benefit from viewing the video more than one time.

### After Viewing

- Select Suggested Activities that integrate into your classroom curriculum. If applicable, gather materials or resources.
- Choose the best way for students to work on each activity. Some activities work best for the whole group. Other activities are designed for students to work independently, in pairs, or in small groups. Whenever possible, encourage students to share their work with the rest of the group.
- Duplicate the appropriate number of Vocabulary, Checking Comprehension, and consumable activity pages for your students.
- You may choose to have students take consumable activities home, or complete them in the classroom, independently, or in groups.
- Administer the Test to assess students' comprehension of what they have learned, and to provide them with practice in test-taking procedures.
- Use the Culminating Activity as a forum for students to display, summarize, extend, or share what they have learned with each other, the rest of the school, or a local community organization.

# Biologically Speaking: Ecosystems and the Cycles of Nature

## Themes

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Biologically Speaking: Ecosystems And The Cycles Of Nature explores the four basic requirements for life and their influence on the interaction of the living organisms in an ecosystem. Students learn about the populations and the community that live in an ecosystem, the niches of various populations, and the adaptations that help the living organisms survive.

## Overview

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Overview: Ecosystems can be seen as the framework within which organisms adapt and survive. Environmental factors such as nutrients, temperature, precipitation, and geography play a critical role in the life cycles and evolution of populations. Water, carbon, nitrogen and phosphorous cycle between the biotic and abiotic worlds, and in doing so, transfer energy from the sun to fuel life.

## Objectives

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- To define community, population, predator, prey, decomposer, symbiosis, mutualism and mimicry
- To identify a biome and its unique characteristics
- To better understand the four basic requirements of life
- To discuss the carbon, nitrogen and phosphorous cycles
- To explain the roles of producers and consumers
- To explore the relationship of plants, solar energy and the Earth

## Introduction to the Program

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Earth contains many types of living organisms, and each has a specific niche to fill. The vast variety of organisms and the relationships between them can be incredibly complex and intriguing.

Ask students to volunteer examples of organisms they see frequently. Make a list of their suggestions on the board. Possible examples for their list include humans and other mammals, birds, reptiles, amphibians, fish, insects and arachnids, plants, trees, and fungi, as well as other types of organisms. How broad a variety of living things does their list represent? What does this say about the ecosystem within which they live? How do the organisms on their list relate to one another? Save the list to review after viewing the program in order to determine what the class has learned about the workings of the local ecosystem.

## Introduction to Vocabulary

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Write the following words on the board and explain that they will be referenced in the video. Some students may be unfamiliar with the terms. If the meaning of any word is unclear to the group, ask volunteers to use an appropriate reference source to check the term and report their findings to the class.

Encourage students to note the context in which the words are used in the program, and to be prepared to discuss their meaning.

*biome, camouflage, community, commensalism, decomposer, habitat, mimicry, niche, nitrogen, omnivore*

## Discussion Ideas

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The intelligence of human beings has controlled or eliminated many natural forces that have limited human population size in the past - such as starvation, disease, and predators. How have humans managed to control these threats? What are the advantages and disadvantages of these controls? (Humans have devised more efficient farming methods and pest controls to produce more food, vaccination and medical advances to deal with disease, and weapons to protect themselves from predators. Such controls have obvious advantages for humans, who can live longer and in greater numbers than in earlier times. Disadvantages to other organisms include extinction of certain species and pollution from harmful chemicals in the form of pesticides and fertilizers.)

## Focus

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Ask students to think for a few moments about the place that they occupy in your local ecosystem. How do they feel their position compares with that of other mammals? With other types of organisms in your area? Humans are at the top of the local food chain; do they think that is true in all other regions? How do conditions in your area contribute to the lives and well-being of humans who live there? How do humans contribute or detract from the local environment? Tell the class they are about to learn more about the Earth's ecosystems and biomes - and the relationships between the diverse organisms that inhabit them.

