

COUSTEAU Kids

January/February 2006 Teacher's Guide

In this issue of *Cousteau Kids* students will:

- read about Indonesia, Earth's largest archipelago
- view diagrams and photographs of sponges for details
- read an in-depth article about grunt fish
- compare the average ages of sea creatures in "It's a CK Fact!"
- get information about a new field of science called Biomimicry
- receive a *Cousteau Kids* 2006 Eco-Calendar
- read a mysterious Cousteau Adventures comic
- solve challenging word puzzles (and check the answers)
- get news about a water-cleaning plant, a giant catfish, and a daddy longlegs discovery

Key Words in Context

Many of the advanced words in Cousteau Kids feature context clues—surrounding words, phrases, and sentences in a passage that provide clues to help determine the meaning. This Teacher's Guide provides key words and phrases used in the January/February 2006 issue for each article. Before reading each article, write the key words on sentence strips and post them on the chalkboard. Ask students to predict the meanings and then use context clues to determine them while reading. Point out that sometimes the clues to the meaning of new words can be found within commas. Instruct students to underline a key word once, and the clues to its meaning twice.

[Pages 4-5]



INDONESIA

A Very Spongy Place!

Standards and Critical-Thinking Skills

- knowledge: describing a geographic area; examining physical features of sponges; identifying parts of a sponge
- comprehension: interpreting informational text
- analysis: reading diagrams for meaning
- application: acquiring supporting details and examples
- evaluation: comparing sizes; explaining why Indonesia is a "very spongy place"; summarizing previously read information

Key Words in Context:

archipelago: a group of islands

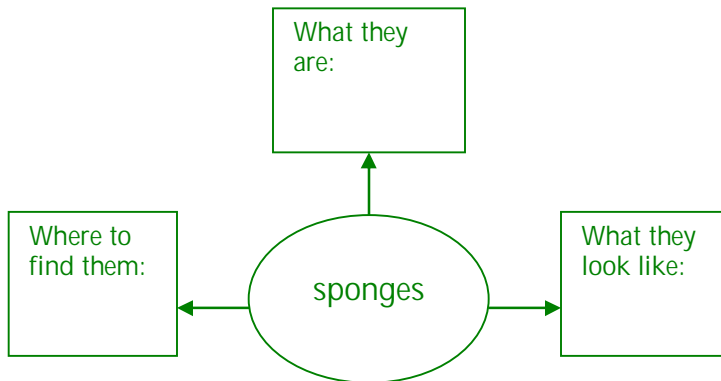
scattered: separated or spread out in a random way (no pattern)

pores: a small hole or opening

oddities: strange occurrences

Getting started:

Before reading, complete this organizer with students to assess prior knowledge:



Discussion Questions:

- What is the main idea of the Expedition passage?
- Why are sponges important to the reefs of Indonesia?
- How are sponges and corals the same?
- What allows water to flow in and out of a sponge's body?
- What are some of the everyday things that sponges can resemble?
- How small are some pores of a sponge?
- How big can some sponges grow?
- What surprises you about sponges?

Extension Activities:

1. Have groups compile an extended list of "Indonesia Quick Facts" on a poster board.
2. After reading the Indonesia article with your class, provide students with world maps and have them compile an A-Z list of islands. Start with: Aleutian Islands, The Islands of the Bahamas, and Canary Islands.
3. Ask students to measure the span of Indonesia on maps using string. Then compare this to the span of the United States (using string).
4. Pass out commercial and natural sponges to groups for students to compare and contrast.

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Standards and Critical-Thinking Skills:

- knowledge: defining types of fins
- comprehension: comparing and contrasting grunt scales with those of other fishes
- analysis: observing zoom illustration of grunt scales
- synthesis: examining a diagram; distinguishing types of fins

Key Words in Context:

dorsal: relating to or situated near or on the back especially of an animal

pectoral: of or relating to the chest of an animal

pelvic: the part of the body that connects the upper and lower parts [e.g., in humans, the pelvic bones (including the hip and backbone) connect the torso to the legs and support the spine]

bi-colored: two-colored

Getting Started:

Before beginning, ask students to discuss why these fish are called grunts. Follow up by asking the class to list reasons why grunts might make the noises.

Set a Purpose for Reading:

While students read the article, ask them to list details for each of the characteristics of grunt fish that make them seem “groovy.” (Suggested answers in the chart below.)

