

# READING EXPLORER

THIRD EDITION




4

# READING EXPLORER

THIRD EDITION

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**Reading Explorer 4**

**Third Edition**

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Student Book with Online Workbook:

ISBN-13: 978-0-357-12473-4

Student Book:

ISBN-13: 978-0-357-11629-6

**National Geographic Learning**

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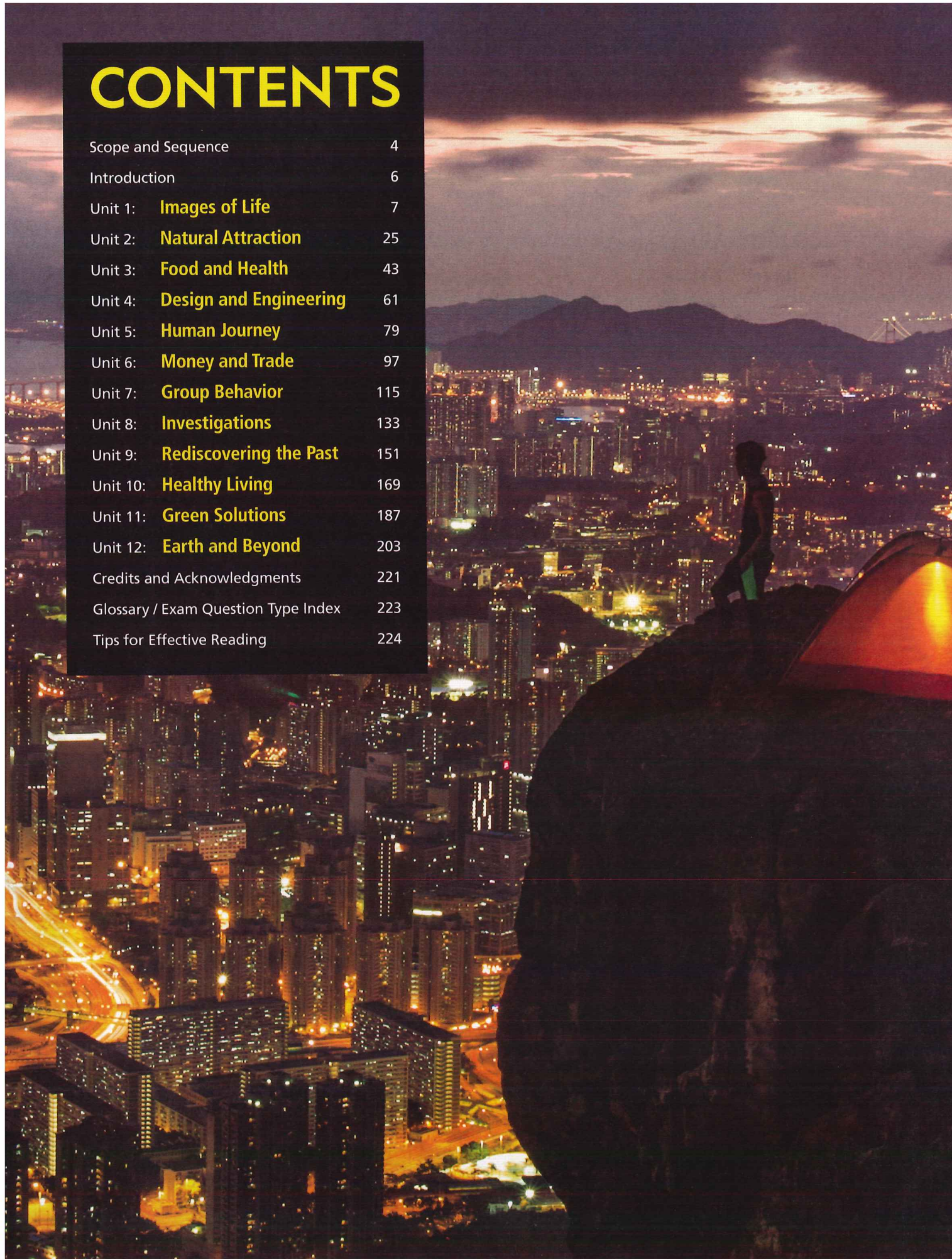
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# SCOPE AND SEQUENCE

UNIT	THEME	READING	VIDEO
<b>1</b>	Images of Life	A: The Visual Village B: My Journey in Photographs	A Photographer's Life
<b>2</b>	Natural Attraction	A: Living Light B: Feathers of Love	Jellyfish
<b>3</b>	Food and Health	A: How Safe Is Our Food? B: The Battle for Biotech	Is Our Food Safe?
<b>4</b>	Design and Engineering	A: Design by Nature: Biomimetics B: Weaving the Future	Robotic Hands
<b>5</b>	Human Journey	A: The DNA Trail B: Fantastic Voyage	Cave Artists
<b>6</b>	Money and Trade	A: How Money Made Us Modern B: The Rise of Virtual Money	Take the Money ... and Run?
<b>7</b>	Group Behavior	A: A Crowd in Harmony B: Our Online Behavior	Social Conformity
<b>8</b>	Investigations	A: Who Killed the Emperor? B: In the Crime Lab	Beating a Lie Detector
<b>9</b>	Rediscovering the Past	A: Virtually Immortal B: Lure of the Lost City	Archeology from Space
<b>10</b>	Healthy Living	A: Living Longer B: In Search of Longevity	You Are What You Eat
<b>11</b>	Green Solutions	A: Saving Water B: Technology as Trash	Your Water Footprint
<b>12</b>	Earth and Beyond	A: Planet Hunters B: The Threat from Space	Shooting Stars



## ACADEMIC SKILLS

READING SKILL	VOCABULARY BUILDING	CRITICAL THINKING
A: Understanding Words with Multiple Meanings B: Scanning for Information (1)—Short Answer Questions	A: Suffix <i>-tic</i> B: Synonyms of <i>thus</i>	A: Evaluating Pros and Cons B: Interpreting; Reflecting
A: Summarizing (1)—Using a Concept Map B: Identifying Figurative Language	A: Word root <i>scend</i> B: Suffix <i>-ility</i>	A: Speculating B: Interpreting/Applying; Speculating
A: Recognizing Cause and Effect Relationships (1) B: Evaluating Arguments	A: Suffix <i>-wide</i> B: Synonyms of <i>diminish</i>	A: Analyzing Solutions B: Evaluating Arguments and Ideas
A: Scanning for Information (2)—Matching Information to Paragraphs B: Recognizing Lexical Cohesion	A: Collocations with <i>vital</i> B: Prefix <i>fore-</i>	A: Applying Ideas B: Applying Ideas
A: Synthesizing Information B: Distinguishing Fact from Speculation	A: Collocations with <i>rate</i> B: Suffix <i>-ous</i>	A: Reflecting/Evaluating B: Reflecting
A: Understanding the Function of Sentences B: Summarizing (2)—Creating an Outline	A: Collocations with <i>policy</i> B: Word usage: <i>principle</i> vs. <i>principal</i>	A: Evaluating Pros and Cons B: Reflecting
A: Understanding Words from Context B: Understanding Word Roots and Affixes	A: Suffix <i>-ant</i> B: Collocations with <i>pressure</i>	A: Analyzing Information B: Applying Ideas; Reflecting
A: Evaluating Evidence B: Understanding Idiomatic Expressions	A: Collocations with <i>dispute</i> B: Word root <i>leg</i>	A: Interpreting/Reflecting B: Interpreting/Reflecting; Evaluating Reliability
A: Recognizing Ellipsis B: Scanning for Information (3)—Summary Completion	A: Collocations with <i>virtual</i> B: Word usage: <i>legend</i> vs. <i>myth</i> vs. <i>folktale</i>	A: Evaluating/Justifying B: Evaluating Pros and Cons; Reflecting
A: Recognizing Cause and Effect Relationships (2) B: Understanding Quantitative and Qualitative Data	A: Compound words with <i>life</i> B: Collocations with <i>relief</i>	A: Applying Ideas B: Relating to Personal Experience; Reflecting
A: Identifying Sources of Information B: Understanding a Writer's Attitude	A: Collocations with <i>extent</i> B: Collocations with <i>substance</i>	A: Evaluating Sources B: Inferring Attitude; Evaluating Solutions
A: Recognizing Cause and Effect Relationships (3) B: Interpreting Analogies	A: Prefix <i>com-</i> B: Prefix <i>di-</i>	A: Justifying an Opinion B: Evaluating Pros and Cons; Ranking Projects



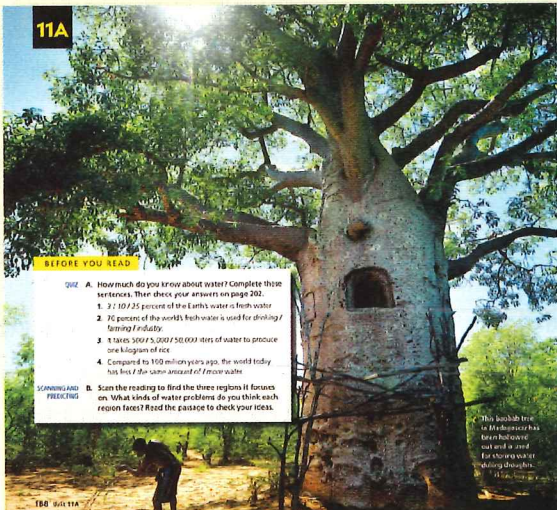
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With *Reading Explorer* you learn about real people and places, experience the world, and explore topics that matter.

What you'll see in the Third Edition:

**Real-world stories** give you a better understanding of the world and your place in it.

**11A**



### SAVING WATER

In the Castilla-La Mancha region of Spain, Julo Escudero, a 74-year-old former fisherman, made an area on the Guadiana River called Los Ojos—"the eyes." Large underground springs bubbled up into the river, where Escudero and his community fished for carp and anguilla. "I would sit in my boat six or seven meters away and just watch the water carrying up," Escudero says. "I would hook like five pieces." Los Ojos doesn't exist anymore—that much of the river dried up in 1981. Added to that, 146 square kilometers of surrounding wetlands have disappeared.

As farming in the region has increased, La Mancha has witnessed an explosion of well digging in the past 40 years that has lowered the water table<sup>1</sup> and diverted water from rivers. The number of wells has grown from 1,500 in 1980 to an official count of 21,000 today. Some experts say the real number, which includes illegal wells, could surpass 50,000.

#### A Global Problem

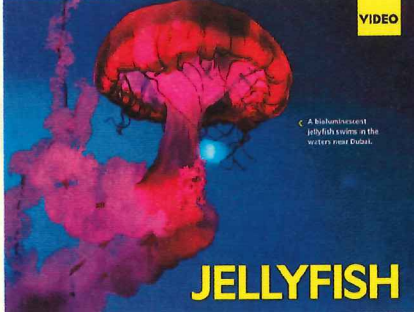
La Mancha is just one of many places facing water shortages. This century, many countries will face the same dilemma that has confronted the people of Spain. How do you balance human needs with the requirements of natural systems that are vital for sustaining life on Earth?

The United Nations recently outlined the extent of the water crisis. Each year, nearly 1 billion people will face severe water shortages by 2020 if consumption continues at current rates. Today, lack of access to clean water means that an estimated 2.1 billion people drink water that is unsafe. More than 3 billion people do so each year from diseases related to unsafe water.

All over the world, humans are pumping water out of the ground faster than it can be replenished. To address this issue, water conservation, such as Rajendra Singh in India and Naji Mahdi in South Africa, are searching for innovative ways to improve their local water situations.

1. A water table is an area of saturated soil in which water is found.  
2. The water table is the level below the Earth's surface where water is found.  
3. A water table is the level below the Earth's surface where water is found.  
4. If you exploit something, you use it to its fullest extent.

**VIDEO**



### JELLYFISH

**BEFORE YOU WATCH**

**REVIEWING** A. Read the information. The words in bold appear in the video. Match these words with their definitions below.

Jellyfish have been around for hundreds of millions of years, even before dinosaurs lived on the Earth. They are probably some of the most mysterious creatures you'll ever see. Unlike fish, jellyfish are **invertebrates**. They do not have bones, brains, hearts, or blood. Nevertheless, some jellyfish are able to **clone** themselves, as well as reverse the aging process by **reverting** back to a younger state.

Despite looking harmless, jellyfish can be **venomous**—their stings are painful and sometimes fatal. However, some species are safe to eat. In certain countries, jellyfish is considered to be a delicacy.

1. invertebrate	• a. (of an animal) poisonous
2. clone	• b. to return to a previous state
3. revert	• c. to make a copy of something
4. venomous	• d. an animal without a backbone

**National Geographic Videos** expand on the unit topic and give you a chance to apply your language skills.

**Reading Skill and Reading Comprehension** sections provide the tools you need to become an effective reader.

## READING SKILL

### Recognizing Lexical Cohesion

Writers use different techniques to avoid repetition in order to add interest and variety to a text. Recognizing how a writer achieves lexical cohesion allows you to better understand the flow of ideas and the relationship between them. Look at some of the following ways a writer can achieve lexical cohesion:

**Synonyms:** Using a word that means the same (or nearly the same) as another word (e.g., *cold, icy*).

**Antonyms:** Using a word that means the opposite of another word (e.g., *big, small*).

**Repetition:** Repeating the same word, or using a different form of the word (e.g., *manufactures, manufacturing*).

**Reference:** Using a pronoun or determiner that refers back to another word (e.g., *fibers, they*).

**Subordination:** Using a specific example of a more general word (e.g., *fibers, silk*).

#### RECOGNIZING LEXICAL COHESION

A. Read the sentences below from Reading B. Note if the two underlined words in each item are examples of A (antonyms), RP (repetition), RF (reference), or SU (subordination).

