



Saving Our Water



Vocabulary Preview

Preview 1

These sentences contain information from the readings. Fill in the blanks with the word that best completes each sentence.

consumers evidence factors global regulations

1. Global warming, acid rain, and pollution are all _____ that contribute to the death of coral reefs.
2. _____ limit the number, size, and type of fish that fishermen can legally catch.
3. In 17 years of swordfishing, Linda Greenlaw says that she has seen no _____ of overfishing. If this is true, why are there fewer fish in the ocean than ever before?
4. American _____ should buy U.S.-caught fish, because U.S. fishermen catch fish legally.
5. Scientists agree that there is a definite link between _____ warming and the death of coral reefs.

Preview 2

Look at the way the underlined words are used in the sentences. Match each word with its definition.

1. The police have the authority to arrest or fine anyone who breaks the law.
2. What can you do to protect the environment—to protect the quality of the air, the water, and the land?
3. The welfare of the oceans and rivers affect all of us. All living things need clean water to drink.
4. Chemicals affect the water in the ocean and the life of coral plants and shellfish.
5. It was legal for Jimmy Blake to fish for and catch sturgeon, but it was against the law to catch striped bass.

- | | |
|-----------------------------|---|
| _____ 1. authority | a. a state of health and wellness |
| _____ 2. environment | b. a material that is made by mixing two or more substances together |
| _____ 3. welfare | c. within the law; allowed by law |
| _____ 4. chemical | d. the right to command or control people or their actions |
| _____ 5. legal | e. the natural world of land, sea, air, plants, and animals; our surroundings |



Reading Preview: What Do You Already Know?

Circle the correct answer. If you don't know the answer, guess.

1. The world's oceans are unhealthy because of
 - a. global warming
 - b. overfishing
 - c. industrial pollution
 - d. all of the above

2. Most American commercial fishermen/fisherwomen
 - a. obey government regulations and observe boundaries
 - b. can't make a living by fishing
 - c. do not care about the environment
 - d. make a lot of money

3. Global warming
 - a. does not affect ocean life
 - b. is causing the temperature of the ocean to rise
 - c. creates colder winters and more snowfall
 - d. is not related to greenhouse gases produced by cars and industries

4. What percentage of the earth's surface is covered by water?
 - a. 33 percent
 - b. 65 percent
 - c. 71 percent
 - d. 86 percent



Introduction to the Readings

(1) Water is one of our most important resources. Nearly 71 percent of the earth's surface is covered by water, causing astronauts orbiting the earth to name it "the blue planet." The human body is approximately 65 percent water. Water is needed for life. Oceans and rivers supply us with drinking water, food, and power. In addition, oceans and rivers have provided humans with the opportunities to explore and travel. It is difficult to imagine human history without oceans and rivers. However, the impact of the growing world population and our increasing use of fossil fuels is affecting the health of the world's oceans, rivers, and lakes. The readings in this unit discuss some of the important issues facing the world's rivers and oceans today.

(2) The first reading is by Linda Greenlaw. She has been fishing commercially for nearly 25 years and is perhaps the only professional female swordfish captain to fish off the Grand Banks in Nova Scotia. Her work and her income depend on having adequate numbers of fish in the ocean. At the same

***conservationists:** people who want to protect the environment and living things from harm, loss, or change

time, many scientists and conservationists* worry that the oceans are being "fished out"—that there are too many people catching too many fish, too fast. They fear that soon there may be no fish left in the oceans. Some groups have tried to create less demand for fish by refusing to buy or eat it. This reading gives a commercial fisherwoman's point of view on the overfishing issue.

***pollution:** substances that harm the water, air, or atmosphere

***sewage:** waste from homes and factories that is carried away by water in pipes called sewers

(3) The second reading is from a book called *The Riverkeepers*. The Hudson River Fishermen's Association was founded in 1966 and later became known as Riverkeeper. The group included fishermen as well as others who lived along the Hudson River. They were all concerned about what was happening to their once beautiful river. Pollution* was killing it. New York City was dumping 1.5 billion gallons of raw sewage* into it every day, factories were dumping **chemicals** and waste

into the river, and power plants were killing millions of fish every day. The association decided to use two little-known laws—the Rivers and Harbors Act of 1888 and the Refuse Act of 1899—to find and prosecute the Hudson River’s polluters. These two laws made it **illegal** to pollute American waters and gave a reward to whoever reported the violation.

(4) Since 1966, Riverkeeper has tracked down hundreds of polluters, taken them to court, and forced them to spend hundreds of millions of dollars cleaning up the Hudson. Today the Hudson is one of the healthiest bodies of water on earth, and the Riverkeeper organization has inspired others to act as “waterkeepers” on more than 150 waterways around the world. The reading here is one of the early cases Riverkeeper became involved in.