## SUGGESTED ACTIVITIES

### Connection to Geography

The Earth is filled with a variety of biomes, each with its own blend of climate, plants and animals. Have students work in small groups utilizing appropriate resources to find examples of biomes in the following categories: ocean, swamp, forest, desert and mountain. Tell them to investigate one specific biome more closely. Ask them to compile a report on: the biome's climate and weather, species of animals, plants and fungi, human population - if any - and the type of societies established by any existing human population. Have each group select a representative to report their findings to the class.



1 Hour

### Meeting Individual Needs

Ask students to look up the words habitat, biome, and community. What does each word mean? What is an example of each? (Habitat is a certain type of environment where an organism lives and seeks shelter, such as a pine tree. Biome is an area of characteristic climate and vegetation, such as a Louisiana swamp. Community is the living part of a biome - all its animals, plants, fungi and other living organisms.)



35 Minutes

### In the Newsroom

Every day we read about current events affecting our environment. Have students work in small groups to research ecology-related stories, utilizing newspapers, magazines, the Internet, and other appropriate resources. Ask them to prepare a newscast report on their selected topic, presenting their collective assessment of the situation. The groups may each choose one or two anchorpersons to present their stories. If feasible, videotape the presentations for review at a later time.



2 Hours

### Critical Thinking

Most organisms have little or no control over their environment. Humans do have control; we can easily move from one environment to another. Students switch environments several times a day: from home, to school, to the library, to the mall, to a friend's house, to a movie theater, and back home again. In addition to moving from one environment to another, humans can adapt to the environment they are in. Ask students to think of ways they adapt to their environment. (Some adaptations include changing clothes or footwear depending on the weather, turning on the heating or air conditioning, using items such as sunblock, or skis or snowshoes to deal with the elements.)



25 Minutes

What adaptations do other animals use to survive in their environments? (Some animals have fur or feathers that change color to suit the weather. Others have webbed feet that make it easier to maneuver through water, snow, or even the air (flying squirrel, bat). Some have layers of body fat that insulate them from winter cold.)

### Connection to Art

Ask students to choose an ecosystem they think they would like to live in, and to draw a scene illustrating a typical day in that environment. Remind them to include themselves and their home in the drawing. Their clothing and surroundings should reflect the climate. What kind of clothing will they need? What kind of shoes? What building materials are their houses made from? Ask them to include any pets they imagine they would have. Encourage them to enrich the drawings with lots of detail.



30 Minutes



### **Link to the World**

Carbon dioxide, a greenhouse gas, is responsible for much of the Earth's global warming. Carbon dioxide levels have increased greatly in the past few centuries because humans have been burning greater quantities of fossil fuels. When such fuels are burned, they give off large amounts of carbon dioxide, adding to the greenhouse effect.



*30 Minutes*

Ask students to make a list of ways to reduce the greenhouse effect by conserving fossil fuels. Remind them that fuels are consumed whenever we use electricity or gas-driven vehicles. (Ways to reduce fuel usage include carpooling, bike riding, using less heat and air conditioning, and turning off lights and appliances when we're finished with them.)

### **Hands On**

What kind of ecosystem do students live in? To find out, have them collect abiotic and biotic samples from their environment. Tell them to place samples in glass jars. Leaves, rocks, flowers, grass, and insects can be important clues to labeling an ecosystem. Students should also write a short description of any animals they observe. Along with the information collected, have students use appropriate research resources to narrow down their search. Do they see evidence of more than one type of climate? How has the weather of their region affected the type of ecosystem that exists?



*1-2 Hours*

### **Culminating Activity**

Tell the class that they are going to work together to become a representation of a tropical rainforest. Ask each student to choose an organism from the list below. After making their choice, they must use what they have learned during the unit to explain their role within the tropical rainforest ecosystem. Ask them to write a short description of what they contribute to their environment. What do they take from the environment? How are they related to the other organisms on the list? Are they involved in a parasitic or symbiotic relationship? What are their defense mechanisms?



