Sharks and Rays: Perfect Predators

INTRODUCTION TO THE AIMS TEACHING MODULE (ATM) → SECTION 1 (Blue)

INTRODUCING SHARKS AND RAYS: PERFECT PREDATORS → SECTION 2 (Purple)

PREPARATION FOR VIEWING → SECTION 3 (Green)

AFTER VIEWING THE PROGRAM → SECTION 4 (Red)

AIMS Media is a leading producer and distributor of educational programs serving schools and libraries for nearly 40 years. AIMS draws upon the most up-to-date knowledge, existing and emerging technologies, and all of the instructional and pedagogical resources available to develop and distribute educational programs in film, videocassette, laserdisc, CD-ROM and CD-i formats.

Persons or schools interested in obtaining additional copies of this AIMS Teaching Module, please contact:

AIMS Media

1-800-FOR-AIMS
1-800-367-2467

AIMS TEACHING MODULE WRITTEN BY HELEN HANSEN

Congratulations!

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

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

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

RATIONALE

In today's classrooms, educational pedagogy is often founded on Benjamin S. Bloom's "Six Levels of Cognitive Complexity." The practical application of Bloom's Taxonomy is to evaluate students' thinking skills on these levels, from the simple to the complex: Knowledge (rote memory skills), Comprehension (the ability to relate or retell), Application (the ability to apply knowledge outside its origin), Analysis (relating and differentiating parts of a whole), Synthesis (relating parts to a whole), and Evaluation (making a judgment or formulating an opinion).

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

ORGANIZATION AND MANAGEMENT

To facilitate ease in classroom manageability, the AIMS Teaching Module is organized in four sections, identifiable by their color across the top of the page and at the side tab margin. You are reading SECTION 1, INTRODUCTION TO THE AIMS TEACHING MODULE (ATM).

SECTION 2, INTRODUCING THIS ATM will give you the specific information you need to integrate the program into your classroom curriculum.

SECTION 3, PREPARATION FOR VIEWING provides suggestions and strategies for motivation, language preparedness, readiness, and focus prior to viewing the program with your students.

SECTION 4, AFTER VIEWING THE PROGRAM provides suggestions for additional activities plus an assortment of consumable assessment and extended activities, designed to broaden comprehension of the topic and to make connections to other curriculum content areas.

FEATURES

INTRODUCING EACH ATM

SECTION 2

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

Themes

The Major Theme tells how this AIMS Teaching Module is keyed into the curriculum. Related Themes offer suggestions for interaction with other curriculum content areas, enabling teachers to use the teaching module to incorporate the topic into a variety of learning areas.

Overview

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

Objectives

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

PREPARATION FOR VIEWING

SECTION 3

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

Introduction To The Program

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

Introduction To Vocabulary

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

Discussion Ideas

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

Focus

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

Jump Right In

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

AFTER VIEWING THE PROGRAM

SECTION 4

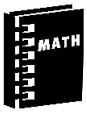
After your students have viewed the program, you may introduce any or all of these activities to interact with other curriculum content areas, provide reinforcement, assess comprehension skills, or provide hands-on and in-depth extended study of the topic.

SUGGESTED ACTIVITIES

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

Meeting Individual Needs

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



Curriculum Connections

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

Critical Thinking

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

Cultural Diversity

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

Hands On

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

Writing

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

In The Newsroom

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

Extended Activities

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

Link to the World

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

Culminating Activity

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

VOCABULARY

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

CHECKING COMPREHENSION

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

CONSUMABLE ACTIVITIES

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

CHECKING VOCABULARY

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

TEST

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

ADDITIONAL AIMS MEDIA PROGRAMS

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

ADDITIONAL READING SUGGESTIONS

AIMS offers a carefully researched list of other resources that you and your students may find rewarding.

ANSWER KEY

Reproduces tests and work pages with answers marked.

Sharks and Rays: Perfect Predators

THEMES

Characteristics of living things is a major theme in the life science curriculum. The structure of living things, animal habitats, how animals reproduce, and interaction among living organisms are all related themes.

OVERVIEW

Sharks and Rays: Perfect Predators introduces viewers to the exciting and dangerous world of sharks and rays. Although sharks and rays have been swimming in the world's oceans for over three hundred and fifty million years, they have not changed very much from their ancestors. But they are not primitive. They have evolved into perfect swimming, hunting, and eating "machines." Their torpedo-like bodies propel them through the water smoothly. Their highly developed senses of smell and touch can detect prey miles away. Their eyes reflect light for nocturnal feeding. Their huge jaws and rows of sharp teeth can grip, cut, or crush their prey. Students will observe sharks and rays in close detail and will discover the characteristics that distinguish sharks from rays. They will learn how these predators live, reproduce, and interact with other fish and man. Students will discover that not all sharks and rays are harmful to man.