- Not long ago, all fibers that were used to make textiles came from natural sources ... The first truly synthetic fiber didn't appear until 1935. \_\_\_\_\_
- Nylon is just one of various industrially produced substances called polymers. \_\_\_\_\_

#### RECOGNIZING LEXICAL COHESION

Review this reading skill in Unit 41.

B. These sentences from the passage (1–5) contain examples of lexical cohesion. Match each pair of underlined words with the type of lexical cohesion (a–e).

a. synonym   b. antonym   c. repetition   d. reference   e. subordination

- In between is an exciting tale of survival, movement, isolation, and conquest, most of it occurring before recorded history. \_\_\_\_\_
- ... people of African descent had twice as many genetic differences ... all living humans descend from a single woman. \_\_\_\_\_
- They now calculate that all living humans maternally descend from a single woman who lived roughly 150,000 years ago in Africa. \_\_\_\_\_
- They either migrated around the wider northern end of the Red Sea, or across its narrow southern opening. \_\_\_\_\_
- Perhaps they ... were traveling along the coast, moving from one piece of land to the next. \_\_\_\_\_

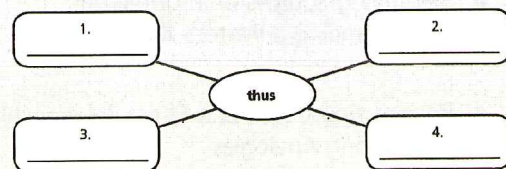
**CRITICAL THINKING Reflecting** Griffiths says a photography class had a strong impact on her. Answer these questions and then share with a partner.

- ▶ Name a class or learning experience that strongly affected you.
- ▶ In what ways did it affect or change you?

**Expanded Vocabulary Practice** sections teach you the most useful words and phrases needed for academic reading.

#### WORD WEB

C. Complete the word web with synonyms of **thus**. Use a thesaurus to help you if necessary.





# IMAGES OF LIFE

1

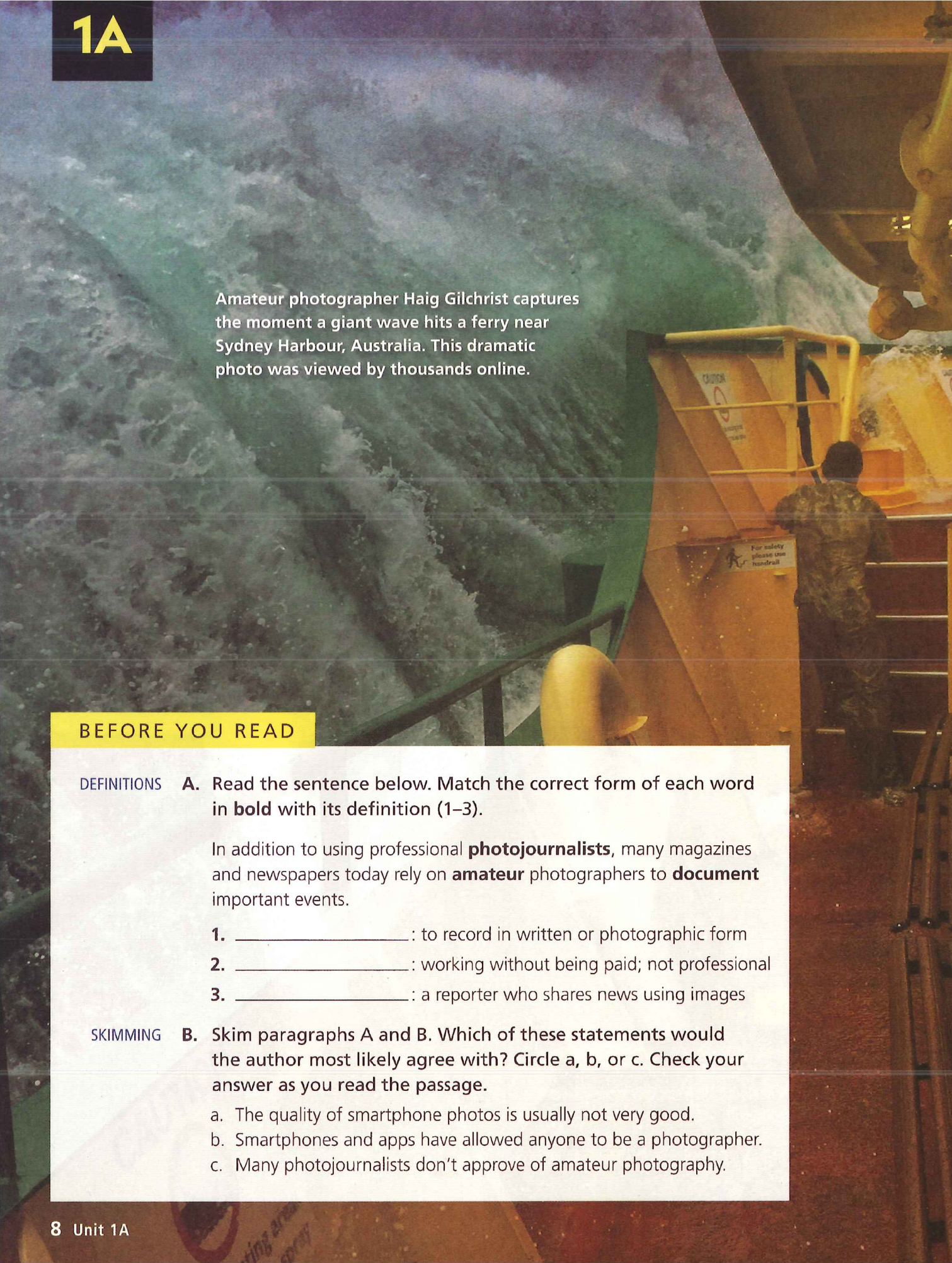
A father and son share a quiet moment at a mosque in New Delhi, India.

## WARM UP

Discuss these questions with a partner.

1. What kinds of things do you usually photograph?
2. What can a photograph do that words cannot?





Amateur photographer Haig Gilchrist captures the moment a giant wave hits a ferry near Sydney Harbour, Australia. This dramatic photo was viewed by thousands online.

## BEFORE YOU READ

**DEFINITIONS** A. Read the sentence below. Match the correct form of each word in **bold** with its definition (1–3).

In addition to using professional **photojournalists**, many magazines and newspapers today rely on **amateur** photographers to **document** important events.

1. \_\_\_\_\_: to record in written or photographic form
2. \_\_\_\_\_: working without being paid; not professional
3. \_\_\_\_\_: a reporter who shares news using images

**SKIMMING** B. Skim paragraphs A and B. Which of these statements would the author most likely agree with? Circle a, b, or c. Check your answer as you read the passage.

- a. The quality of smartphone photos is usually not very good.
- b. Smartphones and apps have allowed anyone to be a photographer.
- c. Many photojournalists don't approve of amateur photography.





# THE VISUAL VILLAGE

- A Before the age of the smartphone, aspiring photographers had to learn how to use high-tech cameras and photographic techniques. Not everyone had cameras, and it took skill and a good eye to capture and create a great photograph. Today, with the huge range of camera apps on our smartphones, we are all amateur photographers. And pretty good ones, too: The quality of smartphone images now nearly equals that of digital cameras.
- B The new ease of photography has given us a **tremendous** appetite for capturing the magical and the ordinary. We are **obsessed** with documenting everyday moments, whether it's a shot of our breakfast, our cat—or our cat's breakfast. And rather than collect pictures in scrapbooks, we share, like, and comment on them with friends and strangers around the globe.
- C Even photojournalists are experimenting with cell phones because their near invisibility makes it easier to capture unguarded moments.<sup>1</sup> The Internet also allows photojournalists to avoid traditional media. They can now act as their own publishers—reaching huge audiences via social media sites such as Instagram. A photograph taken in New York can get a response from someone in Lagos within a second of being uploaded.
- D In the past, magazines published unforgettable photos of important people and global events that captured our imaginations. These photos had the power to change public opinion—even the course of history. But if there are fewer memorable images today, it's not because there are fewer good images: It's because there are so many. No one image gets to be special for long.
- E Cameras are everywhere—a situation that is transforming the way we experience **dramatic** events. When there are major political events or natural disasters, it is ordinary citizens with cell phones—not photojournalists—who often provide the first news images. Quality still matters, but it's less important than what's **instantly** shared.
- F As people everywhere **embrace** photography and the media make use of citizen journalists, professional standards appear to be shifting. In the past, most people trusted photojournalists to accurately **represent** reality. Today, however, digital images can be altered in ways the naked eye might

<sup>1</sup> Something done in an **unguarded moment** is done when you think no one is watching.





never notice. Any image can be altered to create an “improved” picture of reality. The average viewer is left with no way to assess the accuracy of an image except through trust in a news organization or photographer.

- G The question of the accuracy of images gets even trickier when photojournalists start experimenting with camera apps—like Flickr or Instagram—which encourage the use of

filters. Images can be colored, brightened, faded, and scratched to make photographs more artistic, or to give them an antique look. Photojournalists using camera apps to cover wars and conflicts have created powerful images—but also **controversy**. Critics worry that antique-looking photographs romanticize war, while distancing us from those who fight in them.





A taxi driver in Kolkata, India, catches up on the news before starting his day (photographed by Annapurna Mellor).

- H Yet, photography has always been more subjective than we assume. Each picture is a result of a series of decisions—where to stand, what lens<sup>2</sup> to use, and what to leave in or out of the frame. Does altering photographs with camera app filters make them less true?

<sup>2</sup> A **lens** is a thin, curved piece of glass or plastic used in things such as cameras.

- I There's something powerful and exciting about the experiment that the digital age has forced upon us. These new tools make it easier to tell our own stories, and they give others the power to do the same. Many members of the media get stuck on the same stories, focusing on elections, governments, wars, and disasters. In the process, they miss out on the less dramatic images of daily life that can be just as revealing and **relevant**.
- J The increase in the number of photographs and photographers might even be good for **democracy** itself. Hundreds of millions of potential citizen journalists make the world smaller and help keep leaders honest. People can now show what they are up against, making it increasingly difficult for governments to hide their actions. If everyone has a camera, Big Brother<sup>3</sup> isn't the only one watching.
- K Who knows? Our obsession with documentation and constantly being connected could lead to a radical change in our way of being. Perhaps we are witnessing the development of a universal visual language. It's one that could change the way we relate to each other and the world. Of course, as with any language, there will be those who produce poetry and those who make shopping lists.
- L It's not clear whether this flowering of image-making will lead to a public that better appreciates and understands images. Or will it simply numb<sup>4</sup> us to the **profound** effects a well-made image can have? Regardless, the change is irreversible. Let's hope the millions of new photographs made today help us see what we all have in common, rather than what sets us apart.

<sup>3</sup> **Big Brother** refers to a person or organization exercising total control over people's lives; the phrase originates from George Orwell's novel *1984*.

<sup>4</sup> If an event or experience **numbs** you, you are not able to feel any emotions or think clearly.



## READING COMPREHENSION

**A. Choose the best answer for each question.**

## MAIN IDEA

1. According to the author, why are there fewer memorable photographs today?

- a. because the quality of many images is very poor
- b. because most images are not interesting to a global audience
- c. because traditional media refuse to publish amateur photos
- d. because there are so many good images these days

## DETAIL

**2.** What kinds of images does the author think matter most these days?

- a. images that are important to people and can be shared quickly
- b. high-quality images that help show dramatic events
- c. images presented in a traditional way that reflect reality
- d. images that can be altered to improve one's sense of reality

## PURPOSE

**3.** Why does the author put the word *improved* in quotation marks in paragraph F?

- a. The writer is using the exact word from another source.
- b. The writer wants to stress that the picture of reality is greatly improved.
- c. The writer feels it is questionable whether the picture is truly improved.
- d. The writer is not sure the reader understands the word, so draws attention to it.

## INFERENCE

4. Who does the author criticize in paragraph J?

- a. citizen journalists  
b. government leaders  
c. Big Brother  
d. people who alter photos

## PARAPHRASE

5. When referring to visual language, what does the author mean by *as with any language, there will be those who produce poetry and those who make shopping lists* (paragraph K)?

- It will be most useful for shopping and for writing beautiful poetry.
- It will be better because it can be used for a variety of things.
- Visual language has certain limitations compared to written language.
- Some people will use it for everyday things, and others for more creative things.

### MAIN IDEA

**B. Match each paragraph with its main idea (a–e).**

1. Paragraph A •
  - a. More photojournalists are taking smartphone images now and uploading them to social media sites.
2. Paragraph C •
  - b. The effect on us of the increasing number of photographs is still uncertain.
3. Paragraph E •
  - c. When there are big or dramatic news stories, amateur photographers often share the first images with the public.
4. Paragraph G •
  - d. Altering photos with camera apps can give viewers a misleading impression about serious events such as wars.
5. Paragraph I •
  - e. Anyone can be an amateur photographer now because photos taken on smartphones are almost as good as photos taken on digital cameras.