(5) The final reading is about global warming and the harmful effect it is having on the world’s coral reefs. In order to understand this reading, we need to understand the **process** of global warming. **Global*** warming is the gradual increase in the temperature of the atmosphere closest to the earth. The temperature of the atmosphere near the earth’s surface is warmed through a natural **process*** called the “greenhouse effect.” Visible light travels from the sun to the earth and passes through a blanket of “greenhouse” gases made up of water vapor, carbon dioxide, methane, nitrous oxide, and ozone. Infrared radiation, which we cannot see but can feel as heat, is reflected off the planet’s surface toward space. Some of this heat is trapped by the greenhouse gases and reflected back toward the earth. This reflected radiation, or heat, keeps the earth at an average temperature of about 60 degrees Fahrenheit (16 degrees Celsius). Most living things on earth can live at this temperature.

(6) In the last 100 years, growth in industry, agriculture, and transportation, and the increased use of fossil fuel has produced more greenhouse gases. This increase in the amount of greenhouse gases is trapping more heat in the earth’s atmosphere* and causing its temperature to rise. During the

***global:** having to do with the whole earth
***process:** a series of things that happen in order and result in change

***atmosphere:** the layer of air and other gases around a planet

past century, the earth's atmospheric temperature has risen 1.1 degrees Fahrenheit (0.6 degrees Celsius). Melting snow and ice from the polar caps has caused the sea level to rise by several inches.

(7) The earth's atmosphere and the oceans also affect one another. As heat

***evaporate:** to change from a liquid into a gas
***condense:** to change from a gas into a liquid

causes ocean water to evaporate* into the atmosphere, tiny particles of salt are left in the air. Water vapor condenses* around these particles to form fog and clouds. Eventually, some of this water vapor returns to the earth as rain, and brings with it other chemicals and particles that are present in the atmosphere. As you will read, some of these chemicals are changing the acidity of water in the oceans, and this change is killing the coral reefs.

Reading 1: Fishing or Overfishing?

Excerpt adapted from *The Hungry Ocean* by Linda Greenlaw
 (New York: Hyperion, 1999), 143–45.

(8) No matter what **equipment** you have, you can't catch fish if they're not there. And the only way to know whether the fish are at home or not is to put the fishing gear in the water. I guess that's why what I do is called "fishing." If it was easy, we'd call it "catching," and there would be more people doing it. Then, perhaps there would be a reason for the conservationists to advocate putting an end to commercial fishing. In 17 years of fishing, I have seen no **evidence** of fewer fish.

(9) I have always been happy to follow government **regulations** and to observe boundaries, believing that this will ensure the future of fish and fishing. What annoys me are the actions taken by groups such as the restaurant chefs who took swordfish off their menus to try to protect it. I wonder how these chefs can presume they know better than the fishermen and scientists who have been working together for years to keep the stocks of fishes strong. In my opinion, chefs should leave fisheries management to those who know more about swordfish.



(10) U.S. fishermen are among the most **regulated** fishermen in the world. Fishermen of my generation are conservation-minded. We also don't like that the public is given misinformation. If a problem with overfishing does develop, it is not the American fisherman who should be punished, but the fishermen from other countries who continually exceed their allowable catch limits. Fishing for a living is part of our country's history. **Consumers** should enjoy the fruits of the labor of law-abiding and conservation-minded fishermen without being made to feel guilty. Eat U.S.-caught fish! It's **legal!**

Reading 2: Fish Kills

Excerpt adapted from *The Riverkeepers* by John Cronin and Robert F. Kennedy, Jr. (New York: Touchstone, Simon & Schuster, 1997), 177.

(11) In 1981, officers from the New York State Department of **Environmental** Conservation (DEC) charged commercial fisherman Jimmy Blakely with **illegally** catching 52 striped bass by net. Blakely claimed he caught the bass accidentally while fishing **legally** for another type of fish called sturgeon. The state agency fined Blakely the maximum, \$250 per fish. With no money for a lawyer and facing the prospect of having to sell his home to raise the \$13,000 fine, Blakely contacted John Cronin, a commercial fisherman working with the Hudson River's commercial fishermen and the state DEC. After a judge issued a fine of only \$250, angry DEC officials banned winter netting for all fish species on the Hudson.



(12) There was irony* in Blakely's arrest. He had been arrested near the Indian Point power plant, which was **illegally** killing more than a million fish per day, yet the DEC officers had never issued the plant a single ticket. On the contrary, the DEC had shielded the energy company, even attempting to stop photographs of the high numbers of fish killed at the Indian Point plant in 1965. When the photos were **located** and published in *Sports Illustrated*, it created a national scandal* and led to congressional hearings on the fish kills and the withholding of evidence.