*1 Hour*

Encourage students to draw a picture of their chosen organism along with their written description. Display their "biographies" on a wall labeled "Our Tropical Rainforest."

boa constrictor (consumer)  
toadstool (decomposer)  
jaguar (consumer)  
banana tree (producer)  
spider monkey (consumer)  
tree frog (consumer)  
hibiscus plant (producer)  
bacteria on root of hibiscus plant (decomposer)  
tarantula (consumer)  
fungus growing on banana tree (decomposer)  
ant (consumer)



**VOCABULARY**

The following vocabulary words are from *Biologically Speaking: Ecosystems and the Cycles of Nature*. Fill in the number of each term next to its closest definition, then on a separate piece of paper use each term in a sentence.

1. biome
2. camouflage
3. community
4. commensalism
5. decomposer
6. habitat
7. mimicry
8. niche
9. nitrogen
10. omnivore

- \_\_\_\_\_ the total populations of organisms that make up the living portion of an ecosystem or biome
- \_\_\_\_\_ phenomenon in which an organism imitates the coloring, pattern and/or behavior of another organism in order to fool predators
- \_\_\_\_\_ fungi or bacteria that extract energy from the waste products or dead bodies of other organisms, creating nutrient-rich soils
- \_\_\_\_\_ the type of environment where an organism lives and seeks shelter
- \_\_\_\_\_ an area of characteristic climate and vegetation
- \_\_\_\_\_ a relationship between two organisms where one organism benefits and the other organism is not affected
- \_\_\_\_\_ an organism that consumes plants and animals
- \_\_\_\_\_ gas that makes up 79% of the Earth's atmosphere and that is necessary to the development of life
- \_\_\_\_\_ an organism's method of hiding by means of its color, shape and/or behavior
- \_\_\_\_\_ role of a species or organism in its environment, including its behavior and its position in the food chain

**CHECKING COMPREHENSION**

Read the following sentences and circle the letters of the words that correctly fill each blank.

Life on Earth is made up of countless \_\_\_\_\_ 1 \_\_\_\_\_, each filling its own \_\_\_\_\_ 2 \_\_\_\_\_ in remarkable ways. The requirements for all life are \_\_\_\_\_ 3 \_\_\_\_\_. The organisms living in an ecosystem are called a \_\_\_\_\_ 4 \_\_\_\_\_. Plants and other living things capable of \_\_\_\_\_ 5 \_\_\_\_\_ are called producers. Plants absorb \_\_\_\_\_ 6 \_\_\_\_\_ from the atmosphere and release oxygen. \_\_\_\_\_ 7 \_\_\_\_\_ consumers are creatures that eat plants. \_\_\_\_\_ 8 \_\_\_\_\_ consumers eat other animals. Organisms known as \_\_\_\_\_ 9 \_\_\_\_\_ break down the waste of consumers and the dead bodies of plants and consumers, creating nutrient-rich soils to be used by a new generation of plants. The actions of humans have disrupted this cycle of life and increased the amount of carbon dioxide in the atmosphere, leading to an environmental problem called \_\_\_\_\_ 10 \_\_\_\_\_.

1.

- a) nitrates
- b) gases
- c) organisms
- d) elements

2.

- a) decomposer
- b) phosphorus cycle
- c) greenhouse effect
- d) niche

3.

- a) soil, solvent, sunlight and water
- b) carbon, nitrogen, and phosphorus
- c) nutrients, energy, water and a range of temperature
- d) sunlight, water, and a variety of plants

4.

- a) family
- b) community
- c) species
- d) habitat

5.

- a) photosynthesis
- b) digestion
- c) camouflage
- d) mimicry

6.

- a) phosphorus
- b) pure carbon
- c) carbon dioxide
- d) bacteria

7.

- a) symbiotic
- b) primary
- c) mutual
- d) secondary

8.

- a) secondary
- b) tertiary
- c) communal
- d) primary

9.

- a) parasites
- b) omnivores
- c) producers
- d) decomposers

10.

- a) the symbiotic effect
- b) the carbon cycle
- c) the greenhouse effect
- d) the nitrogen cycle

**LINKS IN THE CHAIN**

Label each organism below with its place in the food chain - in the blank, write "D" if the organism is a decomposer, "C" if the organism is a consumer, "PR" if it's a producer, and "PA" if it is a parasite.