## Understanding Words with Multiple Meanings

Many words have more than one meaning. In some cases, the words may be different parts of speech; for example, a noun and a verb. They may be different in meaning (e.g., a **slip** of paper, to **slip** on the ice), or similar (e.g., to score a **goal**, my **goal** in life). In each case, you may need to use a dictionary to understand a word's exact meaning.

### IDENTIFYING MEANING

**A. Scan paragraphs A–D in Reading A to find the words in bold below (1–6). Then choose the correct meaning (a or b) for each.**

- |                    |                        |                           |
|--------------------|------------------------|---------------------------|
| <b>1. age</b>      | a. a period in history | b. how old someone is     |
| <b>2. pretty</b>   | a. quite               | b. attractive             |
| <b>3. appetite</b> | a. physical hunger     | b. a strong desire        |
| <b>4. act</b>      | a. an action           | b. to behave              |
| <b>5. second</b>   | a. a 60th of a minute  | b. number two in a series |
| <b>6. course</b>   | a. a class             | b. the direction          |

### ANALYZING

**B. Read each of these excerpts from Reading A (1–4). Choose the sentence in which the underlined word has the same meaning as the bold word.**

- ... makes it easier to **capture** unguarded moments. (paragraph C)
  - NASA is using space telescopes to help capture images of distant planets.
  - The capture of the gang's leader should lead to less crime in the city.
- Photojournalists using camera apps to **cover** wars ... (paragraph G)
  - The local media will cover the results of the election.
  - His photo appeared on the cover of a magazine.
- ... a result of a **series** of decisions ... (paragraph H)
  - There has been an unusual series of events.
  - What is the most popular comic book series?
- ... and what to leave in or out of the **frame**. (paragraph H)
  - It looked like somebody was trying to frame him for the theft.
  - Look in the camera frame and tell me what you see.

### CRITICAL THINKING Evaluating Pros and Cons

Do you think news photographers should be allowed to use filters when publishing images of serious subjects (e.g., wars)? What are the pros and cons of doing so? Discuss with a partner and note your ideas.

Pros: \_\_\_\_\_

Cons: \_\_\_\_\_

Your opinion: \_\_\_\_\_



## VOCABULARY PRACTICE

**COMPLETION** A. Circle the correct words to complete the paragraph below.

Recent years have seen some <sup>1</sup>**relevant** / **dramatic** changes in photography. The availability of cell phones has allowed millions of people to <sup>2</sup>**embrace** / **represent** photography as a hobby. Image-sharing apps allow anyone to share photos <sup>3</sup>**instantly** / **profoundly** with friends and followers online; some people become <sup>4</sup>**tremendous** / **obsessed** with capturing and documenting every detail of their lives. However, the popularity of image-sharing sites has also raised some <sup>5</sup>**obsessive** / **controversial** issues—for example, when images of an individual are widely shared without the person's knowledge.

## WORDS IN CONTEXT

**B. Complete each sentence with the correct answer (a or b).**

1. A **controversy** involves \_\_\_\_ among people.  
a. agreement                      b. disagreement
2. If a photo **represents** a place, it \_\_\_\_\_ what the place is like.  
a. shows                          b. doesn't show
3. In a **democracy**, citizens \_\_\_\_\_ the right to vote.  
a. have                          b. don't have
4. If the ideas in an old book are **relevant** today, they \_\_\_\_\_ matter.  
a. no longer                      b. still
5. If you feel a **tremendous** amount of pressure, you feel \_\_\_\_\_ of pressure.  
a. a lot                          b. a little bit
6. Something that is **profound** is felt or experienced very \_\_\_\_\_.  
a. briefly                        b. strongly

## WORD FORMS

C. We can add **-tic** to some nouns to form adjectives (e.g., **drama** + **-tic** = **dramatic**). Complete the sentences below using the adjectives in the box.

**athletic      democratic      dramatic      genetic**

1. A person's \_\_\_\_\_ ability—for example, their speed and strength—may be partly affected by \_\_\_\_\_ factors.
2. In the 20th century, many countries held their first \_\_\_\_\_ elections.
3. In 2011, Amy Weston took a(n) \_\_\_\_\_ photo of a woman leaping to safety from a burning building.




## BEFORE YOU READ

**DEFINITIONS** A. You are going to read about photographer Annie Griffiths. Below are some expressions she uses (1–5). What do you think they mean? Match each one with its definition (a–e).

- |                    |   |                                   |
|--------------------|---|-----------------------------------|
| 1. small talk      | • | • a. light conversation           |
| 2. put at ease     | • | • b. addicted; obsessed           |
| 3. hooked          | • | • c. make people feel comfortable |
| 4. by some miracle | • | • d. extremely good; excellent    |
| 5. top-notch       | • | • e. amazingly; surprisingly      |

**PREDICTING** B. What could be some challenges of being a professional photographer? Discuss with a partner. Then check your ideas as you read the passage.



◀ Annie Griffiths has photographed in nearly 150 countries during her career.



# MY JOURNEY IN PHOTOGRAPHS

BY ANNIE GRIFFITHS

➤ An Omani fisherman  
casts his net at dawn.



A I got my first real job at age 12, as a waitress. I am convinced that I learned more as a waitress than I ever did in a classroom. When I went on to college, it also paid for **tuition** and housing and—eventually—a camera. But best of all, being a waitress taught me to quickly assess and understand all kinds of people. I learned how to make small talk and how to quickly put people at ease—great training for a journalist. Waiting tables also taught me **teamwork** and service and humor.

B From the moment I picked up a camera, I was hooked. I lost interest in other studies, and all I wanted to do was take pictures for the university newspaper, the *Minnesota Daily*. In six months, I was able to get a lot of great experience. The week I finished college, I was contacted by the *Worthington Daily Globe*, a regional daily newspaper in southern Minnesota with a history of excellence in


photography. By some miracle I was hired, and the two-year experience that followed was like a master class in photojournalism.

C Jim Vance was the top-notch publisher of the *Globe*. He had very high **expectations** of all the staff. With little or no instruction from him, writers and photographers were expected to fill the paper with stories that were important to our readers. I didn't know it at the time, but this independent reporting was perfect training for my future career.

D Among the most important things I learned at the *Globe* was that if you can make friends with a shy Norwegian farmer and be invited to his kitchen table, you can probably do well in any culture on Earth. I worked with a wonderful writer named Paul Gruchow. Together we would search the farming communities for stories. Paul had grown up on a farm himself and lived through personal tragedy, so he was able to **project** warmth and understanding to anyone he met. Farmers would invite us into their homes and willingly share their personal thoughts with us. From Paul I learned how to be a patient listener, as well as the importance of giving each subject time and **sincere** attention.








◀ A portrait of an Indian woman from a poor background who became a solar engineer



- 
- E It was while I was working at the *Globe* that I happened to answer the phone one morning. A man's voice asked, "You a photographer?" When I replied that indeed I was, the voice responded, "This is Bob Gilka. *National Geographic*. I need a hail<sup>1</sup> damage picture. You guys get a big hailstorm last night?" I **overcame** my nervousness and said, "Yes, sir." When he asked if I could take the picture for him, I again said, "Yes, sir."
- F My little picture of hail damage in southern Minnesota was well received, and a year later, I was working for Bob—*National Geographic's* legendary director of photography. **Thus** began one of the most important relationships of my life.

### Lessons on the Road

- G I was the youngest photographer working for *National Geographic* when I arrived in 1978, and I spent at least a decade just trying not to make mistakes. With each new assignment came the fear that this was going to be the one where they figured out that I couldn't do the job.
- H On many assignments, the most challenging part **turned out** to be the transportation. Over the years, I traveled by horse, car, train, truck, and all sorts of old vehicles. I traveled by mule<sup>2</sup> in Mexico, by ship along the Indian Ocean, by fishing boat in the Sea of Galilee, by moped<sup>3</sup> in Bermuda, by sailboat in Sydney. I flew in helicopters chasing bears in the Arctic. Twice, while flying in light planes, pilots have had to make emergency landings far from any airport. But there were also wonderful experiences. In Africa I traveled by balloon, ultralight aircraft, and elephant. In a rubber raft off the west coast of Mexico, I was suddenly lifted out of the water on the back of a friendly whale.
- I Wherever I traveled in the world, taking beautiful pictures was always my goal. However, later in my career, I also wanted my pictures to make a real difference in people's lives. That is why each spring I tour two or three developing countries, shooting **portraits** of people whose lives are better because of the dedicated workers who care about them. The photos are used in a variety of fund-raising products. The other issue that stole my heart was the environment. With support from the National Geographic Expeditions Council, I have traveled all over the United States to photograph the last one percent of wilderness left here.
- J I am deeply grateful for my life in photography and the amazing lessons it has taught me. I have learned that women really do hold up half the sky; that language isn't always necessary, but touch usually is; that all people are not alike, but they do mostly have the same hopes and fears; that judging others does great harm, but listening to them **enriches**; and that it is impossible to hate a group of people once you get to know one of them as an individual.

---

1 **Hail** is small balls of ice that fall from the sky like rain.

2 **A mule** is a hybrid between a horse and a donkey.

3 **A moped** is a type of lightweight motorcycle.



## READING COMPREHENSION

### A. Choose the best answer for each question.

#### PURPOSE

1. What is the purpose of paragraph A?
  - a. to show how working as a waitress is similar to life as a photographer
  - b. to explain how Griffiths' first job helped prepare her for her future career
  - c. to compare Griffiths' life before and after being a waitress
  - d. to describe how Griffiths became interested in photography at college

#### SEQUENCE

2. What happened after Griffiths graduated from college?
  - a. She picked up a camera for the first time.
  - b. She began working at the *Minnesota Daily*.
  - c. She got a job at the *Worthington Daily Globe*.
  - d. She started teaching photography.

#### DETAIL

3. Which sentence does NOT describe Griffiths' job at the *Globe*?
  - a. She received detailed instructions from her publisher.
  - b. She learned how to be a patient listener.
  - c. The experience prepared her well for a job at *National Geographic*.
  - d. She was expected to fill the paper with stories that readers wanted.

#### DETAIL

4. What kind of transportation challenge does Griffiths mention?
  - a. having an accident in a fishing boat
  - b. getting attacked by an elephant
  - c. being forced to land in a remote place
  - d. getting lost in the ocean in a rubber raft

#### MAIN IDEA

5. According to Griffiths, what has life as a photographer taught her?
  - a. that language is essential for communication
  - b. that most people have very different hopes and fears
  - c. that expressing an opinion is as important as listening
  - d. that it is important to get to know people as individuals

#### IDENTIFYING MEANING

Review this  
reading skill  
in Unit 1A

### B. Scan the section "Lessons on the Road" to find the words in **bold** below (1–6). Then choose the correct meaning (a or b) for each.

- |                  |                             |                                  |
|------------------|-----------------------------|----------------------------------|
| 1. <b>spent</b>  | a. paid money for something | b. passed time in a specific way |
| 2. <b>light</b>  | a. not heavy                | b. pale; not dark                |
| 3. <b>back</b>   | a. rear surface of a body   | b. in the opposite direction     |
| 4. <b>spring</b> | a. to suddenly jump forward | b. the season after winter       |
| 5. <b>left</b>   | a. went away                | b. remaining                     |
| 6. <b>once</b>   | a. one time only            | b. as soon as; when              |



## Scanning for Information (1)—Short Answer Questions

Scanning is an important skill for taking exams, but how you approach scanning should depend on the question type. With **short answer questions**, for example, read each question carefully first to determine the information you need. Check if there is a word limit for each answer. Identify key words in the questions, and think about what synonyms might be in the text. Then scan to find the relevant parts of the text. Note that answers normally follow the order they appear in the text.

**ANALYZING A.** Read the questions below. What kind of answer will you need to scan for? Circle a, b, or c.

1. What kind of photographic equipment did Griffiths' waitress job help pay for?  
a. an object                      b. a number                      c. a reason
2. For how long was Griffiths employed at the *Worthington Daily Globe*?  
a. a place                      b. a specific date                      c. a time period
3. What was Bob Gilka's role at *National Geographic*?  
a. a person's name                      b. a place                      c. a job title
4. Where did Griffiths travel by moped?  
a. a reason                      b. a place                      c. a number
5. Why did Griffiths' goals change later in her career?  
a. an example                      b. an activity                      c. a reason

**SCANNING B.** Scan Reading B and write short answers to the questions above.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

### CRITICAL THINKING Interpreting

- ▶ Griffiths says she has learned that "women really do hold up half the sky." What do you think she means by this? Discuss with a partner.
- ▶ What examples can you think of that support her statement? Note some ideas below. Then share them with a partner.