OBJECTIVES

- To identify the physical characteristics of sharks and rays
- To describe the natural environment of sharks and rays
- To determine which sharks and rays are harmful to man
- To create a sea-life mural

Use this page for your individual notes about planning and/or effective ways to manage this AIMS Teaching Module in your classroom.

Our AIMS Media Educational Department welcomes your observations and comments.
Please feel free to address your correspondence to:

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INTRODUCTION TO THE PROGRAM

Ask students to tell what they know about sharks. Elicit from students where they heard or saw the information about sharks (e.g., news reports about shark attacks, movies, and nature programs). Tell students that sharks are not all dangerous and that some are helpful to other fish.

INTRODUCTION TO VOCABULARY

To prepare students for viewing Sharks and Rays: Perfect Predators, write the words cartilage, gill, plankton, prey, predator, and toxin on the chalkboard. Assign groups of students to define the words and present the definitions to the class.

DISCUSSION IDEAS

Bring in pictures of sharks and rays and display them around the room. Ask students to describe the similarities and differences between sharks and rays. Tell students that these predators are related—over millions of years ago some sharks' bodies flattened out, and they became rays.

FOCUS

Remind students that sharks and rays come in various shapes and sizes, which determine how they move through the water. Ask students to watch how sharks and rays swim.

JUMP RIGHT IN

HOW TO USE THE SHARKS AND RAYS: PERFECT PREDATORS AIMS TEACHING MODULE

Preparation

- Read Sharks and Rays: Perfect Predators Themes, Overview, and Objectives to become familiar with program content and expectations.
- Use Preparation for Viewing suggestions to introduce the topic to students.

Viewing SHARKS AND RAYS: PERFECT PREDATORS

- Set up viewing monitor so that all students have a clear view.
- Depending on your classroom size and learning range, you may choose to have students view Sharks and Rays: Perfect Predators together or in small groups.
- Some students may benefit from viewing the video more than one time.

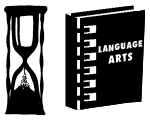
After Viewing SHARKS AND RAYS: PERFECT PREDATORS

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

SUGGESTED ACTIVITIES

Connection to Language Arts

Inform students that sharks and rays belong to the class of fish called Chondrichthyes. Tell them that sharks are either oviparous, viviparous, or ovoviviparous. Have groups of students research the origins and meanings of these four words. Have volunteers make their presentations to the class. Encourage students to use pictures to enhance their presentations.

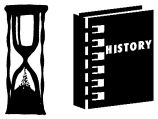


20 Minutes

Connection to History

Have students investigate the ancestors (Devonian period) of sharks and rays. Have them find the answers to questions such as:

When did they live?
What did the ancient fish look like?
What did they eat?
How can scientists determine how long ago they lived?
What were they called?

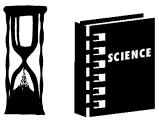


30 Minutes

If possible, bring in fossils or pictures, such as shark teeth, jaws, or skeletal impressions for students to examine.

Connection to Science

Write the word symbiosis on the chalkboard. Have students research this phenomenon associated with smaller fish "hitching rides" on sharks. Topics they can address are: What sea creatures do this? (remora, barnacles, copepods, and pilot fish) Why do they do it? Does it harm the shark?



30 Minutes

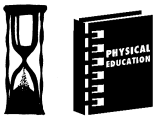
Connection to Health and Nutrition/Mathematics

Some sharks are man-eaters. And some sharks are eaten by humans! Mako shark, thresher shark, and dogfish (a small shark about 2 feet long) are lean, meaty, and boneless—due to the shark's cartilaginous skeleton.

Is eating fish a healthier alternative to beef and chicken? Have students research and make a chart of the calories, fat (in grams), saturated fat (in grams), and cholesterol (in milligrams) of 3 ounces of fish, beef, and chicken. Then have them compare these three sources of protein in our diet and report their findings.

20 Minutes

Connection to Physical Education

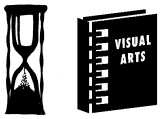


30 Minutes

As students saw in Sharks and Rays: Perfect Predators, the shark has acute senses. Its keen sense of smell and ability to feel electricity generated by living creatures miles away help it to find prey.