***irony:** an unusual or unexpected aspect of a situation

(13) Have times changed? Unfortunately not. Many other fish kills have been reported in the decades since. The Clean Water Act and other laws are intended to protect public property and **welfare** and improve water quality by forcing polluters to pay. However, regulations alone will not accomplish these **objectives**. Only following the law will. Environmental law gives government the **authority** to stop pollution, but it cannot make the government exercise that authority.

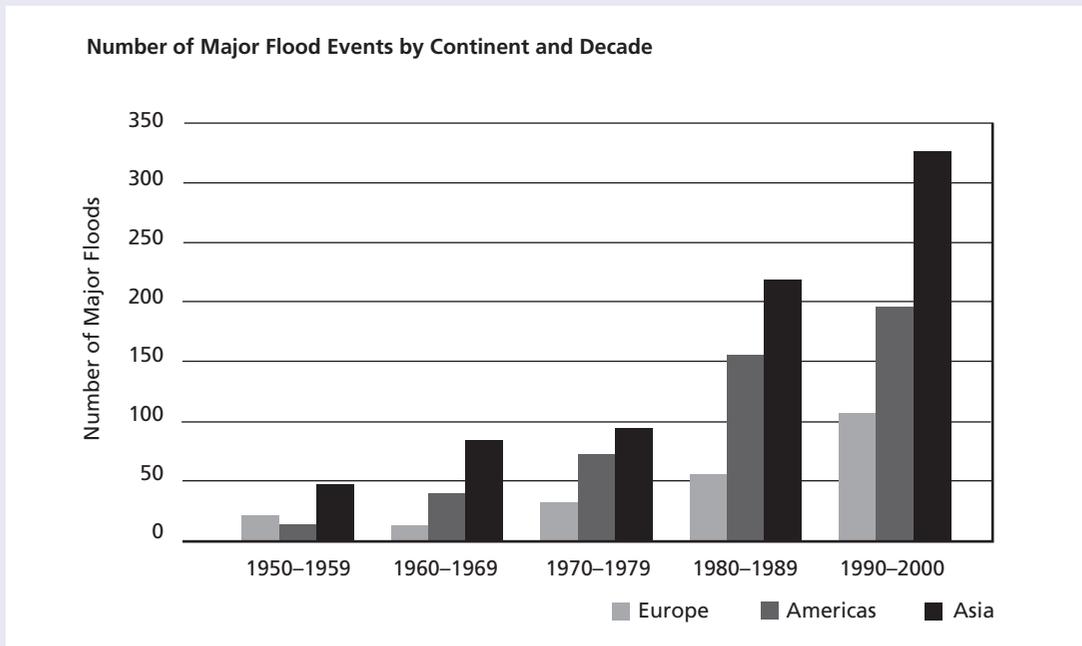
***scandal:** a situation that many people find shocking or wrong

Reading 3: Global Warming

Excerpt adapted from *An Inconvenient Truth* by Al Gore
(Emmaus, PA: Rodale, 2006), 164–68.

(14) Coral reefs, which are as important to ocean life as rainforests are to land animals, are being killed in large numbers by **global** warming. Many **factors** contribute to the death of coral reefs—pollution, destructive dynamite fishing in less-developed regions, and more acidic ocean waters. However, the most deadly cause of the recent, rapid destruction to coral reefs is believed by scientists to be the higher ocean temperatures due to global warming.

(15) Coral bleaching—the **process** that turns healthy multi-colored coral reefs into white or gray skeletons—occurs when tiny organisms living in the covering are stressed by heat and other **factors** and leave the coral. When they escape, the thin clear skin reveals the colorless skeleton beneath. The bleached



Source: *An Inconvenient Truth*, page 106.

appearance usually precedes the death of the coral. The link between global warming and the bleaching of corals, considered **controversial** only 10–15 years ago, is now universally accepted.

(16) Corals—along with many other ocean life forms—are also threatened

***emissions:** gases that are released into the air

by the growth of carbon dioxide (CO₂) emissions* worldwide because up to one-third of these emissions end up sinking into the ocean and increasing the acidity of the water. We are used to thinking about the harmful effects of all the extra CO₂ in the atmosphere. But we now have to worry about the **chemical** transformation of the oceans as well.

(17) Acid resulting from all the extra CO₂ changes ocean water and alters

***ions:** electrically charged atoms

the amount of carbonate and bicarbonate ions.* This, in turn, affects the levels of calcium carbonate in the oceans—and that is important because many small sea creatures routinely use calcium carbonate as the basic building block from which they make the hard structures—like reefs of shells—on which their lives depend.