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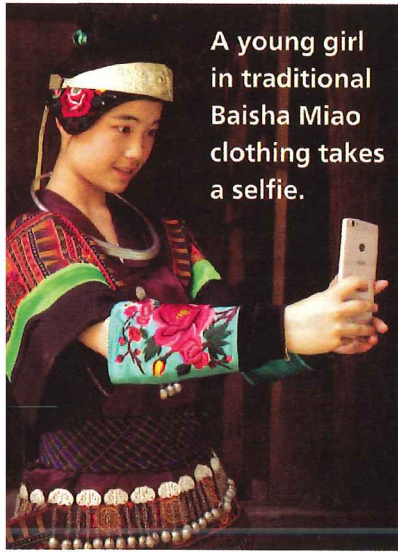


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## VOCABULARY PRACTICE

COMPLETION A. Circle the correct words to complete the paragraph below.



There are a few things to keep in mind when taking a selfie. First, think about what emotion you want to convey. For example, do you want the photo to <sup>1</sup>**turn out** / **project** love, sadness, or joy? Do you want it to look natural or perhaps more formal and posed? Decide on your location, and try different angles and distances. Experiment with different camera features. Remember, though, that while new technologies may <sup>2</sup>**enrich** / **overcome** your photo, you might prefer a simpler <sup>3</sup>**portrait** / **tuition**, even one in black and white. How your final selfie <sup>4</sup>**overcomes** / **turns out** will <sup>5</sup>**thus** / **portrait** depend on a number of factors.

DEFINITIONS B. Match the words in the box with the definitions below.

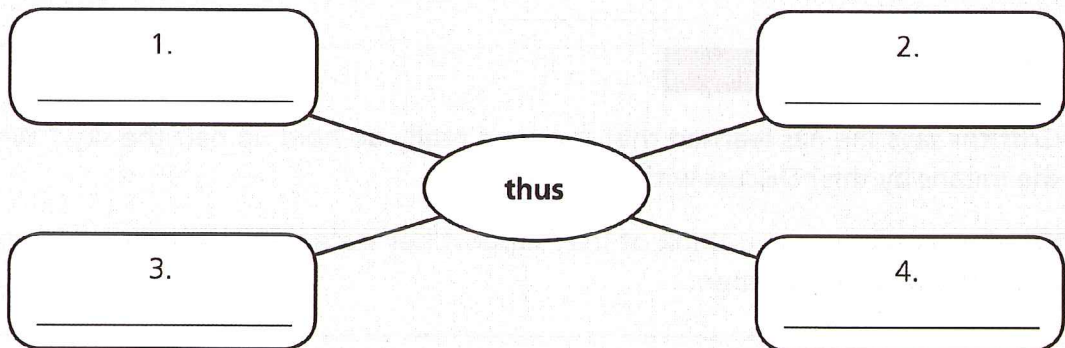
**enrich**  
**sincere**

**expectation**  
**teamwork**

**overcome**  
**tuition**

1. \_\_\_\_\_: to successfully deal with a problem
2. \_\_\_\_\_: a belief that someone will or should achieve something
3. \_\_\_\_\_: honest; not pretending or lying
4. \_\_\_\_\_: payment for instruction, especially in a college or university
5. \_\_\_\_\_: the effort of people working together to get something done
6. \_\_\_\_\_: to improve or make better

WORD WEB C. Complete the word web with synonyms of **thus**. Use a thesaurus to help you if necessary.





University students in Dubai,  
photographed by Annie Griffiths

VIDEO

# A PHOTOGRAPHER'S LIFE

## BEFORE YOU WATCH

**DISCUSSION** A. You are going to watch an interview with Annie Griffiths. Discuss these questions with a partner.

1. Based on the information in Reading B and the photo above, what kinds of photos do you think Griffiths likes to take?
2. What do you think Griffiths hopes to achieve with her photography?

**PREDICTING** B. Read these extracts from the video. What words do you think are missing? Discuss with a partner and complete the sentences with your guesses. Use one word for each blank.

"I think our kids also understand that people all over the world are <sup>1</sup>\_\_\_\_\_ — that you don't assume that they are going to be the same as we are. But then if you go into each culture open, and look <sup>2</sup>\_\_\_\_\_ in the eye, and observe and <sup>3</sup>\_\_\_\_\_, you're going to make <sup>4</sup>\_\_\_\_\_ ..."

"[Photography is] a wonderful, terrible job because you get this <sup>5</sup>\_\_\_\_\_ to go out and do it, but then you're supposed to do it <sup>6</sup>\_\_\_\_\_ than it's ever been done before."



## WHILE YOU WATCH

**GIST A.** Watch the video. Check your guesses in Before You Watch B. Are they correct or similar to what Annie Griffiths says in the video?

**MULTIPLE CHOICE** B. Watch the video again. Choose the correct answer for each question.

1. What did Griffiths want to be before she got interested in photography?
  - a. a writer
  - b. a painter
2. What benefit did Griffiths' daughter gain from the family's travels?
  - a. She can speak several languages.
  - b. She is now a confident traveler.
3. What tip does Griffiths give for immersing yourself in a different culture?
  - a. staying away from tourist hotspots
  - b. respecting the local way of life
4. According to Griffiths, what is one of the most inspirational parts about photography?
  - a. It gives you the opportunity to be creative and grow artistically.
  - b. A good photo can help shape or change public opinion.

## CRITICAL THINKING Reflecting

Griffiths says a photography class had a strong impact on her.

Answer these questions and then share with a partner.

- Name a class or learning experience that strongly affected you.

---

- In what ways did it affect or change you?

---

---

## VOCABULARY REVIEW

Do you remember the meanings of these words? Check (✓) the ones you know. Look back at the unit and review any words you're not sure of.

## Reading A

- ☐ controversy\*    ☐ democracy    ☐ dramatic\*    ☐ embrace    ☐ instantly  
☐ obsessed    ☐ profound    ☐ relevant\*    ☐ represent    ☐ tremendous

## Reading B

- ☐ enrich      ☐ expectation      ☐ overcome      ☐ portrait      ☐ project\*
- ☐ sincere      ☐ teamwork      ☐ thus      ☐ tuition      ☐ turn out

\* Academic Word List



# NATURAL ATTRACTION

## WARM UP

Discuss these questions with a partner.

1. Which animals are known for their bright colors or spectacular appearance?
2. In what ways do you think those characteristics help the animals?

^ The Victoria crowned pigeon is known for its large head crest of lacy feathers.



## BEFORE YOU READ


- DISCUSSION** A. Read the information below. What types of animals do you know that are bioluminescent? Make a list.

**Bioluminescence** is the production and emission of light by living organisms, through chemical reactions occurring inside their bodies. Simply put, creatures that are bioluminescent can glow in the dark. Examples of bioluminescent creatures can be found in the ocean, on land, and in the air.

- PREDICTING** B. Why might it be useful for an organism to be bioluminescent? Brainstorm some purposes with a partner. Check your ideas as you read the passage.

➤ The bioluminescent bay on the Puerto Rican island of Vieques





# LIVING LIGHT

- A The ability of some species to create light—known as bioluminescence—is both magical and commonplace. Magical, because of its glimmering beauty. Commonplace, because many life forms can do it. On land the most familiar examples are fireflies, **flashing** to attract mates on a warm summer night. But there are other luminous land organisms, including glow-worms, millipedes, and some 90 species of fungus. Even some birds, such as the Atlantic puffin, have beaks that glow in the dark.
- B But the real biological light show takes place in the sea. Here, an **astonishing** number of beings can make light. Some, such as ostracods, are like ocean fireflies, using flashes of light to attract a mate. There are also glowing bacteria, and light-making fish, squid, and jellyfish. Indeed, of all the groups of organisms known to make light, more than four-fifths live in the ocean.
- C As a place to live, the ocean has a couple of peculiarities. Firstly, there is almost nowhere to hide, so being **invisible** is very important. Secondly, as you **descend**, sunlight disappears. At first, red light is absorbed. Then the yellow and green parts



of the spectrum disappear, leaving just the blue. At 200 meters below the surface, the ocean becomes a kind of perpetual twilight,<sup>1</sup> and at 600 meters the blue fades out too. In fact, most of the ocean is as black as the night sky. These **factors** make light uniquely useful as a weapon or a veil.

## Hiding with Light

- D In the ocean's upper **layers**, where light penetrates, creatures need to blend in to survive. Any life form that stands out is in danger of being spotted by **predators**—especially those swimming below, looking up. Many life forms solve this problem by avoiding the light zone during the day. Others—such as jellyfish and swimming snails—are **transparent**, ghostlike creatures, almost impossible to see.
- E Other sea species use light to survive in the upper layers—but how? Some, such as certain shrimp and squid, illuminate their bellies to match the light coming from above. This allows them to become invisible to predators below. Their light can be turned on and off at will—some even have a dimmer switch.<sup>2</sup> For example, certain types of shrimp can alter how much light they give off, depending on the brightness of the water around them. If a cloud passes overhead and briefly blocks the light, the shrimp will dim itself accordingly.

F But if the aim is to remain invisible, why do some creatures light up when they are touched, or when the water nearby is **disturbed**? A couple of reasons. First, a sudden burst of light may **startle**<sup>3</sup> a predator, giving the prey a chance to escape. Some kinds of deep-sea squid, for example, give a big squirt of light before darting off into the gloom.

- G Second, there is the principle of “the enemy of my enemy is my friend.” Giving off light can help summon the predator of your predator. Known as the “burglar alarm” effect, this is especially useful for tiny life forms, such as dinoflagellates, that cannot swim fast. For such small beings, water is too viscous<sup>4</sup> to allow a quick getaway—it would be like trying to swim through syrup. Instead, when threatened by a shrimp, for example, these organisms light up. The flashes attract larger fish that are better able to spot—and eat—the shrimp. The chief defense for these tiny organisms is therefore not fight or flight—but light.

1 **Twilight** is the time of day after the sun sets but before it becomes completely dark.

2 A **dimmer switch** is a device—such as those found on lamps—that can control the brightness of a light.

3 If something **startles** you, it causes you to feel surprised or shocked.

4 A liquid that is **viscous** is thick and not easy to move through.

5 **Flagella** are thin, threadlike structures that enable tiny organisms such as bacteria or protozoa to swim.