A game students can play indoors or out, to test their sense of hearing, consists of one player, the Predator, who is blindfolded, and several players who pretend to be the Prey scattered throughout the playing field. The prey are instructed to make various sounds (such as rubbing an arm, clearing the throat, rustling a skirt, or making a light clucking sound) at irregular intervals to reveal their locations. The predator listens for these clues to catch as many prey as possible during an allotted time.

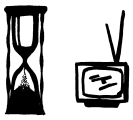
Connection to Visual Arts



45 Minutes

Have students create a sea-life mural using what they saw in Sharks and Rays: Perfect Predators. They may view the video again for details, such as the sandy ocean floor, rocks, plant life, coral, and kinds and sizes of sharks, rays, and prey. Display the mural in the classroom or in the hallway for all the school to see.

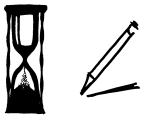
In the Newsroom



60 Minutes

Assign newsroom reporters to research information about Jacques Cousteau for an upcoming interview. Topics to research may include his education and inventions, books he has written, and institutions he has founded. Have a team of writers put together a series of informative questions (with the answers) to ask the French ocean explorer. Have a small anchor team conduct the interview with a volunteer role-playing the part of Cousteau. If available, have reporters assemble some photographs or videotapes of Cousteau's television series to enhance the interview. Make an audio or video recording of the program for viewing at a different time.

Writing



30 Minutes

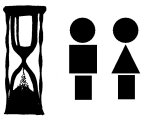
Have students write a fictional story with the title "Swimming with the Sharks." Encourage them to think to themselves about what the title means and to summarize their thoughts in an outline or rough draft.

Hands On

1 Day

Plan a field trip to a marine park, aquarium, natural history museum, or zoo nearby that has a shark exhibit. Ahead of time, arrange with the facility to have an employee of the shark exhibit talk with your class and answer questions.

Meeting Individual Needs



20 Minutes

Begin a discussion about the things a baby needs when it is born. Ask students questions such as:

Does the baby look like a small version of its parents?
Does the baby walk and talk?
Can the baby feed and cloth itself?
Can the baby keep itself warm?
Can the baby protect itself from enemies or harm?

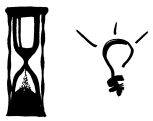
Inform students that when sharks and rays are born they are small, exact versions of their parents. They can swim, feed, and protect themselves from enemies. They do not need their parents to take care of them—they are self-sufficient. Ask students if they know of any other animal offspring that are self-sufficient at birth.

Link to the World

15 Minutes

Ask students what careers and jobs could be related to the study of sharks and rays. Suggestions should include paleontologist, archaeologist, oceanographer, marine biologist, marine park scientist, sports fisherman, commercial fisherman, commercial diver, naval personnel, and wildlife photographer.

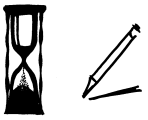
Critical Thinking



30 Minutes

In Sharks and Rays: Perfect Predators, viewers learned that for more than three hundred and fifty million years, sharks “have been cruising the world oceans long before even the dinosaurs walked upon the earth.” As a whole group discussion, ask students how “survival of the fittest” is an apt description of the shark and the ray.

Writing



20 Minutes

If students have not already done so, have them revise and edit their fictional stories, then write the final draft.

Culminating Activity

Have students discuss the topic: Can Our Oceans Be Saved? Have them research questions such as:

30 Minutes

What are some of the ways we use the ocean?
What is ocean dumping?
How does ocean dumping affect us?
How does it affect sea life?
What can be done to clean up the oceans?
What can we do as individuals?
How can recycling help?

As an extension to this discussion, create a recycling program in your class if you do not already have one. Set up trash pails labeled Paper, Aluminum, Plastic, and Glass in the classroom. Place labeled trash pails in the cafeteria and around the school grounds. Suggest to students that they do this at home, too. Choose to use and purchase items that are made from recycled materials. Ask students to suggest other things they can do to keep waste out of our oceans.

Name

VOCABULARY

Write the definition of these words or phrases as you learned them in Sharks and Rays: Perfect Predators. Use a dictionary if you need help. Then write the word in a sentence on the line below its definition.

cartilage: _____

_____

docile: _____

_____

en masse: _____

_____

hibernate: _____

_____

leviathan: _____

_____

mako: _____

_____

replica: _____

_____

sensor: _____

_____

shoal: _____

_____

toxin: _____

_____

Name

CHECKING COMPREHENSION

Write letter of the answer in each blank that makes each statement correct.