1. \_\_\_\_\_ flea
2. \_\_\_\_\_ bear
3. \_\_\_\_\_ rose bush
4. \_\_\_\_\_ fungus
5. \_\_\_\_\_ you
6. \_\_\_\_\_ strawberry plant
7. \_\_\_\_\_ grasshopper
8. \_\_\_\_\_ tapeworm
9. \_\_\_\_\_ bacteria
10. \_\_\_\_\_ oak tree

**BACK TO THE ROOTS**

Many of the items we use or consume every day started with a plant or an animal. Record the history of each item below, going backward until you reach the item's origin. The first one has been done for you.

1. leather belt: store, belt factory, leather tanning company, cattle ranch, cow
2. orange juice: \_\_\_\_\_
3. cotton shirt: \_\_\_\_\_
4. cheese: \_\_\_\_\_
5. corn flakes: \_\_\_\_\_
6. wooden desk: \_\_\_\_\_
7. omelet: \_\_\_\_\_
8. notebook paper: \_\_\_\_\_
9. silk ribbon: \_\_\_\_\_
10. honey: \_\_\_\_\_

**WHAT ARE WE TALKING ABOUT?**

Match each word below to the example that best describes it.

- |                 |                               |
|-----------------|-------------------------------|
| 1. camouflage   | 6. mutualism                  |
| 2. commensalism | 7. parasitism                 |
| 3. competition  | 8. predator-prey relationship |
| 4. decomposer   | 9. symbiotic relationship     |
| 5. mimicry      | 10. warning coloration        |

- \_\_\_\_\_ An oxpecker bird eats insects off the back of a rhinoceros.
- \_\_\_\_\_ A lion kills a zebra.
- \_\_\_\_\_ The viceroy butterfly is not eaten by birds because it looks like the unpleasant-tasting monarch butterfly.
- \_\_\_\_\_ The feathers of a pheasant are the same colors as its habitat.
- \_\_\_\_\_ A harmless snake has colors similar to the poisonous coral snake.
- \_\_\_\_\_ The epiphyte plant grows on a tree branch, receiving only structure from its host.
- \_\_\_\_\_ A bee feeds on the nectar of a flower, spreading pollen from that flower to the next one it visits.
- \_\_\_\_\_ Bacteria, which turns dead plants, animals and waste products into nutrient-rich soil.
- \_\_\_\_\_ A crow and a bluejay fight over the remains of a dead rabbit.
- \_\_\_\_\_ A flea sucks blood from a cat's leg.

**WORD SEARCH PUZZLE**

The words below are from *Biologically Speaking: Ecosystems And The Cycles Of Nature*. Find them in the puzzle by looking across, up, down, diagonally, and backward.

E	C	H	I	N	W	P	Q	S	D	F	K
S	M	N	B	H	J	P	L	D	W	E	Q
V	W	I	K	A	X	C	Q	E	Y	S	B
Q	P	T	M	B	H	W	N	C	H	U	K
T	A	R	B	I	O	M	E	O	G	O	F
W	R	G	H	T	C	P	W	M	Q	H	X
B	A	J	K	A	M	R	C	P	V	N	G
N	S	T	K	T	W	M	Y	O	F	E	W
B	I	Q	E	R	Q	W	P	S	N	E	X
W	T	C	A	R	B	O	N	E	M	R	D
B	E	Y	W	Q	L	M	B	R	M	G	Q
H	O	M	N	I	V	O	R	E	C	R	J

**WORD BANK**

biome  
carbon  
decomposer  
greenhouse  
habitat  
mimicry  
niche  
omnivore  
parasite  
water

**TEST**

Circle the letter that correctly answers the question.