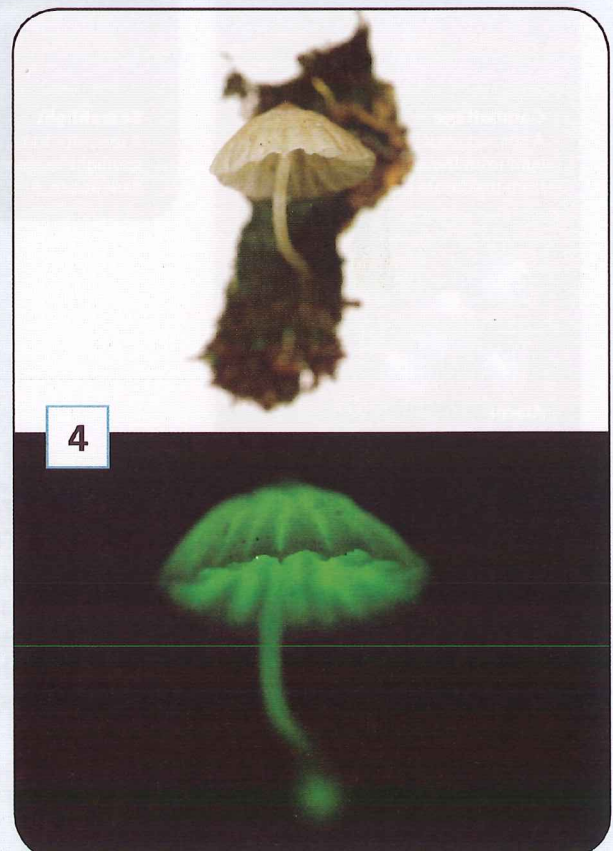
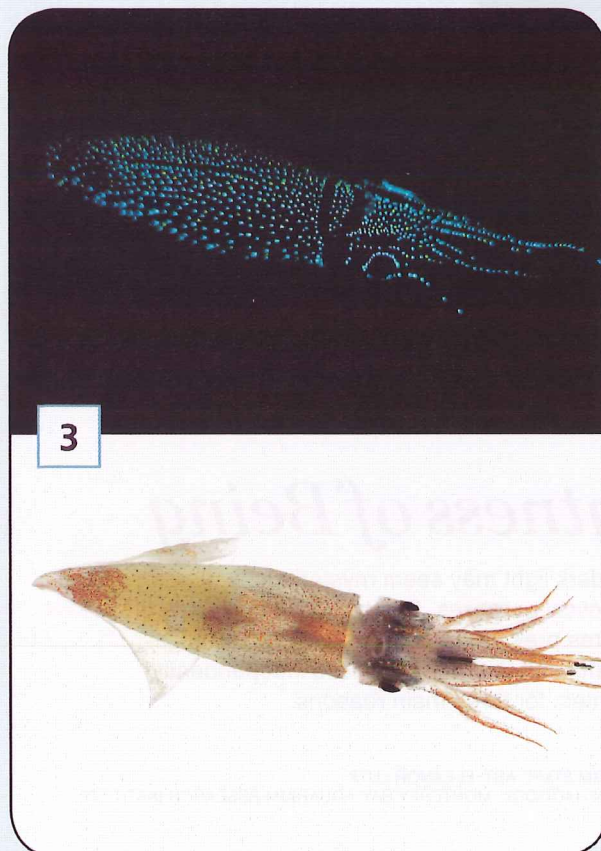
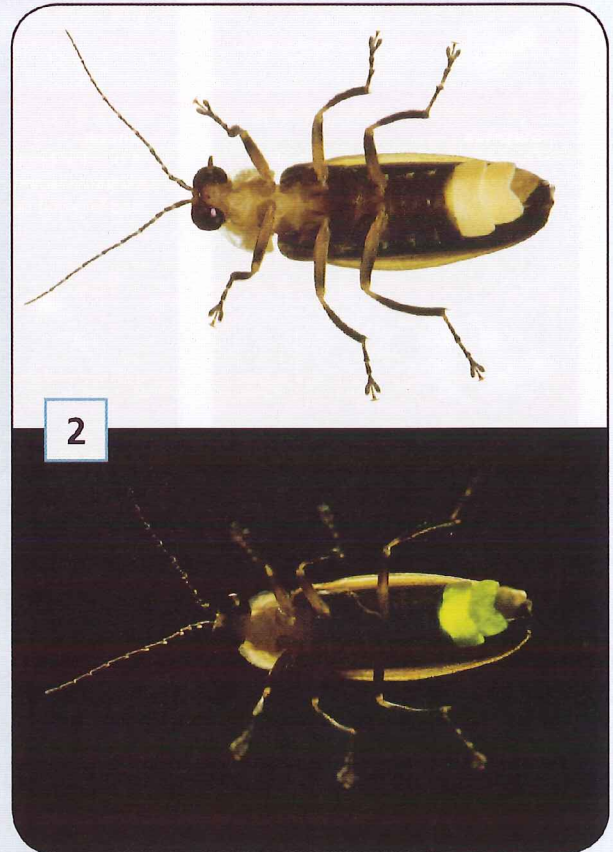
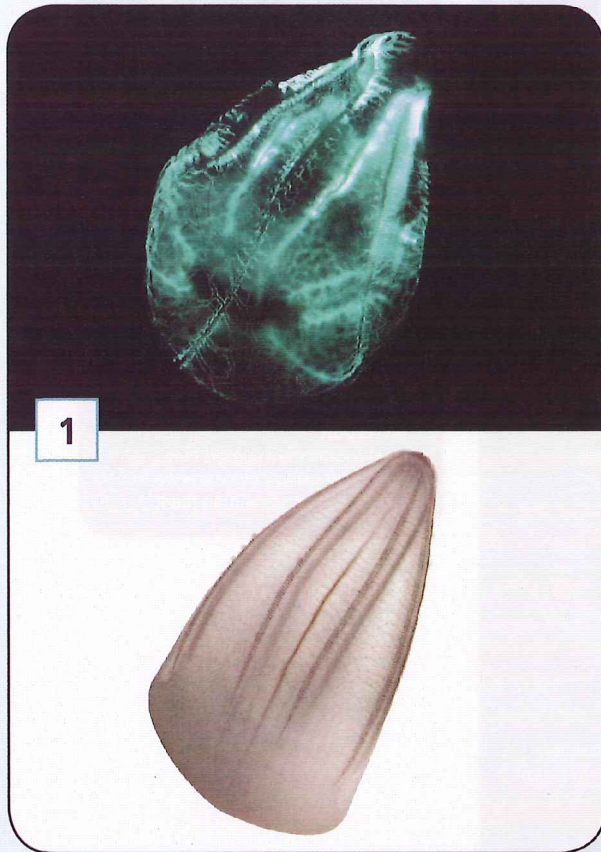
## STARS OF THE SEA

One of the best places in the world to see a natural light show is Vieques, a small island that belongs to Puerto Rico. The island is famous for its *bahía bioluminiscente*, or “bio bay”—home to **countless** dinoflagellates. These dust-size beings are named for their two flagella<sup>5</sup> and the whirling motion they make (*dinos* means “whirling” in Greek). Dinoflagellates light up whenever the water around them moves; they are the organisms typically responsible for the flashes of light you sometimes see when swimming or boating on a dark night.

Visitors to Vieques can join an evening tour group and set out across the bay in transparent canoes. The island has only a few streetlights, so when the moon is not yet risen, the sea is dark and the sky is full of stars. Fish dart through the water, looking like meteors. Eventually, the movement of the canoes disturbs the dinoflagellates, and they light up in a bright, flickering stream. Watching them through the canoe's transparent floor can give a powerful impression that the water is part of the sky, and you are paddling through the stars.

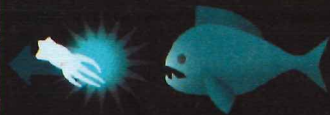


✓ Examples of bioluminescence in the natural world include (1) the comb jelly, (2) the firefly, (3) squid, and (4) some species of mushroom.



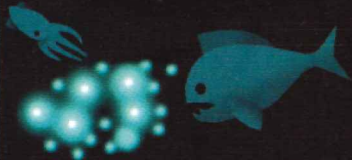


## DEFENSE



### Surprise

The prey produces a bright flash that startles a predator, making it easy to escape.



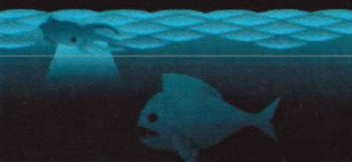
### Smoke screen

The prey emits a glowing fluid or a cloud of sparks to misdirect the predator from its real location.



### Decoy

The prey jettisons one of its body parts. The glowing limb distracts the predator, allowing escape.



### Camouflage

A shining underbelly matching the light from the surface conceals prey from predators below.



### Alarm

The prey's bioluminescence makes its predator visible—alerting the predator's predators.



### Warning

Gleaming prey signals to a predator that its next meal could taste terrible—or even be toxic.

## OFFENSE



### Shock

A burst of bright light from a bioluminescent predator stuns prey and leaves it open to attack.



### Lure

Prey is attracted to the glow produced by a predator.



### Beacon

Predators seek out the glimmer that tells them that bioluminescent creatures are gathering.



### Searchlight

A predator turns on its natural spotlight to locate prey in a dark ocean.

## REPRODUCTION



### Attraction

Flickers of light signal that a bioluminescent insect is ready to meet new mates.



### Invitation

Mushrooms may spread their spores by using luminescence to attract insects to land on them.

## Lightness of Being

Glow-in-the-dark light may seem mysterious, but organisms use it for practical purposes. Bioluminescence warns off predators, lures prey, and attracts mates. Making light is such a useful trait that it has evolved independently at least 40 times, for three main reasons.

JASON TREAT, NGM STAFF. ART: ELEANOR LUTZ  
SOURCE: STEVEN HADDOCK, MONTEREY BAY AQUARIUM RESEARCH INSTITUTE



## READING COMPREHENSION

### A. Choose the best answer for each question.

#### MAIN IDEA

1. All life forms with bioluminescence \_\_\_\_.

- a. live in or near water
- b. are able to create light
- c. use light to attract mates
- d. use light to protect themselves

#### DETAIL

2. Which of these is NOT explained in the passage?

- a. why some bioluminescent creatures produce light
- b. why invisibility is important to many sea creatures
- c. why some birds have beaks that glow in the dark
- d. how various creatures near the ocean's surface hide themselves

#### COHESION

3. In which position should this sentence be added to paragraph D?

*These creatures only rise toward the surface at night.*

- a. after the first sentence
- b. after the second sentence
- c. after the third sentence
- d. after the fourth sentence

#### DETAIL / SYNTHESIZING

4. According to paragraph E, how do certain shrimp in the ocean's upper layers use bioluminescence?

- a. as a decoy
- b. as camouflage
- c. as an alarm
- d. as a warning

#### INFERENCE

5. What is meant by the "burglar alarm" effect?

- a. Light allows predators to spot their prey in total darkness.
- b. A sudden flash of light startles predators, allowing their prey to escape.
- c. When lit up, tiny organisms such as dinoflagellates can swim faster.
- d. Organisms produce light, which attracts the predators of their predators.

#### EVALUATING STATEMENTS

B. Are the following statements true or false according to the reading passage, or is the information not given? Circle T (true), F (false), or NG (not given).

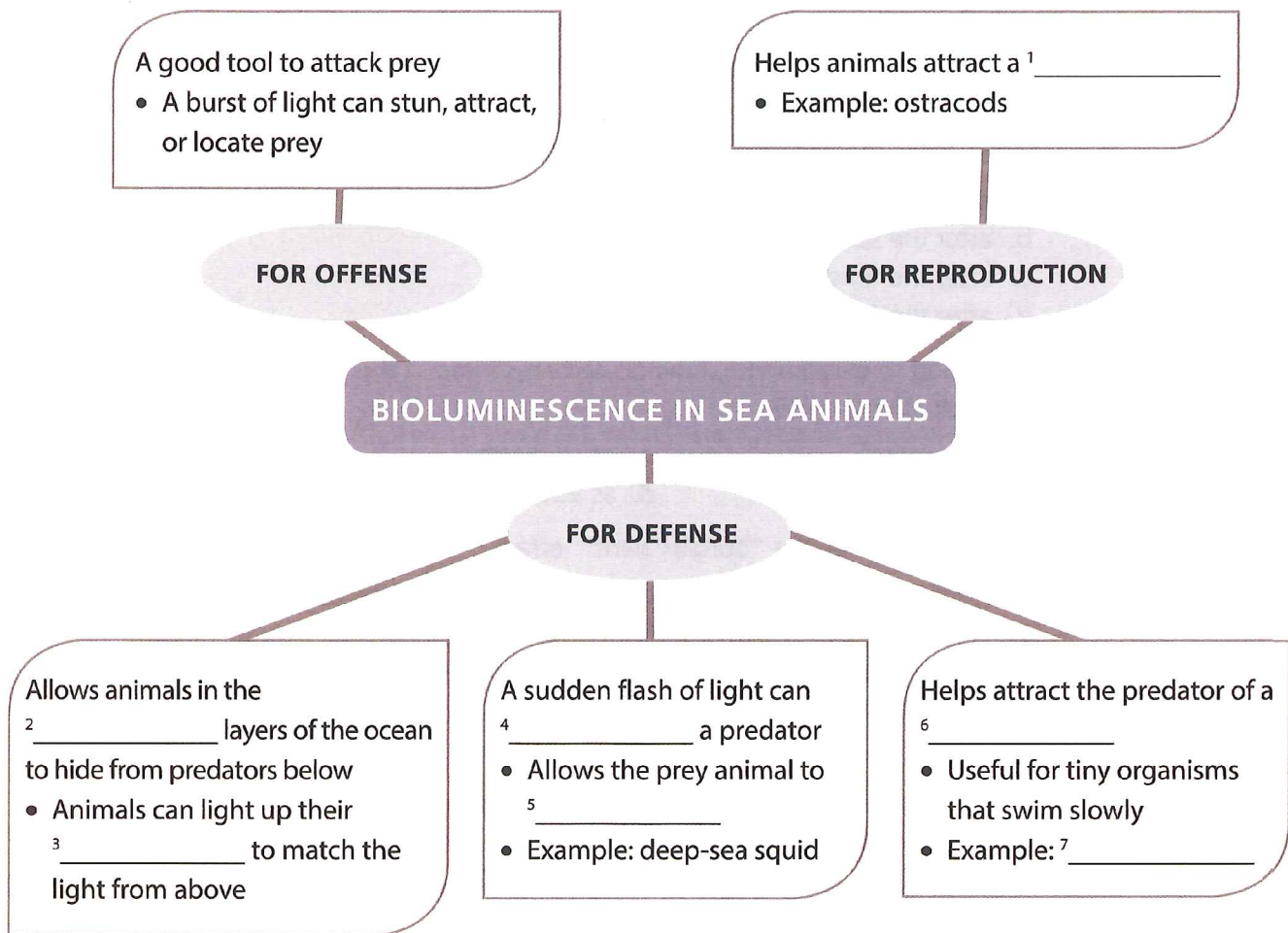
- |  |   |   |    |
|--|---|---|----|
| 1. Most bioluminescent creatures in the sea live near the surface.                 | T | F | NG |
| 2. Six hundred meters below the surface, sunlight stops penetrating the ocean.     | T | F | NG |
| 3. Dinoflagellates use light to help them find and eat shrimp.                     | T | F | NG |
| 4. Human activity in the Vieques "bio bay" stops dinoflagellates from lighting up. | T | F | NG |
| 5. Visitors to the Vieques "bio bay" can only see dinoflagellates in the summer.   | T | F | NG |



## Summarizing (1)—Using a Concept Map

To help you identify and remember a passage's key ideas, it can be useful to take notes using a concept map. This allows you to see the relationships and connections between the writer's main and supporting ideas. To create a concept map, start with the main topic in the middle, add subtopics around it, and then list supporting details and examples for each subtopic.

**SUMMARIZING** A. Complete the concept map below with words from Reading A.



### CRITICAL THINKING Speculating

The reading passage mentions that Atlantic puffins have beaks that glow in the dark. What do you think is the purpose of the glowing beak? Discuss with a partner.

> A puffin beak glows under a black light.