1. Sharks have been swimming in the oceans of the world for _____ million years.
   A. 50
   B. 350
   C. 100
   D. 250

2. Sharks and rays are _____.
   A. mammals
   B. amphibians
   C. reptiles
   D. fish

3. Two senses, smell and _____, help the shark detect an injured fish miles away.
   A. touch
   B. sight
   C. taste
   D. hearing

4. The only enemies of the shark are _____.
   A. killer whales
   B. other hungry sharks
   C. moray eels
   D. whale sharks

5. It is believed that basking sharks _____ in winter.
   A. hibernate
   B. form an extra fat layer
   C. swim to warmer water
   D. give birth

Name

6. The whale shark is approximately _____ feet long.
   A. 10
   B. 25
   C. 35
   D. 50

7. The _____ can shock its victim with a 200-volt shock.
   A. stingray
   B. bat ray
   C. electric ray
   D. manta ray

8. The squid's defense against the ray is_____.
   A. darting back and forth
   B. camouflage screen
   C. burying into the sand
   D. squirting an inky smoke

9. The shark uses the tiny pores on its snout to _____.
   A. sense electricity generated by other creatures
   B. breathe
   C. take in food
   D. hear

10. The basking shark eats_____.
   A. other sharks
   B. large amounts of very small plants and animals
   C. large fish
   D. tuna

Name

IMPROVING ON PERFECTION

Although the shark and the ray are considered perfect predators, it is possible to make an even better design. Draw your own shark or ray and describe your design on the lines below.

Name

UNDERSEA TOPOGRAPHY

Draw an underwater scene using some or all of the sea land forms listed below. Use a dictionary for help in defining unfamiliar terms.

basin	canyon	volcano
mountain	ocean floor	island
shoal	ridge	coral reef

Name

TORPEDO FLATS

List the following species under the correct heading below.

electric	hammerhead	horn
mako	bat	blue
white	basking	stingray
angel	manta	swell

SHARK	RAY

Name

RELATIVELY SPEAKING

In Sharks and Rays: Perfect Predators, you learned about some differences between sharks and rays. Place the phrases below under the correct heading. Some phrases may apply to both headings.

SHARKS	RAYS

produces few young
whiplash tails
moves very fast through water
flat body shape
injects nerve toxins into victims
unprovoked attacks against humans
darts back and forth through water

body makes electricity
rows of sharp teeth
at least five gill slits
skeletons made of cartilage
propelled by wing-like fins
torpedo-like body shape
spines on tail for defense

Name

TIME AND TIDE

The habitat of sharks and rays is the ocean. One feature of the ocean environment is tide. Tides rise and fall every day. Use the weather page of the newspaper to record the high and low tides every day for one week. Then answer the questions below.

DATE	HIGH TIDE	LOW TIDE	HIGH TIDE	LOW TIDE

What do you notice about the times of the tides?

What do you notice about the heights of the highs and lows?

Name

CHECKING VOCABULARY

The phrases listed below are anagrams of words from Sharks and Rays: Perfect Predators. Unscramble each anagram and write the word in the blank.

1. HALOS __ O __ __ __

2. GRACE TAIL __ O __ __ __ __ __ __ __

3. SEEN SAM __ __ O __ __ __ __

4. OK MA O __ __ __

5. VAIN LATHE __ O __ __ __ __ __ __ __

6. PORT DEAR __ O __ __ __ __ __ __

7. THEIR BEAN O __ __ __ __ __ __ __ __

8. SNORES __ O __ __ __ __

9. CAR PILE __ __ __ __ __ __ O

10. OLD ICE O __ __ __ __ __

A kind of shark __ __ __ __ __ __ __ __ __ __

Name

TEST

For each item, circle the letter for the BEST answer.