WHY GRUNTS ARE SO GROOVY:	
They've got grooves on their scales.	The scales are ctenoid, with grooves at the end of each one.
They have groovy stripes.	The stripes run across the body from the mouth to just before the caudal tail fin
Grunts have groovy mouths.	a deep groove on each side of its mouth which makes it lips curl up at the end
I think grunts are groovy because:	

Discussion Questions:

What feature(s) of a grunt's body seems to be the most useful? Explain your reasoning.

What feature(s) of a grunt's body do you find the most unusual? Explain your reasoning.

What word would you use to describe a grunt fish?

Follow-up Activities:

1. Grunts have pharyngeal teeth at the back of their throats that do all the “crushing” and “grinding” of shellfish, their favorite foods. Ask students to name their “food crushing” and “food grinding” teeth. [Answers: premolars (food crushers) and molars (food grinders)]
2. Have students write humorous poems entitled “I'm A Grunt” to share aloud.

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Standards and Critical-Thinking Skills:

- knowledge: acquiring vocabulary
- comprehension: reading for meaning; distinguishing between methods of determining age
- analysis: making inferences regarding why a specific group of animals are hard to age
- evaluation: focusing on a specific idea or concept

Getting Started:

Discuss how humans mark their ages by counting yearly birthdays. Ask students to think about the ways scientists can tell how old animals are.

Set a purpose for reading:

Before reading, “mix-up” the CK Facts by writing them randomly on the chalkboard or chart paper. Have students read the article to match the facts correctly.

After reading:

Ask students to learn the average age of some land animals. Here’s a few:

Gray wolves can live up to 13 years in the wild.

The gastrotich (a microscopic aquatic invertebrate) lives only about 3 days.

Elephants can live about 70 years.

A mouse lives about 4 years.

Queen ants can live about 28 years.

Rust-colored wooly bear caterpillars live about 14 years.

Discussion Questions:

Do you feel it is easy or difficult for scientists to learn the lifespan of animals in the wild?

What may make it difficult for scientists to determine the ages of some animals in the wild? [Possible answers: *Animals move around, which makes evaluating their age difficult. Sea creatures are prey for other animals and humans.*]

Follow-up Activity:

1. Have students compare their ages to those of the animals mentioned in “It’s a CK Fact!”
2. The average life expectancy of Americans is about 75 years. Have students find the difference between an American’s life expectancy and a few of the animals mentions in “It’s a CK Fact!”



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Getting Started:

Have students find examples of Velcro™, the two-part fastener made of “hooks” and “loops” in the classroom. (Check coats, shoes, and bags.) Explain that the idea of Velcro of was thought up by a

Swiss amateur mountaineer after he took his dog for a hike. George de Mestral and his dog returned home from this hike covered with burrs—the plant seed sacs that cling to clothes and fur! After de Mestral observed a burr under a microscope, he designed a similar fastener for his pants. He called his invention “Velcro,” a combination of the words velour (a clothing material) and crochet (a type of stitching sewn using hooks and yarn made into interlocking loops). Ask students: *What inspired George de Mestral’s invention of Velcro?* Reinforce to students that Velcro was inspired by something observed in Nature!

Set a Purpose for Reading:

Have groups complete the chart in the **Student Activity Page 1 “Inspired by Nature”** as they read. The answers have been provided below (written in green).

INVENTION	INSPIRATION
waterproof paints, roof tiles, and fabrics	lotus flower
“sharklet”	shark skin
next generation of airplanes, space vehicles, bridges, and construction vehicles	giant conch (pink queen conch)
super glue	blue mussels
“BioSteel®”	spider silk
organ antifreeze and airplane de-icers	Alaskan stink bugs
plastic fake tape	gecko toes
slimy crystals	snail and slug slime

Follow-up Activities:

1. Take a nature walk with your class to collect and observe objects such as leaves, pinecones, and blades of grass. Encourage students to “collect ideas” and find examples of things that might spark inventions.

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2006 ECO-CALENDAR

Using the Calendar:

Have students write classmates' birthdays and important school dates on the calendar. Assign groups to photo research the animals featured in the calendar and then write short presentations about each. Contact the Parks and Recreation department of your city or town to learn if there are any local "eco-holidays" planned for 2006 that students can add to their calendars. Get students to think of ways the class can celebrate each of the environmental holidays featured in the calendar.