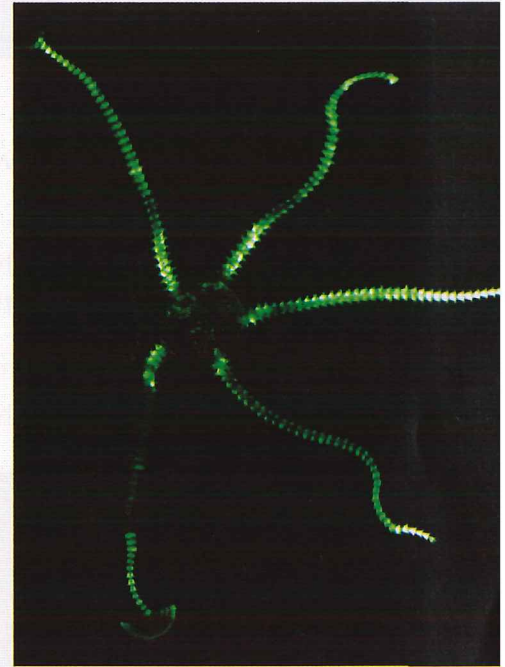




COMPLETION A. Circle the correct words to complete the information below.

A(n) <sup>1</sup>**astonishing** / **disturbed** variety of sea creatures use bioluminescence. Brittle stars, for example, can <sup>2</sup>**flash** / **descend** a green light when they are threatened by <sup>3</sup>**layers** / **predators**. Some brittle stars can even detach their arms. Predators are attracted to the detached, glowing arm of the brittle star, giving the animal a chance to escape. It later regrows its arm.

Some species of sea cucumber can attach their body parts onto other animals. When frightened or <sup>4</sup>**transparent** / **disturbed**, these sea cucumbers break off the bioluminescent parts of their bodies onto nearby fish. The predator will follow the glow on the fish, while the sea cucumber simply crawls away.



▲ Brittle stars are closely related to starfish.

WORDS IN  
CONTEXT

B. Complete the sentences. Circle the correct words.

1. When you **descend** a staircase, you go *up* / *down*.
2. If something is **transparent**, you *can* / *cannot* see through it.
3. Something described as **countless** has a very *low* / *high* number.
4. A **factor** is something that *is unlikely* / *affects a result*.
5. The purpose of adding a **layer** of clothing would likely be to get *warmer* / *wetter*.
6. If something is **invisible**, it *can* / *cannot* be seen.

WORD ROOTS

C. The word **descend** contains the word root **scend**, which means "move toward." Complete the sentences with the correct words from the box.

ascend	crescendo	descend	transcend
--------	-----------	---------	-----------

1. The plane began to \_\_\_\_\_ as it approached its destination.
2. Divers must not \_\_\_\_\_ too quickly to the water's surface.
3. Musical symphonies often include a series of softer melodies that build toward a powerful \_\_\_\_\_.
4. Some types of music are able to \_\_\_\_\_ cultural boundaries and become popular worldwide.



## BEFORE YOU READ

**DISCUSSION** A. Look at the photo below. In what way(s) is this bird unusual? Discuss your ideas with a partner.

**SKIMMING** B. Look at the reading title and headings on the next three pages. Check (✓) the information about birds of paradise you think will be covered in the passage. Then read the passage to check your answers.

- |  |   |
|--|---|
| <input type="checkbox"/> a. why they have colorful feathers  | <input type="checkbox"/> c. their migration patterns  |
| <input type="checkbox"/> b. how they show off their feathers | <input type="checkbox"/> d. threats to their survival |

^ A male Wilson's  
bird of paradise



# FEATHERS OF LOVE

- A Covered in soft, black feathers, the **noble** performer bows deeply to his audience. From the top of his head grow several long feathers that tap the ground as he begins his dance. This dancing bird is Carola's parotia, just one of the many birds of paradise that live on the island of New Guinea. This male bird is attempting to impress a row of females that are watching him from a branch above.
- B Keeping the females' attention isn't easy. He pauses for dramatic effect, then **commences** his dance again. His neck sinks and his head goes up and down, head feathers **bouncing**. He jumps and shakes his feathers until his performance finally attracts the attention of one of the females.

## An Amazing Performance

- C In the dense jungle of New Guinea is nature's most **absurd** theater, the special mating game of the birds of paradise. To attract females, males' feathers resemble costumes worthy of the stage. The bright reds, yellows, and blues stand out sharply against the green of the forest. It seems that the more extreme the male's costume and colors, the better his chance of attracting a mate.
- D In addition to having extremely beautiful feathers, each species has its own type of display behavior. Some dance on the ground, in areas that they have cleared and prepared like their own version of a dance floor. Others perform high in the trees.
- E The male red bird of paradise shows off his red and yellow feathers in a display called a "butterfly dance." He spreads and moves his

wings intensely, like a giant butterfly. The male Carola's parotia, however, is the dance king of the birds of paradise; he has serious dance moves! These include one in which he spreads out his feathers like a dress, in a move called the "ballerina<sup>1</sup> dance." While some birds of paradise perform alone, others perform in groups, creating an eye-catching performance that female birds find impossible to resist. Hanging from nearby branches, male Goldie's birds **prominently** display the soft red feathers that rise from their backs as they flap<sup>2</sup> their wings. Excited females soon choose the one that pleased them the most.

## The Evolution of Color

- F These brilliantly colored birds of paradise have developed over millions of years from ancient birds whose feathers were dark and boring in comparison. Of today's 45 brightly colored birds of paradise species, most live only on New Guinea. These birds of paradise invite us to solve a mystery of nature. It seems to be a contradiction<sup>3</sup> that such extreme feathers and colors could have been favored by the process of **evolution**. After all, these same brightly colored feathers that attract mates also make the birds much more noticeable to predators. The answer lies in the safe environment in which the birds live, and a process of evolution known as sexual selection.

---

1 A **ballerina** is a female ballet dancer.

2 If a bird or an insect **flaps** its wings, the wings move quickly up and down.

3 If an aspect of a situation is a **contradiction**, it is completely different from other aspects and makes the situation confusing.



G "Life here is pretty comfortable for birds of paradise. The island's unique environment has allowed them to go to extremes unheard of elsewhere," says biologist Ed Scholes. Under **harsher** conditions, he says, "evolution simply wouldn't have come up with these birds." Fruit and insects are abundant all year round, and predators are few. The result is a perfect environment for birds.

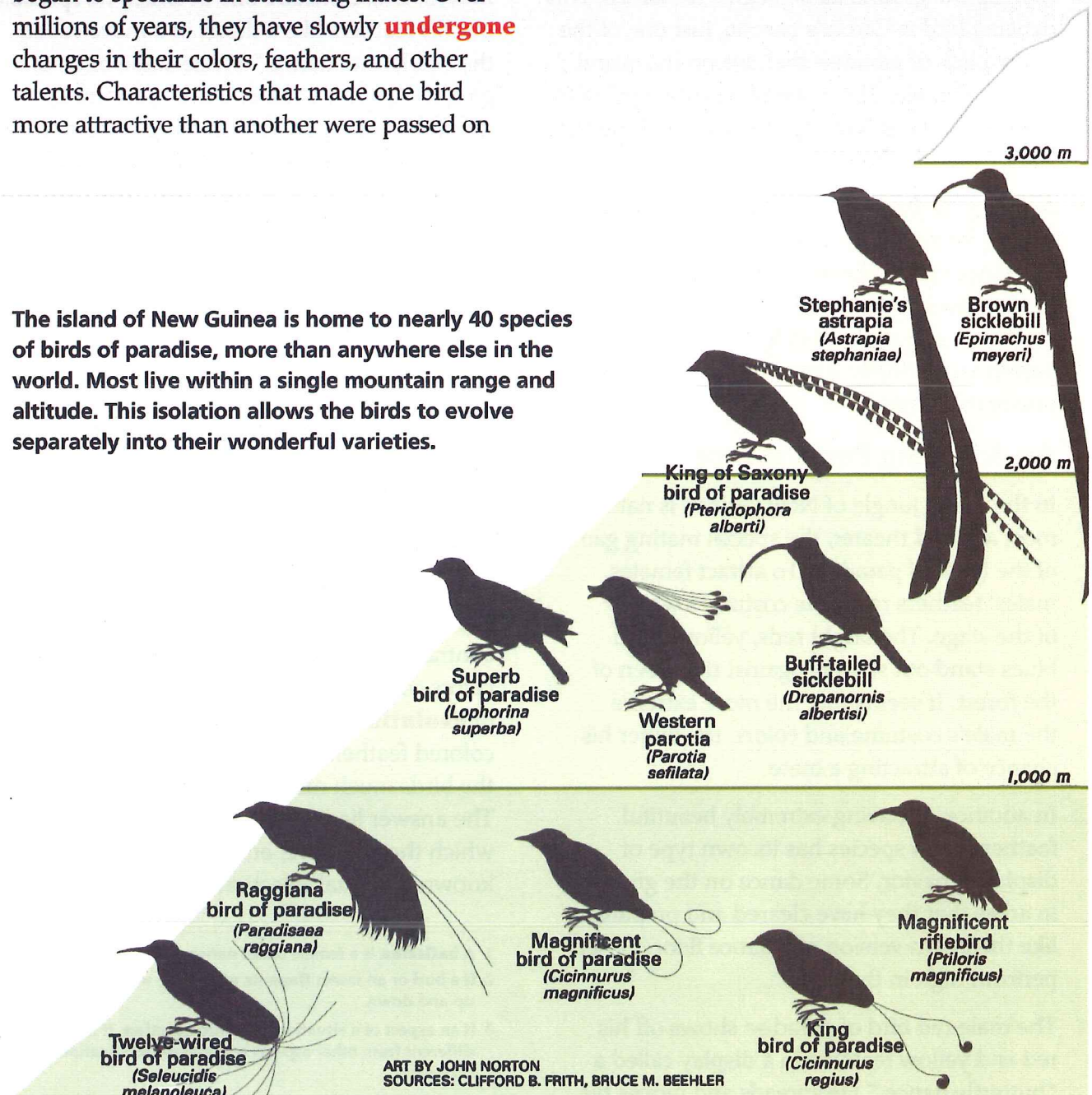
H Sexual selection has thus been the driving force in the evolution of birds of paradise. Freed of other pressures, birds of paradise began to specialize in attracting mates. Over millions of years, they have slowly **undergone** changes in their colors, feathers, and other talents. Characteristics that made one bird more attractive than another were passed on

and enhanced over time. "The usual rules of survival aren't as important here as the rules of successful mating," Scholes adds.

The diversity of New Guinea's birds also springs from its varied environments: from coastal plains to cloud forests, from swamps<sup>4</sup> to mountains rising as high as 5,000 meters. The landscape has many physical barriers that isolate animal populations, allowing them to develop into distinct species.

<sup>4</sup> A **swamp** is an area of very wet land with wild plants growing in it.

> The island of New Guinea is home to nearly 40 species of birds of paradise, more than anywhere else in the world. Most live within a single mountain range and altitude. This isolation allows the birds to evolve separately into their wonderful varieties.