1. Approximately how many species of sharks and rays are there?
   A. 200
   B. 300
   C. 400
   D. 500

2. What substance is the shark skeleton made of?
   A. bone
   B. cartilage
   C. muscle
   D. enameled scales

3. What helps sharks detect vibrations in the water?
   A. antennae
   B. hair-like feelers
   C. specially adapted ears
   D. pressure-sensitive cells

4. How many sets of gill slits do sharks and rays have?
   A. at most 1
   B. at most 5
   C. at least 1
   D. at least 5

5. Which best describes the movement of a mako shark?
   A. graceful
   B. darting
   C. slow
   D. gliding

Name

6. Which is the largest fish in the world?
   A. whale shark
   B. basking shark
   C. great white shark
   D. mako shark

7. What method of defense does the stingray use?
   A. swimming ability
   B. camouflage
   C. nerve toxins in its tail
   D. inky smoke screen

8. What does the electric ray use its tail for?
   A. deliver nerve toxins to its prey
   B. pushing it through the water
   C. balance
   D. carry electrical charge

9. Which shark can pursue the fast-moving tuna?
   A. great white
   B. blue
   C. hammerhead
   D. mako

10. What ultimately may be responsible for sharks and rays becoming endangered?
   A. reproducing in small numbers
   B. reproducing en masse
   C. humans
   D. killer whales

ADDITIONAL AIMS MEDIA PROGRAM

If you and your students enjoyed Sharks and Rays: Perfect Predators you also may be interested in viewing:

Beneath the North Atlantic 8569AT
Ecosystems: Nature in Balance 8559AT
How Animals Survive 8206AT
How We Classify Animals 8205AT
Vulnerable, Threatened, Endangered, Extinct (The Green Earth Club Series) 8618AT
Sharks and How They Live 8813AT

ADDITIONAL READING SUGGESTIONS

You and your students also may enjoy reading:

Darlington, P. J. Zoogeography: The Geographical Distribution of Animals. John Wiley & Sons, 1957.
Doubilet, Anne. Under the Sea from A to Z. Crown Publishers, 1991.
MacEachern, Diane. Save Our Planet. Dell, 1990.
MacQuitty, M. Eyewitness Books: Shark. Knopf, 1992.
Malnig, Anita. Where the Waves Break: Life at the Edge of the Sea. Lerner, 1987.
Palazzo, Tony. The Biggest and the Littlest Animals. Lion, 1973.

ANSWER KEY for page 19

Name

VOCABULARY

Write the definition of these words or phrases as you learned them in Sharks and Rays: Perfect Predators. Use a dictionary if you need help. Then write the word in a sentence on the line below its definition.

cartilage: tough, elastic tissue, which makes up the skeleton in sharks and rays

docile: easy to manage or lead

en masse: as a whole; all together

hibernate: to spend the winter in a deep sleep

leviathan: something very large

mako: a fast-moving shark that is a sport fish and dangerous to man

replica: a very close copy of the original

sensor: a device that can detect a signal

shoal: a shallow, unrocky depth of water

toxin: a poisonous substance that is a product of a living thing

ANSWER KEY for page 20

_____
Name

CHECKING COMPREHENSION

Write the answer in each blank that makes the statement correct.

1. Sharks have been swimming in the oceans of the world for _B_ million years.
   A. 50
   B. 350
   C. 100
   D. 250

2. Sharks and rays are _D_.
   A. mammals
   B. amphibians
   C. reptiles
   D. fish

3. Two senses, smell and _A_, help the shark detect an injured fish miles away.
   A. touch
   B. sight
   C. taste
   D. hearing

4. The only enemies of the shark are _B_.
   A. killer whales
   B. other hungry sharks
   C. moray eels
   D. whale sharks

5. It is believed that basking sharks _A_ in winter.
   A. hibernate
   B. form an extra fat layer
   C. swim to warmer water
   D. give birth

ANSWER KEY for page 21

Checking Comprehension, Page 2

_____
Name

6. The whale shark is approximately ___D___ feet long.
   A. 10
   B. 25
   C. 35
   D. 50

7. The ___C___ can shock its victim with a 200-volt shock.
   A. stingray
   B. bat ray
   C. electric ray
   D. manta ray

8. The squid's defense against the ray is___D___.
   A. darting back and forth
   B. camouflage screen
   C. burying into the sand
   D. squirting an inky smoke

9. The shark uses the tiny pores on its snout to ___A___.
   A. sense electricity generated by other creatures
   B. breathe
   C. take in food
   D. hear

10. The basking shark eats___B___.
   A. other sharks
   B. large amounts of very small plants and animals
   C. large fish
   D. tuna

ANSWER KEY for page 22

Name

IMPROVING ON PERFECTION

Although the shark and the ray are considered perfect predators, it is possible to make an even better design. Draw your own shark or ray and describe your design in the lines below.

PICTURES AND DESCRIPTIONS WILL VARY.

