

CURRICULUM GUIDE: **TIGERS**



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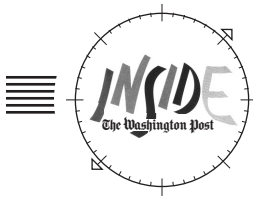
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Sumatran Tiger

KidsPost Article: "Earning His Stripes"

Lesson: Investigating rare and endangered animals

Level: Intermediate

Subjects: Science

Related Activity: Geography, English, Language Arts

Procedure

Read and Discuss

Read the KidsPost article. Give students the following questions and discuss the answers.

1. How many live cubs did Soyono give birth to on Sept. 18, 2001?
2. Why has the new addition to the National Zoo not been on public display?
3. Zookeepers take care of animals and observe them. Give two examples of Wayne Millner taking care of the tiger cub. Give two examples of Millner's observations of the club.
4. What are tigers fed in captivity? What do tiger cubs eat?
5. Why is it important that the cub has regular examinations by a veterinarian?

Study a Map

1. Find Asia on a globe or a map. All wild tigers live in Asia. Show students where the three tiger subspecies that are extinct lived. Find Java. The Java tiger, last seen in 1972, lived here. Next find Bali. It is believed that the last *Panthera tigris balica*, Bali tiger, was killed in 1937. An area that is now in the news was home to the Caspian tiger. *Panthera tigris virgata* once ranged in Turkey, Iran, Afghanistan, Mongolia and the Central Asiatic area of Russia.
2. Find Sumatra on a map. Discuss the natural habitat of the Sumatran tiger. Read "Tigers in Trouble." Ask students to speculate why the tiger population in Sumatra is diminishing. For more information go to "Sumatran Tiger" at http://www.5tigers.org/Basics/Subsp_distribution/sumatran.htm.

Tiger Resources

On the Web and in Print

ON THE WEB

<http://www.fonz.org/animals/tigertiger/tiger-cubpr1.htm>

Friends of the National Zoo

See pictures and learn about Sumatran tigers at the zoo.

www.5tigers.org

5 Tigers: The Tiger Information Center

Dedicated to providing an international forum focusing on the preservation of wild tigers across Asia and in zoos worldwide, the site provides teacher's resources, kids section and information on the five remaining subspecies of tigers.

http://www.thebigzoo.com/Animals/Sumatran_Tiger.asp

The Big Zoo.com

Quick facts about the Sumatran tiger

<http://www.honolulu zoo.org/tiger.htm>

Sumatran Tiger

The Honolulu Zoo provides pictures and information about the Sumatran tiger's physical characteristics, habitat, behavior and diet. Students can follow the treatment of Pandji, one of the tigers, from August 2000 to the most recent pictures and commentary.

<http://www.nfwf.org/programs/stf.htm>

Save the Tiger Fund

A project of the National Fish and Wildlife Foundation in partnership with ExxonMobil Corporation, Save the Tiger Fund supports conservation of Asia's remaining wild tigers.

<http://www.wwf.us.org/>

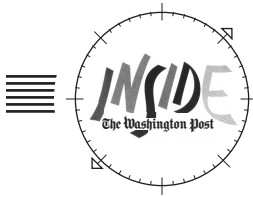
World Wildlife Fund

The "Endangered Species" section provides information on tigers. Take time to view the Tiger Slide Show.

<http://www.wwfus.org/fun/>

World Wildlife Fund Fun Stuff

Games, puzzles, a test of your biodiversity IQ, and a free action kit to order. Includes an online 5-question Tigers in Trouble quiz.



Sumatran Tiger

Continued

Develop Vocabulary

1. Review wild vocabulary.
2. Give students Word Study. Examine the concept of extinction.

Research

Pick one of these approaches:

Tigers Only

Students' research will focus on tigers. The assignment questions can apply to the five subspecies of tigers that survive. Divide the class into five groups.

Rare and Endangered Animals

Students' research will focus on more than tigers. They will learn about rare and endangered animals. A list of animals found at the National Zoo is provided. Have students select different animals. You may wish to read Scott Berg's article for your background or to share with students. "Three Success Stories," published in the April 2001 Washington Post relates the stories of golden lion tamarins, Guam rail and black-footed ferrets.

http://nl4.newsbank.com/nl-search/we/Archives?p_action=doc&p_docid=0EBBDF90C9363E84&p_docnum=3&s_subterm=Subscription%20until%3A%2012%2F31%2F2010%2023%3A59%3A59&s_subexpires=12%2F31%2F2010%2023%3A59%3A59

If your students are learning how

to prepare a Web page, this assignment may be presented as a Web page.