1. The living part of an ecosystem or biome is called a \_\_\_\_\_.
  - a) habitat
  - b) environment
  - c) family
  - d) community
  
2. Which of the following is an example of an ecosystem?
  - a) a pond
  - b) the Earth
  - c) a drop of water
  - d) all of the above
  
3. The greenhouse effect is thought to be caused by \_\_\_\_\_.
  - a) nitrogen
  - b) carbon dioxide
  - c) phosphorus
  - d) none of the above
  
4. Some relationships that take place between populations and communities are \_\_\_\_\_.
  - a) competitive relationships
  - b) predator-prey relationships
  - c) symbiotic relationships
  - d) all of the above
  
5. The element that forms the framework for all organic molecules is \_\_\_\_\_.
  - a) oxygen
  - b) phosphorus
  - c) carbon
  - d) fossil fuels



**TEST (CONTINUED)**

6. Where can phosphates be found?
- a) in rocks like limestone
  - b) in the atmosphere
  - c) in oceans and mountain streams
  - d) all of the above
7. Organisms capable of photosynthesis are called \_\_\_\_\_.
- a) detritus feeders
  - b) decomposers
  - c) producers
  - d) consumers
8. Ticks, fleas and leeches are common types of \_\_\_\_\_.
- a) hosts
  - b) detritus feeders
  - c) parasites
  - d) secondary consumers
9. Omnivores are represented by which group of animals?
- a) humans, seals, cows
  - b) rats, bears, raccoons
  - c) deer, cows, seals
  - d) wolves, snakes, frogs
10. Climate is determined by \_\_\_\_\_.
- a) latitude
  - b) elevation
  - c) nearness to oceans and mountains
  - d) all of the above

## **ADDITIONAL AIMS MULTIMEDIA PROGRAMS**

You and your students might also enjoy these other AIMS Multimedia programs:

2604-EN-VID: *Biologically Speaking: Ecosystems and the Cycles of Nature*

8207-EN-VID: *Animal Communities*

8559-EN-VID: *Ecosystems: Nature in Balance*

8206-EN-VID: *How Animals Survive*

8205-EN-VID: *How We Classify Animals*

8598-EN-VID: *Learning about Science: Flowers*

## ANSWER KEY for page 9

### VOCABULARY

The following vocabulary words are from *Biologically Speaking: Ecosystems and the Cycles of Nature*. Fill in the number of each term next to its closest definition, then on a separate piece of paper use each term in a sentence.

1. biome
2. camouflage
3. community
4. commensalism
5. decomposer
6. habitat
7. mimicry
8. niche
9. nitrogen
10. omnivore

- 3 the total populations of organisms that make up the living portion of an ecosystem or biome
- 7 phenomenon in which an organism imitates the coloring, pattern and/or behavior of another organism in order to fool predators
- 5 fungi or bacteria that extract energy from the waste products or dead bodies of other organisms, creating nutrient-rich soils
- 6 the type of environment where an organism lives and seeks shelter
- 1 an area of characteristic climate and vegetation
- 4 a relationship between two organisms where one organism benefits and the other organism is not affected
- 10 an organism that consumes plants and animals
- 9 gas that makes up 79% of the Earth's atmosphere and that is necessary to the development of life
- 2 an organism's method of hiding by means of its color, shape and/or behavior
- 8 role of a species or organism in its environment, including its behavior and its position in the food chain

## ANSWER KEY for page 10

### CHECKING COMPREHENSION

Read the following sentences and circle the letters of the words that correctly fill each blank.

Life on Earth is made up of countless \_\_\_\_\_ 1 \_\_\_\_\_, each filling its own \_\_\_\_\_ 2 \_\_\_\_\_ in remarkable ways. The requirements for all life are \_\_\_\_\_ 3 \_\_\_\_\_. The organisms living in an ecosystem are called a \_\_\_\_\_ 4 \_\_\_\_\_. Plants and other living things capable of \_\_\_\_\_ 5 \_\_\_\_\_ are called producers. Plants absorb \_\_\_\_\_ 6 \_\_\_\_\_ from the atmosphere and release oxygen. \_\_\_\_\_ 7 \_\_\_\_\_ consumers are creatures that eat plants. \_\_\_\_\_ 8 \_\_\_\_\_ consumers eat other animals. Organisms known as \_\_\_\_\_ 9 \_\_\_\_\_ break down the waste of consumers and the dead bodies of plants and consumers, creating nutrient-rich soils to be used by a new generation of plants. The actions of humans have disrupted this cycle of life and increased the amount of carbon dioxide in the atmosphere, leading to an environmental problem called \_\_\_\_\_ 10 \_\_\_\_\_.