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CAREER IN FOCUS

Standards and Critical-Thinking Skills:

- knowledge: acquire information about a marine career
- comprehension: identify the skills needed to be a marine biologist
- analysis: explore the things that inspired Emily Carrington to become a marine biologist; inferring character traits
- synthesis: recognition of a cause and effect relationship
- evaluation: assess whether or not marine biology is a

Before reading:

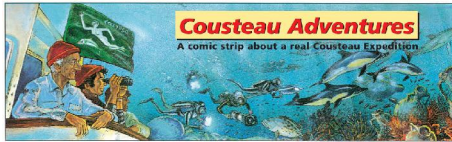
To set anticipation, ask students: *Do you love animals? Do you seek adventure? Would you like to travel?* If a student answered yes to all three of these questions, then he or she might want to become a marine biologist when they grow up! Ask groups to write down two to three questions they would ask a marine biologist. Then have students read aloud the interview in small groups.

Follow-up Activities:

1. Have students e-mail *Cousteau Kids* at cousteaukids@weeklyreader.com to suggest marine careers they'd like to learn more about. They can also send specific questions they have for scientists. Be sure students include a first name and school name. You students can also write to:

Cousteau Kids c/o Weekly Reader
200 First Stamford Place
PO Box 120023
Stamford, CT 06912-0023

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Standards and Critical-Thinking Skills:

- knowledge: defining vocabulary; locating a geographic area
- comprehension: reading for meaning; predicting outcomes
- analysis: using visual abilities to analyze informative illustrations
- evaluation: making inferences

About the comic:

In this Cousteau Adventure, students will learn about the Cousteau expedition to Dia, one of the Greek Islands. In this adventure, Captain Cousteau has divided the crew into three teams: a diving team, a land team, and a helicopter team. Have students suggest reasons why Captain Cousteau may have divided the crew into teams. Ask: *How does working in groups effect the outcome of some situations?* Before reading the comic, read aloud the introduction to students. Challenge students to locate the setting of the comic on class maps.

Key Words:

The meaning of the words below can be determined using context and picture clues.

environmentalists: people that support, defend, or work on behalf of the environment (e.g. saving trees, recycling, protecting rain forests, or cleaning up beaches and shorelines)

ecologists: scientists that study the relationship between organisms and their environments

ruins: the remains of something destroyed

mounted: posted or hung up

landmass: a large area of land or earth

Reading the Comic:

Read the comic in small groups or assign roles and perform the comic aloud. Assign roles by page, including: a narrator, Captain Cousteau; a helicopter pilot; three divers, two crew members (page 18); and chief diver wearing a red cap (Albert Falco).

Discussion Questions:

What happened to the pine and cedar trees that once covered the island of Dia?

What does the helicopter pilot mean by the statement, "They were sailors, not ecologists."

Why do you think the diver was yelling at the helicopter, even though it was impossible for Captain Cousteau to hear him? (Follow-up question: Have you ever felt that excited about something? If so, describe the event or feeling.)

The Cousteau team found pottery during their dive. What does that imply?

What do you think the sunken structure will turn out to be?

What do you think the Cousteau team will have to do to uncover it?

Follow-up Activities:

1. Share this "Did You Know...?" with your students: *More than 1,400 islands surround the coastline of Greece but only 154 islands are inhabited.*
2. Create a list of student predictions of what the mysterious land mass is hiding. (Stay tuned to the

[Pages 19-20]

PUZZLES

Critical-Thinking Skills:

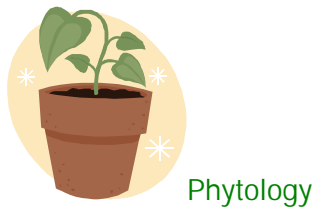
- strengthening spatial intelligence
- developing visual acuity
- following directions
- noticing word and letter patterns

Getting Started:

Begin by creating a word tree with “ology” at the base. Challenge students to add as many “ology” words to the branches on the tree as possible.

Follow-up Activities:

1. Have students research the parts of a ship and then draw diagrams that highlight each of words in the puzzle. (See “Alcyone: Daughter of the Wind,” *January/February 2005* and “A New Day for Calypso,” *March/April 2005*)
2. Have students create an “icon” (visual) dictionary for the “ology” words listed in the puzzle. Here’s a few to get you started:



The Maritimes

January/February 2006

Standards and Critical-Thinking Skills

- knowledge: reading for meaning; identifying the attributes of informational text and visual aids
- comprehension: comparing arachnids; restating previously read information
- application: using vocabulary strategies
- synthesis: composing questions
- analysis: calculating decreased catfish population numbers
- evaluation: assessing similarities and differences of prickly pear cactus “goo” and water treatment plants

Set a Purpose for Reading:

Before reading the articles, assign groups to list facts about cacti, catfish, and daddy longlegs (as many as they can for each in five minutes). After reading, have groups check and alter their lists.