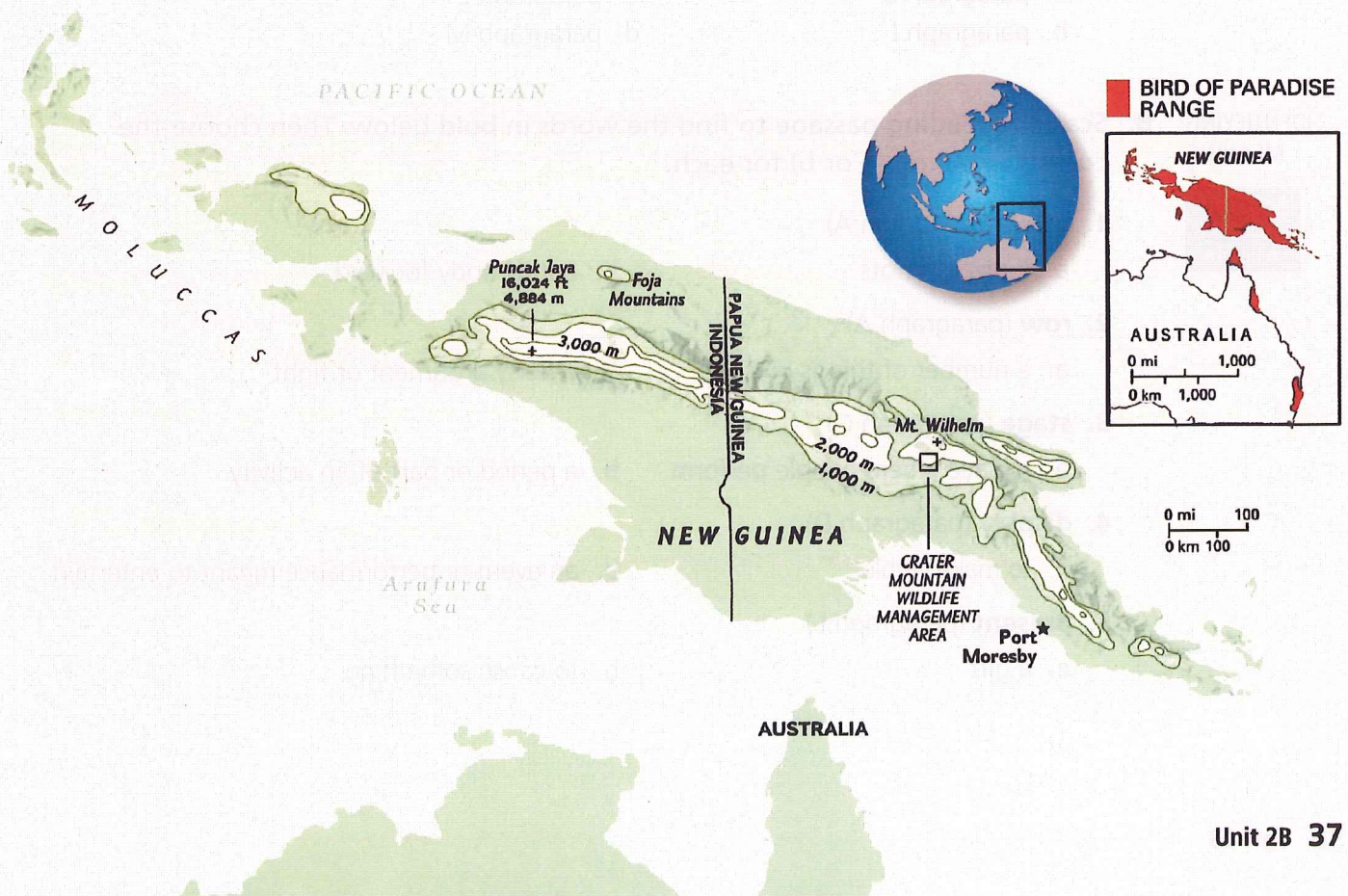
## Trouble in Paradise

- J The people of New Guinea have been watching the displays of the birds of paradise for centuries. "Locals will tell you they went into the forest and copied their **rituals** from the birds," says anthropologist Gillian Gillison. At local dance performances, the painted dancers still evoke the birds with their movements and beautiful costumes. "By wearing the feathers," Gillison says, "... you capture the animal's life force."
- K In the past, demand for the birds' feathers resulted in a huge amount of hunting. At the peak of the trade in the early 1900s, 80,000 skins a year were exported from New Guinea for European ladies' hats. Nowadays, few birds die for fashion or for traditional costumes: Ceremonial feathers are passed down from generation to generation. Although local people are still permitted to hunt the birds for traditional uses, they usually target older male birds, leaving younger males to continue **breeding**.

- L There are more serious threats to the birds, however. An illegal market in feathers still exists. Large farms use up thousands of hectares of forest where birds of paradise once lived. Logging,<sup>5</sup> oil prospecting, and mining also present dangers to New Guinea's forests. Meanwhile, human populations continue to grow.
- M David Mitchell, a conservationist, is relying on the help of local villagers to record where the birds display and what they eat. He hopes to not only gather data, but also encourage protection of the birds' habitat. The strategy seems to be working. "I had come to cut down some trees and plant yam<sup>6</sup> vines," says Ambrose Joseph, one of Mitchell's farmers. "Then I saw the birds land there, so I left the trees alone." For millions of years, these impressive birds have danced to find their mates. They'll keep dancing for as long as the forest offers them a stage.

<sup>5</sup> **Logging** is the business of cutting down trees for use as wood.

<sup>6</sup> A **yam** is a root vegetable, like a potato, that grows in tropical areas.





## READING COMPREHENSION

### A. Choose the best answer for each question.

MAIN IDEA

1. Why do birds of paradise dance and display their feathers?

- a. to frighten away predators
- b. to attract a mate
- c. to exercise and clean their bodies
- d. to show possession of an area

DETAIL

2. Which factor is NOT mentioned as a reason for the birds' unusual characteristics?

- a. the widespread availability of fruit and insects
- b. the wide variety of environments
- c. the wide variety of breeding systems
- d. the lack of predators

CAUSE AND EFFECT

3. Why did so many birds of paradise die in the early 1900s?

- a. There was a high demand for feathers to use in European hats.
- b. The birds got sick after early interactions with humans.
- c. Industrial development destroyed the birds' habitat.
- d. Logging drastically reduced the birds' habitat.

INFERENCE

4. Why do local people continue to hunt birds of paradise?

- a. to eat them
- b. to protect smaller birds
- c. to make traditional costumes
- d. to keep their numbers down

COHESION

5. The following sentence would best be placed at the beginning of which paragraph?  
*However, there may be some good news for the birds.*

- a. paragraph E
- b. paragraph I
- c. paragraph L
- d. paragraph M

IDENTIFYING MEANING

Review this reading skill in Unit 1A

B. Scan the reading passage to find the words in **bold** below. Then choose the correct meaning (a or b) for each.

1. **bows** (paragraph A)

- a. loops or knots
- b. bends body forward

2. **row** (paragraph A)

- a. a number of things in a line
- b. a noisy argument or fight

3. **stage** (paragraph C)

- a. a place where people perform
- b. a period or part of an activity

4. **display** (paragraph D)

- a. to make visible
- b. an event or performance meant to entertain

5. **present** (paragraph L)

- a. a gift
- b. to cause something



# Identifying Figurative Language

Writers use figurative language—similes, metaphors, and personification—to create an image of someone or something in the reader’s mind.

A **simile** compares two different things using *like* or *as*: *Her skin was as cold as ice.*

A **metaphor** says one thing *is* another thing: *During rush hour, the road is a parking lot.*

Sometimes the comparison in a metaphor is implied: *He has a heart of stone.*

**Personification** gives humanlike qualities to something nonhuman: *Lightning danced across the sky.*

## IDENTIFYING FIGURATIVE LANGUAGE

**A. Look at these sentences from Reading B. Mark each one as an example of a simile (S), a metaphor (M), or personification (P). Some may have more than one answer.**

1. \_\_\_\_\_ Covered in soft, black feathers, the noble performer bows deeply to his audience. (paragraph A)
2. \_\_\_\_\_ He spreads and moves his wings intensely, like a giant butterfly. (paragraph E)
3. \_\_\_\_\_ The male Carola’s parotia, however, is the dance king of the birds of paradise. (paragraph E)
4. \_\_\_\_\_ These include one in which he spreads out his feathers like a dress. (paragraph E)
5. \_\_\_\_\_ They’ll keep dancing for as long as the forest offers them a stage. (paragraph M)

## IDENTIFYING FIGURATIVE LANGUAGE

**B. Look back at Reading A (“Living Light”). Underline these examples of figurative language (1–5) in the passage.**

1. A simile in paragraph C
2. A metaphor in paragraph E
3. A simile in paragraph G
4. A simile in the sidebar “Stars of the Sea” (second paragraph)
5. A metaphor in the sidebar “Stars of the Sea” (second paragraph)

## CRITICAL THINKING Interpreting / Applying

- ▶ What does each example of figurative language in activity B mean? What is the writer emphasizing? Discuss with a partner.
- ▶ Think of some similes or metaphors you could use to describe someone you know. Note your ideas below and then share with a partner.



## VOCABULARY PRACTICE

COMPLETION A. Complete the paragraph using the correct form of words from the box.

**absurd bounce prominent ritual**

Over the years, the male Carola's parotia bird of paradise has developed a special mating <sup>1</sup> \_\_\_\_\_ that involves a lot of bowing and flapping. On its head, the bird has several long and <sup>2</sup> \_\_\_\_\_ quills, which it <sup>3</sup> \_\_\_\_\_ up and down in hopes of attracting a female. "Its mating dance is so <sup>4</sup> \_\_\_\_\_," says researcher Jennifer Holland, "that I could hardly keep from laughing."



▲ A male parotia dances to attract a female companion.

DEFINITIONS B. Match the words in the box with the definitions below.

**evolution breed commence noble harsh undergo**

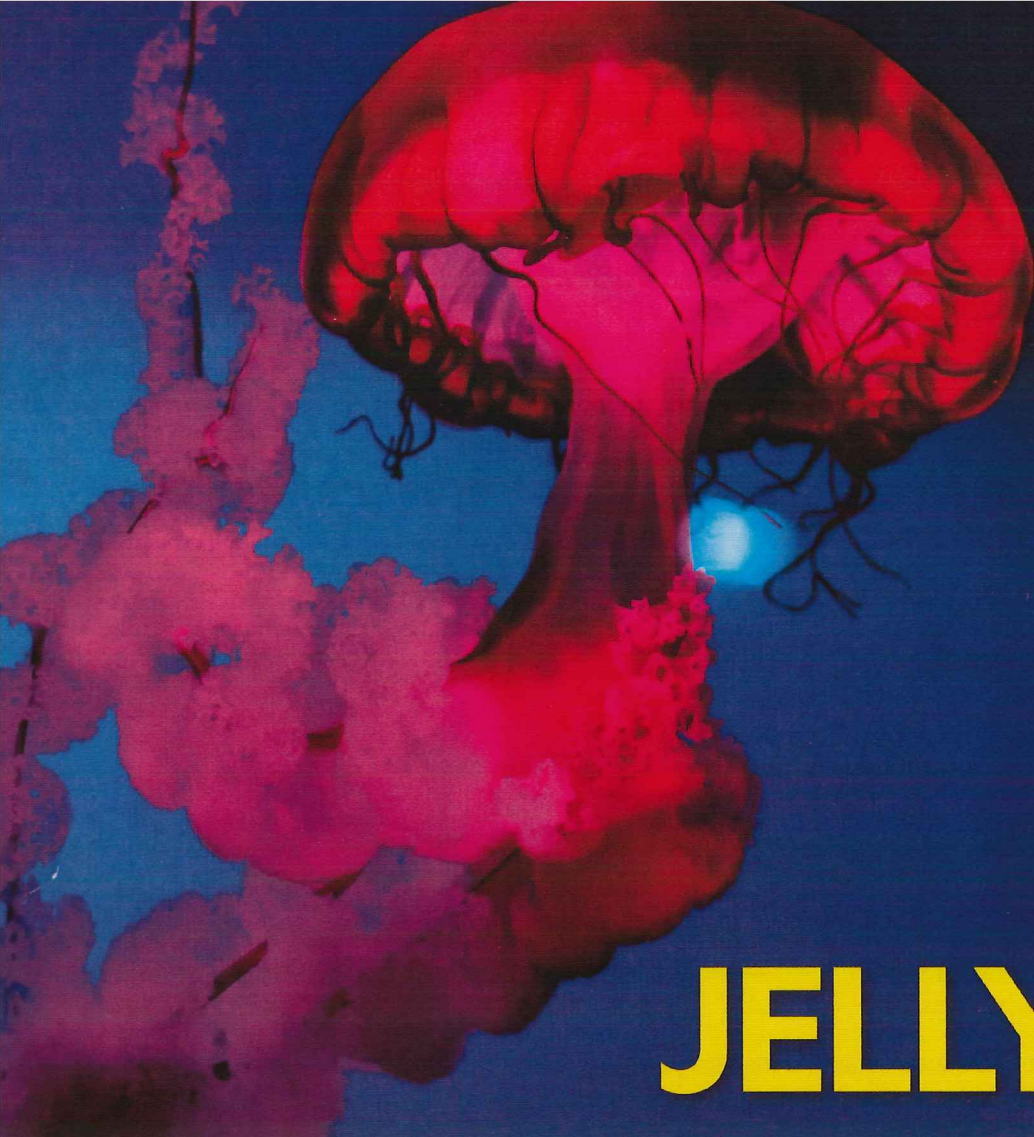
1. \_\_\_\_\_: (for animals) to mate and have babies
2. \_\_\_\_\_: to begin
3. \_\_\_\_\_: to experience something necessary or unpleasant
4. \_\_\_\_\_: cruel or severe
5. \_\_\_\_\_: having fine personal qualities or appearance
6. \_\_\_\_\_: the way in which living things change and develop over millions of years

WORD FORMS C. We can add **-ility** to some adjectives to form nouns (e.g., **noble** + **-ility** = **nobility**). Complete the sentences below with the correct form of words from the box. One word is extra.

**hostile mobile noble reliable stable**

1. Economic development is more likely to occur during periods of political \_\_\_\_\_.
2. Oil is not a \_\_\_\_\_ energy source in the long term, as supplies are limited.
3. Communication breakdowns can produce a \_\_\_\_\_ environment in the workplace.
4. The widespread availability of cars in the 20th century led to an increase in personal \_\_\_\_\_.





< A bioluminescent jellyfish swims in the waters near Dubai.

# JELLYFISH

## BEFORE YOU WATCH

PREVIEWING **A. Read the information. The words in **bold** appear in the video. Match these words with their definitions below.**

Jellyfish have been around for hundreds of millions of years, even before dinosaurs lived on the Earth. They are probably some of the most mysterious creatures you'll ever see. Unlike fish, jellyfish are **invertebrates**. They do not have bones, brains, hearts, or blood. Nevertheless, some jellyfish are able to **clone** themselves, as well as reverse the aging process by **reverting** back to a younger state.

Despite looking harmless, jellyfish can be **venomous**—their stings are painful and sometimes fatal. However, some species are safe to eat. In certain countries, jellyfish is considered to be a delicacy.