Comprehension Check

Did you understand the readings? Mark these sentences true (T) or false (F).

- _____ 1. Linda Greenlaw does not believe that the oceans are overfished.
- _____ 2. Scientists, fishermen, and the government all want to ensure that there will be plenty of fish in the future.
- _____ 3. It's unhealthy to eat swordfish.
- _____ 4. The Indian Point power plant had to pay a huge fine for killing millions of fish.
- _____ 5. The New York Department of Environmental Conservation stopped fishermen from netting fish during the winter.
- _____ 6. Riverkeeper started out as a group of local people who wanted to clean up and protect the Hudson River.
- _____ 7. Global warming is one of the factors causing coral reefs to die.
- _____ 8. A decrease in the acidity of ocean water is killing coral reefs and shellfish.
- _____ 9. Global warming occurs when the earth gets too close to the sun.



Word Study

Target Vocabulary

authority	equip (equipment)	locate
chemical	evident (evidence)	objective
consume (consumer)	factor	process
controversy (controversial)	globe (global)	regulate
environment	legal	welfare

Word Parts

Exercise 1: Suffixes

The suffix *-ment* is used to form nouns. These nouns refer to an action or process, the thing that is used to perform an action or process, the result of an action, or the place where an action occurs.

Match each noun containing the suffix *-ment* with the best definition. Write the letter of the definition in the space provided.

- environ* means *around*, so **environment** means _____
 - elementum* means *a basic part or principle*, so **element** means _____
 - docēre* means *to teach or to prove*, so **document** means _____
 - equipper* means *to prepare for action or to make ready*, so **equipment** means _____
- an official paper that shows or proves something
 - a single part of something that combines with other parts to make up a whole
 - a person's surroundings; the natural world around us
 - the tools or resources that will be needed to perform an action

Word Relationships

Analogy are comparisons between two sets of words. An analogy consists of four words, three of which are always given. The analogy is completed by adding a fourth word that completes the comparison.

Examples:

1. A kitten is to a cat as a child is to a/an _____.

kitten : cat :: child : adult

2. Day is to light as night is to _____.

day : light :: night : dark

3. A driver is to a car as a pilot is to a _____.

driver : car :: pilot : plane

Exercise 2: Analogies

Use one of the target words from Units 1 to 4 to complete each analogy. Change the word form by adding a word ending if necessary.

1. mind : mental :: body : _____
2. stadium : sports :: bank : _____
3. many : crowd :: one : _____
4. goods : purchase :: food : _____
5. canvas : painting :: paper : _____
6. unknown : question :: know : _____

Exercise 3: Synonyms and Antonyms

Identify these pairs of words as synonyms (S) or antonyms (A).

- | | |
|---------------------------|---------------------------------|
| _____ 1. locate/find | _____ 5. normal/typical |
| _____ 2. individual/group | _____ 6. appropriate/unsuitable |
| _____ 3. dominant/passive | _____ 7. legal/unlawful |
| _____ 4. process/method | _____ 8. controversial/arguable |

The Grammar of Words and Word Families

Exercise 4: Word Families

Use these words to fill in the word family chart. Follow the example given. Some words will be used more than once.

<u>authority</u> (2x)	<u>chemical</u> (2x)	<u>consumer</u>	<u>controversial</u>	<u>environment</u>
authoritative	chemist	consume	controversially	environmental
authoritatively	chemistry	consumerism	controversy	environmentalism
authorization		consuming		environmentalist
authorize		consumption		environmentally
<u>equipment</u>	<u>evidence</u>	<u>factor</u> (2x)	<u>global</u>	<u>legal</u>
equip	evident		globalization	legality
	evidently		globalize	legalize
			globally	
			globe	
<u>locate</u>	<u>objective</u> (2x)	<u>process</u> (3x)	<u>regulate</u>	<u>welfare</u> (2x)
location	objectively		regulation	
			regulatory	

Noun	Noun (person)	Verb	Adjective	Adverb
authority authorization	authority	authorize	authoritative	authoritatively
		—	chemical	—
	consumer			—
	—	—	controversial	
environment		—		
equipment	—		—	—
evidence	—	—		
factor	—		—	—
	—		global	
	—		legal	—
	—	locate	—	—
objective	—	—		
process	—			—
regulation	—			—
welfare	—	—		—

Exercise 5: Word Forms

Complete each sentence with the correct form of the word.