1.

- a) nitrates
- b) gases
- c) organisms**
- d) elements

2.

- a) decomposer
- b) phosphorus cycle
- c) greenhouse effect
- d) niche**

3.

- a) soil, solvent, sunlight and water
- b) carbon, nitrogen, and phosphorus
- c) nutrients, energy, water and a range of temperature**
- d) sunlight, water, and a variety of plants

4.

- a) family
- b) community**
- c) species
- d) habitat

5.

- a) photosynthesis**
- b) digestion
- c) camouflage
- d) mimicry

6.

- a) phosphorus
- b) pure carbon
- c) carbon dioxide**
- d) bacteria

7.

- a) symbiotic
- b) primary**
- c) mutual
- d) secondary

8.

- a) secondary**
- b) tertiary
- c) communal
- d) primary

9.

- a) parasites
- b) omnivores
- c) producers
- d) decomposers**

10.

- a) the symbiotic effect
- b) the carbon cycle
- c) the greenhouse effect**
- d) the nitrogen cycle

## ANSWER KEY for page 11

### LINKS IN THE CHAIN

Label each organism below with its place in the food chain - in the blank, write "D" if the organism is a decomposer, "C" if the organism is a consumer, "PR" if it's a producer, and "PA" if it is a parasite.

1. PA flea
2. C bear
3. PR rose bush
4. D fungus
5. C you
6. PR strawberry plant
7. C grasshopper
8. PA tapeworm
9. D bacteria
10. PR oak tree

## ANSWER KEY for page 12

### BACK TO THE ROOTS

Many of the items we use or consume every day started with a plant or an animal. Record the history of each item below, going backward until you reach the item's origin. The first one has been done for you.

1. leather belt: store, belt factory, leather tanning company, cattle ranch, cow
2. orange juice: grocery store, juice plant, orange orchard, orange
3. cotton shirt: store, clothing factory, fabric manufacturer, cotton mill, cotton plant
4. cheese: grocery store, cheese factory, dairy farm, cow
5. corn flakes: grocery store, cereal factory, farm, ear of corn
6. wooden desk: store, furniture factory, lumber yard, tree
7. omelet: eggs, grocery store, poultry farm, chicken
8. notebook paper: store, paper company, paper mill, tree
9. silk ribbon: store, silk factory, silk farm, silkworm
10. honey: store, honey factory, bee farm, bees, flowers

## ANSWER KEY for page 13

### WHAT ARE WE TALKING ABOUT?

Match each word below to the example that best describes it.

- |                 |                               |
|-----------------|-------------------------------|
| 1. camouflage   | 6. mutualism                  |
| 2. commensalism | 7. parasitism                 |
| 3. competition  | 8. predator-prey relationship |
| 4. decomposer   | 9. symbiotic relationship     |
| 5. mimicry      | 10. warning coloration        |