- |                 |   |                                    |
|-----------------|---|------------------------------------|
| 1. invertebrate | • | • a. (of an animal) poisonous      |
| 2. clone        | • | • b. to return to a previous state |
| 3. revert       | • | • c. to make a copy of something   |
| 4. venomous     | • | • d. an animal without a backbone  |



## WHILE YOU WATCH

**GIST A. Watch the video. Check (✓) the topics that are covered in the video.**

- ☐ a. how the jellyfish got its name
- ☐ b. the diet of a jellyfish
- ☐ c. how jellyfish reproduce
- ☐ d. what jellyfish taste like
- ☐ e. problems that large groups of jellyfish can cause

**COMPLETION B. Watch the video again and complete the notes below. Use up to two words for each blank.**

### Interesting facts about jellyfish

- Since jellyfish aren't actually fish, some scientists have started using the umbrella term <sup>1</sup> "\_\_\_\_\_ " instead.
- By undergoing transdifferentiation, the "immortal jellyfish" can revert back to a <sup>2</sup> \_\_\_\_\_ and start its life cycle all over again.
- The Australian box jellyfish is considered to be the most <sup>3</sup> \_\_\_\_\_ marine animal in the world.
- Jellyfish are mostly made of <sup>4</sup> \_\_\_\_\_ ; if a jellyfish washes ashore, it will mostly <sup>5</sup> \_\_\_\_\_ .
- Jellyfish blooms have clogged fishing gear, destroyed ships, and closed <sup>6</sup> \_\_\_\_\_ .

**CRITICAL THINKING Speculating** Some jellyfish are bioluminescent. How might this ability be useful to them? Refer to the infographic on page 30 for ideas and discuss with a partner.

## VOCABULARY REVIEW

Do you remember the meanings of these words? Check (✓) the ones you know. Look back at the unit and review any words you're not sure of.

### Reading A

- |                                      |                                     |                                  |                                   |                                      |
|--------------------------------------|-------------------------------------|----------------------------------|-----------------------------------|--------------------------------------|
| <input type="checkbox"/> astonishing | <input type="checkbox"/> countless  | <input type="checkbox"/> descend | <input type="checkbox"/> disturb  | <input type="checkbox"/> factor*     |
| <input type="checkbox"/> flash       | <input type="checkbox"/> invisible* | <input type="checkbox"/> layer*  | <input type="checkbox"/> predator | <input type="checkbox"/> transparent |


### Reading B

- |                                 |                                 |                                      |                                    |                                     |
|---------------------------------|---------------------------------|--------------------------------------|------------------------------------|-------------------------------------|
| <input type="checkbox"/> absurd | <input type="checkbox"/> bounce | <input type="checkbox"/> breed       | <input type="checkbox"/> commence* | <input type="checkbox"/> evolution* |
| <input type="checkbox"/> harsh  | <input type="checkbox"/> noble  | <input type="checkbox"/> prominently | <input type="checkbox"/> ritual    | <input type="checkbox"/> undergo*   |

\* Academic Word List



# FOOD AND HEALTH

A woman with dark hair, wearing a patterned t-shirt and dark pants, is working in a greenhouse. She is surrounded by rows of tomato plants that are heavily laden with fruit. Some tomatoes are green, while others are ripe and red. The plants are supported by a trellis system. The woman is reaching up to harvest a cluster of tomatoes. The background shows more rows of similar plants stretching into the distance.

A woman collects tomatoes in a greenhouse in the Netherlands.

## WARM UP

Discuss these questions with a partner.

1. What kinds of foods can be dangerous to your health?
2. In what ways could the world increase its supply of food?





## BEFORE YOU READ

DEFINITIONS A. Read this information and match each word or phrase in **bold** with its definition (1–4).

In recent years, **bacteria** found in foods are posing increased health risks—particularly to people with weakened **immune systems**. While improvements in **sanitary** practices have reduced some **foodborne** threats, new hazards have arisen because of changes in our lifestyle and in food production methods.

1. \_\_\_\_\_: clean and not dangerous for your health
2. \_\_\_\_\_: very small organisms that can cause disease
3. \_\_\_\_\_: parts and processes of the body that fight illness
4. \_\_\_\_\_: carried into our bodies through the things we eat

PREDICTING B. What causes food poisoning, and how can we avoid it? Discuss with a partner. Then check your ideas as you read the passage.



# HOW SAFE IS OUR FOOD?

- A The everyday activity of eating involves more risk than you might think. It is estimated that each year in the United States, 48 million people suffer from foodborne diseases; 128,000 of them are hospitalized, and 3,000 die. In the developing world, **contaminated** food and water kill over half a million children a year. In most cases, virulent<sup>1</sup> types of bacteria are to blame.
- B Bacteria are an **integral** part of a healthy life. There are 200 times as many bacteria in the intestines<sup>2</sup> of a single human as there are human beings who have ever lived. Most of these bacteria help with **digestion**, making vitamins, shaping the immune system, and keeping us healthy. Nearly all raw food has bacteria in it as well. But the bacteria that produce foodborne illnesses are of a different, more dangerous kind.

## Bad Bacteria

- C Many of the bacteria that produce foodborne illnesses are present in the intestines of the animals we raise for food. When a food animal containing dangerous bacteria is cut open during processing, bacteria inside can contaminate the meat. Fruits and vegetables can pick up dangerous bacteria if washed or watered with contaminated water. A single bacterium, given the right conditions, divides rapidly enough to produce billions over the course of a day. This means that even only lightly contaminated food can be dangerous. Bacteria can also hide and multiply on dishtowels, cutting boards, sinks, knives, and kitchen counters, where they're easily transferred to food or hands.
- D Changes in the way in which farm animals are raised also affect the rate at which dangerous bacteria can spread. In the name of efficiency and economy, fish, cattle, and chickens are raised in giant "factory" farms, which **confine** large numbers of animals in tight spaces. Cattle, for example, are crowded together under such conditions that if only one animal is contaminated with the virulent bacteria *E. coli* O157:H7, it will likely spread to others.

## Tracking the Source

- E Disease investigators, like Patricia Griffin, are working to find the sources of these outbreaks<sup>3</sup> and prevent them in the future. Griffin, of the Centers for Disease Control and Prevention (CDC) in the United States, has worked in

<sup>1</sup> Something that is **virulent** is dangerous or poisonous.

<sup>2</sup> Your **intestines** are the tubes in your body through which food passes when it has left your stomach.

<sup>3</sup> If there is an **outbreak** of something unpleasant, such as violence or a disease, it happens suddenly.



Students study new techniques of food production at Wageningen University & Research, Netherlands.





^ A medical researcher examines a sample of *E. coli*.



the foodborne-disease business for 15 years. Periodic *E. coli* outbreaks turned her attention to the public food safety threat that exists in restaurants and in the food production system. Food safety is no longer just a question of handling food properly in the domestic kitchen. “Now,” Griffin says, “we are more aware that the responsibility does not rest solely with the cook. We know that contamination often occurs early in the production process—at steps on the way from farm or field or fishing ground to market.”

- F Griffin’s job is to look for trends in food-related illness through the analysis of outbreaks. Her team tries to identify both the food source of an outbreak and the contaminating bacteria. To link cases together, the scientists use a powerful tool called PulseNet, a national computer network of health laboratories that matches types of bacteria using DNA<sup>4</sup> analysis. PulseNet allows scientists to associate an illness in California, say, with one in Texas, tying together what might otherwise appear as unrelated cases. Then it’s the job of the investigators to **determine** what went wrong in the food’s journey to the table. This helps them decide whether to recall<sup>5</sup> a particular food or to change the process by which it’s produced.
- G In January 2000, public health officials in the state of Virginia noted an unusual group of patients sick with food poisoning from salmonella.<sup>6</sup> Using PulseNet, the CDC identified 79 patients in 13 states who were **infected** with the same type of salmonella bacteria. Fifteen had been hospitalized; two had died. What was the common factor? All had eaten mangoes during the previous November and December. The investigation led to a single large mango farm in Brazil, where it was discovered that mangoes were being washed

in contaminated water containing a type of salmonella bacteria. Salmonella contamination is a widespread problem; salmonella cases involving contaminated chicken, melons, coconut, and cereals were reported in 2018.

- H The mango outbreak had a larger lesson: We no longer eat only food that is in season or that is grown locally. Instead, we demand our strawberries, peaches, mangoes, and lettuce year-round. As a result, we are depending more and more on imports. Eating food grown elsewhere in the world means depending on the soil, water, and sanitary conditions in those places, and on the way in which their workers farm, harvest, process, and transport the food.

## Reducing the Risk

- I There are a number of success stories that provide hope and show us how international food production need not mean increased risk of contamination. Costa Rica has made sanitary production of fruits and vegetables a **nationwide** priority. Fresh fruits and vegetables are packed carefully in sanitary conditions; frequent hand washing is **compulsory**; and proper toilets are provided for workers in the fields. Such changes have made Carmela Velazquez, a food scientist from the University of Costa Rica, **optimistic** about the future. “The farmers we’ve trained,” she says, “will become models for all our growers.”
- J In Sweden, too, progress has been made in reducing the number of foodborne disease at an early stage. Swedish chicken farmers have eliminated salmonella from their farms by thoroughly cleaning the area where their chickens are kept, and by using chicken feed that has been heated to rid it of dangerous bacteria. Consequently, the chickens that Swedes buy are now salmonella-free. These successes suggest that it is indeed **feasible** for companies and farms to produce safe and sanitary food, while still making a profit.

<sup>4</sup> **DNA** is a material in living things that contains the code for their structure and many of their functions.

<sup>5</sup> When sellers **recall** a product, they ask customers to return it to them.

<sup>6</sup> **Salmonella** is a group of bacteria that cause food poisoning.



## READING COMPREHENSION

### A. Choose the best answer for each question.

GIST

1. What is the reading mainly about?

- a. new research regarding the effects of foodborne bacteria
- b. the decline in sanitary conditions in restaurants and farms around the world
- c. sources of dangerous foodborne bacteria, their detection, and control
- d. the importance of advanced technology in the fight against foodborne bacteria

DETAIL

2. Why is even a single disease-causing bacterium dangerous?

- a. It can mix with other bacteria.
- b. It is often hard to detect.
- c. Just one can kill a small child.
- d. It can multiply very quickly.

PURPOSE

3. What is PulseNet used for?

- a. to match cases of foodborne illness that have the same source
- b. to identify restaurants with poor sanitary conditions
- c. to connect patients who have foodborne illnesses with doctors
- d. to record best practices in food production methods

DETAIL

4. According to the passage, why are people eating more imported food now?

- a. People want to have certain foods year-round.
- b. Imported foods are usually cheaper.
- c. Imported foods are usually safer.
- d. Consumers have more sophisticated tastes.

PARAPHRASE

5. What does Carmela Velazquez mean in paragraph I when she says, "The farmers we've trained will become models for all our growers"?

- a. The farmers will go on TV to talk about what they learned from her.
- b. More farmers will adopt the habits that were taught to the trained farmers.
- c. Both farmers and growers will now work together to assure food safety.
- d. Farmers need to listen to the growers to learn and decide what works for them.

EVALUATING  
STATEMENTS

B. Are the following statements true or false according to paragraph G, or is the information not given? Circle T (true), F (false), or NG (not given).

- |   |   |   |    |
|---|---|---|----|
| 1. The salmonella outbreak in 2000 first affected people in Virginia.               | T | F | NG |
| 2. Everyone affected by that outbreak had eaten mangoes in the previous months.     | T | F | NG |
| 3. The outbreak was investigated by the Centers for Disease Control and Prevention. | T | F | NG |
| 4. The salmonella outbreak was caused by farmers not washing their mangoes.         | T | F | NG |
| 5. Salmonella can contaminate several different kinds of food.                      | T | F | NG |



# Recognizing Cause and Effect Relationships (1)

A cause is an action or a condition that makes something happen. An effect is a result of that action. Some texts use words that indicate cause and effect relationships, such as *caused*, *as a result*, *because* (*of*), *so*, *due to*, *consequently*, *thus*, and *the reason*. In other cases, a writer may imply a cause-effect relationship without using these words. As you read, try to make connections between events by asking *What caused ...?* and *What was the result of ...?* questions.

**ANALYZING** A. Read the sentences below. In each sentence, underline the cause.

1. I didn't go to the doctor because I forgot about the appointment.
2. The medicine in our cabinet was old, so we threw it out.
3. The reason I didn't go to school was that I had a stomachache.
4. Due to new health guidelines, all food will be removed from the staff fridge on weekends.
5. Investigators believe improper hand washing caused the disease outbreak at the school.

**CAUSE AND EFFECT**

B. Match each cause below with its effect according to information from Reading A.

## Causes

1. cutting open a food animal during processing •
2. the use of "factory" farms •
3. a salmonella outbreak linked to mangoes •
4. all-year demand for fresh fruits and vegetables •
5. improving sanitary conditions on farms •

## Effects

- a. fewer cases of contaminated produce
- b. the death of two people
- c. meat can be contaminated by the bacteria inside
- d. greater dependence on imports
- e. bacteria will likely spread from animal to animal

## CRITICAL THINKING Analyzing Solutions

Discuss these questions with a partner.

- ▶ How have Costa Rica and Sweden reduced the occurrence of foodborne diseases? Complete these notes with information from the reading passage.

Costa Rica: focus on safer farming of \_\_\_\_\_

Sweden: focus on safer farming of \_\_\_\_\_

- ▶ What might be some of the challenges of each approach? Note your ideas below.

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