1. Laws _____ the places where fisherman can fish and the number of fish that they can legally catch.

regulation regulates regulate regulating

2. Photographs showing dead fish were used as _____ in the trial against the power company.

evident evidence evidently evidenced

3. Swordfishing takes special _____. The fish are so large and so strong that they easily break ordinary fishing gear.

equipped equipments equip equipment

4. One of the main _____ of Riverkeeper was to find and prosecute the people and businesses that were polluting the Hudson River.

objective objection objectives objects

5. Today commercial fishermen use radar and aerial searches to _____ schools of fish.

location located locating locate



Understanding Words in Context

Exercise 6: Collocations

Remember that **collocations** are words that often appear together. Match the four words with their common collocations. Write the combinations on the lines provided. Can you think of any other words that collocate with these? Add them. One has been done for you.

activist

confidence

protection

agency

goods

rights

case

impact

warming

challenge

issues

1. consumer consumer confidence

2. global _____

3. legal _____

4. environmental _____

Exercise 7: Constructing Sentences

Use each set of words to write a sentence. Use all the words given. No additional words are needed. Add punctuation.

1. effect / is / that / earth's / the / atmosphere / greenhouse / a / process / warms

2. warming / water / global / the / balance / ocean / is / chemical / of / changing / of

3. of / controversial / overfishing / the / is / idea

4. to / are / factors / many / reefs / causing / many / die / coral

5. environment / do / can / help / consumers / what / to / the

Exercise 8: Reading

Read the article, and answer the questions in your own words.

Recycling

Recycling turns old, used materials into new products. Recycling is important because it prevents the waste of useful materials, reduces the consumption of raw materials, reduces energy usage and reduces the production of greenhouse gases. Glass, paper, aluminium, asphalt, iron, textiles and plastics can all be recycled. Food waste or garden waste is also recyclable through composting.

There are two common methods of recycling. In “curbside collection,” consumers separate glass, paper, plastic, and metal materials. They leave these recyclable materials in front of their home or business where they are collected by a recycling vehicle. With a “bring” or carry-in system, the consumer takes the materials to a collection point. From there recyclables are sorted and separated into material types, and the material is cleaned.

After they are cleaned and separated, the recycled materials are manufactured into new products. Today many products are being manufactured with total or partial recycled content. Common household items that contain recycled materials include newspapers and paper towels; aluminum, plastic, and glass soft drink containers; steel cans; and plastic bottles. Recycled materials are also being used in new ways such as recovered glass in roadway asphalt (called glassphalt) or recovered plastic in carpeting, clothing, and park benches.

Purchasing recycled products completes the recycling loop. By “buying recycled,” governments, businesses, and individual consumers make the recycling process a success.

1. What is recycling? _____

2. There are three main steps in the recycling process. What are they?

3. What kind of materials can be recycled? _____

4. Describe two common methods of recycling. _____

5. What kind of products are made with recycled materials? _____

6. What are three benefits of recycling? _____

Exercise 9: Writing

A. Some of the serious environmental problems we face today are listed. Choose a topic that interests you, and circle it.

- human overpopulation
- water pollution and water shortages
- air pollution
- global warming
- loss of plant and animal habitats
- endangered and extinct species of plants, animals, and fish

1. In your opinion, what are some of the causes of this problem?

2. Do you think this is a serious problem? Why or why not?

3. What can you do to help solve this problem? List three things.

4. What do you think will happen if this problem is not solved?

B. Use the information you wrote in Part A to write one or two paragraphs about your topic.

Exercise 10: Critical Thinking

A cause and effect relationship occurs when one event (the **cause**) leads to another event (the **effect**). The first event makes the second event happen. Here are some examples:

CAUSE —————> leads to —————> EFFECT

You touch something hot.

It hurts, so you pull your hand away.

You always eat too much.

You gain weight.

You sit in the sun all day.

You get a sunburn.

Global warming is a series of cause and effect events. Put the events that follow in the correct order. Write the number of the event in the space provided. Write number 1 next to the first thing that happens, number 2 next to the second event, and so on. Refer back to the introduction and readings for more information.

- _____ a. Some heat is trapped by greenhouse gases and reflected back toward the earth.
- _____ b. Increased amounts of greenhouse gases trap more heat in the earth's atmosphere.
- _____ c. Melting snow and ice from the polar caps causes the sea level to rise by several inches.
- _____ d. Visible light from the sun goes through a layer of "greenhouse" gases that surround the earth.
- _____ e. Industry, agriculture, and the increased use of fossil fuel produce more greenhouse gases.
- _____ f. The temperature of the earth's atmosphere rises.
- _____ g. Infrared radiation is reflected by the earth's surface toward space.
- _____ h. Reflected radiation heats the earth to about 60 degrees Fahrenheit.