ANSWER KEY for page 23

Name

UNDERSEA TOPOGRAPHY

Draw an underwater scene using some or all of the sea land forms listed below. Use a dictionary for help in defining unfamiliar terms.

basin	canyon	volcano
mountain	ocean floor	island
shoal	ridge	coral reef

STUDENT UNDERWATER PICTURES WILL VARY.

ANSWER KEY for page 24

Name

TORPEDO FLATS

List the following species under the correct heading below.

electric	hammerhead	horn
mako	bat	blue
white	basking	stingray
angel	manta	swell

SHARK	RAY
HAMMERHEAD	ELECTRIC
HORN	BAT
MAKO	STINGRAY
BLUE	MANTA
WHALE	
BASKING	
ANGEL	
SWELL	

ANSWER KEY for page 25

Name

RELATIVELY SPEAKING

In Sharks and Rays: Perfect Predators, you learned about some differences between sharks and rays. Place the phrases below under the correct heading. Some phrases may apply to both headings.

SHARKS	RAYS
produces few young	produces few young
rows of sharp teeth	body makes electricity
moves very fast through water	whiplash tails
at least five gill slits	at least five gill slits
skeletons made of cartilage	flat body shape
unprovoked attacks aginst man	skeletons made of cartilage
torpedo-like body shape	injects toxins into its victims
darts back and forth through water	propelled by wing-like fins
	spines on tail for defense

produces few young
whiplash tails
moves very fast through water
flat body shape
injects nerve toxins into victims
unprovoked attacks against man
darts back and forth through water

body makes electricity
rows of sharp teeth
at least five gill slits
skeletons made of cartilage
propelled by wing-like fins
torpedo-like body shape
spines on tail for defense

ANSWER KEY for page 26

Name

TIME AND TIDE

The habitat of sharks and rays is the ocean. One feature of the ocean environment is tide. Tides rise and fall every day. Use the weather page of the newspaper to record the high and low tides every day for one week. Then answer the questions below.

DATE	HIGH TIDE	LOW TIDE	HIGH TIDE	LOW TIDE

ANSWERS WILL VARY ACCORDING TO WHERE YOU LIVE.

What do you notice about the times of the tides? Answers will vary.

What do you notice about the heights of the highs and lows? Answers will vary.

ANSWER KEY for page 27

Name

CHECKING VOCABULARY

The phrases listed below are anagrams of words from Sharks and Rays: Perfect Predators. Unscramble each anagram and write the word in the blank.

1. HALOS — S (H) O A L
2. GRACE TAIL — C (A) R T I L A G E
3. SEEN SAM — E N (M) A S S E
4. OK MA — (M) A K O
5. VAIN LATHE — L (E) V I A T H A N
6. PORT DEAR — P (R) E D A T O R
7. THEIR BEAN — (H) I B E R N A T E
8. SNORES — S (E) N S O R A T E
9. CAR PILE — H I B E R N (A) T E
10. OLD ICE — (D) O C I L E

A kind of shark — H A M M E R H E A D

ANSWER KEY for page 28

Name

TEST

For each item, circle the letter for the BEST answer.

1. Approximately how many species of sharks and rays are there?
   - A. 200
   - B. 300
   - (C.) 400
   - D. 500

2. What substance is the shark skeleton made of?
   - A. bone
   - (B.) cartilage
   - C. muscle
   - D. enameled scales

3. What helps sharks detect vibrations in the water?
   - A. antennae
   - B. hair-like feelers
   - C. specially adapted ears
   - (D.) pressure-sensitive cells

4. How many sets of gill slits do sharks and rays have?
   - A. at most 1
   - B. at most 5
   - C. at least 1
   - (D.) at least 5

5. Which best describes the movement of a mako shark?
   - A. graceful
   - (B.) darting
   - C. slow
   - D. gliding

ANSWER KEY for page 29

Test, Page 2

Name

6. Which is the largest fish in the world?
   - (A.) whale shark
   - B. basking shark
   - C. great white shark
   - D. mako shark

7. What method of defense does the stingray use?
   - A. swimming ability
   - B. camouflage
   - (C.) nerve toxins in its tail
   - D. inky smoke screen

8. What does the electric ray use its tail for?
   - A. deliver nerve toxins to its prey
   - (B.) pushing it through the water
   - C. balance
   - D. carry electrical charge

9. Which shark can pursue the fast-moving tuna?
   - A. great white
   - B. blue
   - C. hammerhead
   - (D.) mako

10. What ultimately may be responsible for sharks and rays becoming endangered?
   - (A.) reproducing in small numbers
   - B. reproducing en masse
   - C. humans
   - D. killer whales