Article One: WATER TREATMENT “PLANT”

Getting Started:

Before reading this article, create a dirt and water mixture in a mason jar. (Use just enough dirt so that there is a bit of suspension.) Use a colander to show students how some solids can easily be removed from water. Next, create a salt and water solution in a second mason jar. (Use just enough salt so that it dissolves in the water. Ask: *How can things we can't see be removed from water (especially harmful toxic chemicals)?*)

Discussion Questions:

How can the prickly pear cactus “goo” change a sample of dirty water?

What does a prickly pear cactus have in common with a water treatment plant, or facility?

If you were a research at the University of South Florida, what would you want to do with the “goo”?

What are some of the positive and negative things that could happen to a water supply if the cactus “goo” turns out to work? (*Possible answers: The “goo” could be used to clean up contaminated water. People wouldn't be as careful not to pollute if they think the “goo” could be used to clean water. Scientists might use too many of the prickly pear cactuses for their “goo.”*)

Follow-up Activities:

1. Salt can be extracted from salt water through a process called desalination. You can perform the process as a demonstration in school by leaving the salt water out in the sun. The water will eventually evaporate, leaving behind the dry salt crystals. Have students predict how long desalination will take for one cup water and dissolved salt. Then test students' hypotheses.

Article Two: MEKONG KING KONG

Getting Started:

Ask students: *What do you picture when you here the phrase “King Kong?”* Ask students if they can think of something that weighs more than 600 lbs. (About the same weight as an American male black bear, or a motorcycle, or two empty refrigerators!)

Discussion Questions:

Besides its weight, what surprises you about the Mekong giant catfish?
What are some of the causes of the decrease in Mekong giant catfish numbers?
What are people doing to help save the giant catfish? Do you think these practices will work? Why or why not?

Article Three: "LONG-AGO LONGLEGS"

Getting Started:

Ask students to draw a picture of a daddy longlegs. After reading the article, have students make a second daddy longlegs illustration and then compare both pictures.

Discussion Questions:

Is a daddy longlegs a spider?
In what way is a daddy longlegs related to a spider?
What two things make a daddy longlegs different from a spider?
Why is this daddy longlegs discovery newsworthy?
In your opinion, what is the most interesting fact you read in this article?

Follow-up Activity:

1. In this article, students read that daddy longlegs is a nickname name of both male and female harvestmen. Sometimes, male and female animals of the same species have different names. Challenge groups to complete the chart below to learn the male and female animal names. You may wish to provide all the names and challenge students to write them correctly into the chart. (Answers are provided in green.)

Animal	Male	Female
whale	bull	cow
chicken	rooster	hen
horse	stallion	mare
tiger	tiger	tigress
opossum	jack	jill

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SEA QUERIES

Getting Started:

In this issue, the *Sea Queries* focus on trumpetfish; catfish; smelts; and the largest population of fish in the sea (herring). Begin by telling students they will read about these topics. Have them write their own questions before reading the pages.

Key Words in Context:

While reading *Sea Queries*, encourage students to use the picture and context clues to determine the meaning of the following words. Instruct students to underline these bold words once and the clues twice.

vertically: upright or lengthwise
chomp: to chew or bite on something
barbels: sensory parts around a fish's mouth
individual: special or personal
spawn: to produce offspring (young) in large numbers
array: a collection or group
abundant: containing a good or full amount; found in large numbers

Did You Know...? [Page 22]

Compare the average temperature of the ocean (39°F) to the high and low temperatures in your area today.

Did You Know...? [Page 23]

Moles can tunnel through 300 feet of dirt in one day. That's five feet less than the Statue of Liberty, including the base and pedestal (305 ft).

Follow-up Activity:

E-mail *Sea Queries* to cousteaukids@weeklyreader.com. Or, mail to: Cousteau Kids! Sea Queries
c/o Weekly Reader, 200 First Stamford Place, PO Box 120023, Stamford, CT 06912



Cousteau Kids Teaching Guide
January/February 2006
Editor: Melissa E. Norkin

Name _____ Date _____

INSPIRED BY NATURE

A new field of science is pioneering a new way of looking at and value Nature. This new science is called biomimicry, a combination of the words *biology* (the study of life) and *mimicry* (to copy). Scientists working in this field are called "bioneers." They use what they learn about plants, animals, and how things in Nature work to improve things and invent new products.

Directions: Work with a partner to complete this chart while you read the "Inspired by Nature" article on pages 9 and 10.

INVENTION	INSPIRATION
waterproof paints, roof tiles, and fabrics	
"sharklet"	
	giant conch (pink queen conch)
super glue	
"BioSteel®"	
organ antifreeze and airplane de-icers	
	gecko toes
slimy crystals	