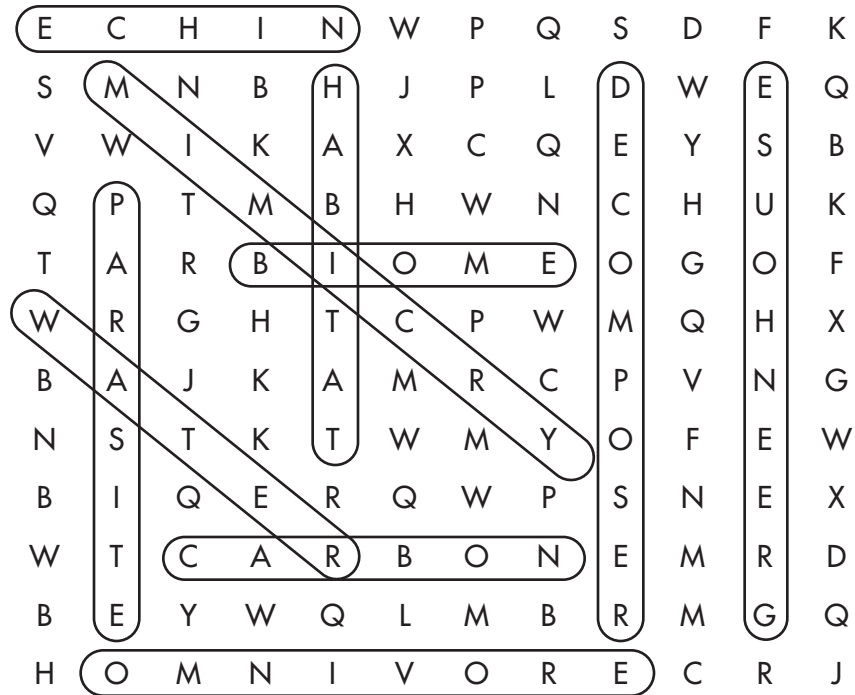
- 6 An oxpecker bird eats insects off the back of a rhinoceros.
- 8 A lion kills a zebra.
- 5 The viceroy butterfly is not eaten by birds because it looks like the unpleasant-tasting monarch butterfly.
- 1 The feathers of a pheasant are the same colors as its habitat.
- 10 A harmless snake has colors similar to the poisonous coral snake.
- 2 The epiphyte plant grows on a tree branch, receiving only structure from its host.
- 9 A bee feeds on the nectar of a flower, spreading pollen from that flower to the next one it visits.
- 4 Bacteria, which turns dead plants, animals and waste products into nutrient-rich soil.
- 3 A crow and a bluejay fight over the remains of a dead rabbit.
- 7 A flea sucks blood from a cat's leg.



## ANSWER KEY for page 14

### WORD SEARCH PUZZLE

The words below are from *Biologically Speaking: Ecosystems And The Cycles Of Nature*. Find them in the puzzle by looking across, up, down, diagonally, and backward.



#### **WORD BANK**

biome  
carbon  
decomposer  
greenhouse  
habitat  
mimicry  
niche  
omnivore  
parasite  
water

## ANSWER KEY for page 15

### TEST

Circle the letter that correctly answers the question.

1. The living part of an ecosystem or biome is called a \_\_\_\_\_.  
a) habitat  
b) environment  
c) family  
☒ d) community
2. Which of the following is an example of an ecosystem?  
a) a pond  
b) the Earth  
c) a drop of water  
☒ d) all of the above
3. The greenhouse effect is thought to be caused by \_\_\_\_\_.  
a) nitrogen  
☒ b) carbon dioxide  
c) phosphorus  
d) none of the above
4. Some relationships that take place between populations and communities are \_\_\_\_\_.  
a) competitive relationships  
b) predator-prey relationships  
c) symbiotic relationships  
☒ d) all of the above
5. The element that forms the framework for all organic molecules is \_\_\_\_\_.  
a) oxygen  
b) phosphorus  
☒ c) carbon  
d) fossil fuels

## ANSWER KEY for page 16

### TEST (CONTINUED)

6. Where can phosphates be found?

☒ a) in rocks like limestone

b) in the atmosphere

c) in oceans and mountain streams

d) all of the above

7. Organisms capable of photosynthesis are called \_\_\_\_\_.

a) detritus feeders

b) decomposers

☒ c) producers

d) consumers

8. Ticks, fleas and leeches are common types of \_\_\_\_\_.

a) hosts

b) detritus feeders

☒ c) parasites

d) secondary consumers

9. Omnivores are represented by which group of animals?

a) humans, seals, cows

☒ b) rats, bears, raccoons

c) deer, cows, seals

d) wolves, snakes, frogs

10. Climate is determined by \_\_\_\_\_.

a) latitude

b) elevation

c) nearness to oceans and mountains

☒ d) all of the above