Enrichment

1. What does this taxonomy, species identification, tell you? Begin with kingdom and end with subspecies. How does each group of characteristics further define a particular species?

Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

Order: Carnivora

Family: Felidae

Genus: *Panthera*

Species: *tigris*

Subspecies: *sumatrae*

2. What's the story now?

Three of the eight subspecies of tiger — the Bali, Caspian and Javan tigers are extinct. According to the Environmental News Network in 1999, the South China tiger faced the same fate as only 20 or 30 were known to remain in the wild, down from an estimated 4,000 in the 1950s. Has progress been made since 1999 in saving the South China tiger from extinction?

"Earning His Stripes" can be found at

<http://www.washingtonpost.com/wp-dyn/education/kidspost/archive> ?????
KidsPost "Tigers in Trouble" can be found at

<http://www.washingtonpost.com/wp-dyn/education/kidspost/archive> ?????

IN PRINT

Lewin, Ted, **Tiger Trek**. Macmillan. 1990.

Follow a mother tiger as she stalks her prey in India's national parks. The unfolding story is told in brief text and watercolor paintings. This story time book combines narrative with science, geography and art.

Matthiessen, Peter. **Tigers in the Snow**. North Point Press. 2000.

Teachers and older students will not forget Maurice Hornocker's photographs and Matthiessen's account of Russia's Siberian tigers. They accompany Russian and American researchers who seek to save the tigers from extinction in their last refuge in the Russian Far East

Spagnoli, Cathy. **Nine-In-One Grr! Grr!** Children's Book Press. 1989.

Blia Xiong tells the story of Tiger, the first and only tiger on earth. This story of cleverness is a delightful folktale from the Hmong people of Laos.

Ward, Geoffrey and Michael Nichols. **The Year of the Tiger**. National Geographic Society. 1999.

Nichols' photographs of tigers in the wild and Ward's text remind readers of the beauty of the tiger and the danger of human encroachment on its delicately balanced ecosystem.

Rare Sightings at the Zoo

You will become an expert about one animal. This is a very special assignment. You will have knowledge that must be shared so others can appreciate an animal that lives in a precarious balance between life and extinction.

The following questions are provided as guidelines for the information you need to find.

Answer these questions

1. What are the physical characteristics of your animal? Include size, color and special features.
2. Where did your animal originally live? What is the habitat of your animal? Tell about the community.
3. Is your animal a carnivore, a herbivore or an omnivore? What are its favorite foods?
4. What is the social behavior of your animal? Include living arrangements, hunting and mating.
5. Why is your animal in trouble? Is it threatened by poaching, habitat loss or population fragmentation? Go to Threats to Tigers (<http://www.5tigers.org/Basics/Trouble/threats2.htm>) for information about habitat loss and population fragmentation.

6. What are your animal's chances of survival? What are the latest figures of number of your animal in the wild and in zoos? Is your animal being bred in captivity?

Where in the world does your animal live?

1. Include a map that shows where your animal originated.
2. Include an illustration that shows where your animal now lives in the wild, if any are in the wild.
3. Does your animal live in any zoos besides the National Zoo?

What do others say about your animal?

1. Include two quotations from experts.
2. Find a news story or feature about your animal. Clip or download them.
3. Include a bibliography of the books, articles and Web sites you used to learn about your animal.

Wild Vocabulary

Carnivore

Predatory, flesh-eating mammal

Community

The plants and animals within a certain habitat

Cub

The young of certain carnivorous animals

Den

Shelter or retreat of a wild animal; a lair

Habitat

A place where living things naturally grow and live

Herbivore

An animal that feeds chiefly on plants

Omnivore

Eating both animal and vegetable foods

Poach

To trespass on another's property in order to take fish or game; to take illegally

Predator

An animal that lives by preying on other organisms

Prey

(Noun) an animal that is hunted and eaten by a predator; (verb) to hunt, catch, plunder

Pugmark

The mark, footprint, track or trail of an animal; a pug

Species

A group of living things of the same kind that can reproduce with one another

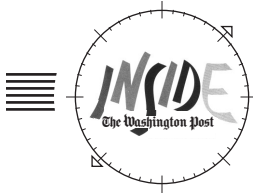
Streak

A group of tigers

Survival

The process of ensuring that a species, or individual, will live to maturity and reproduce

Definitions are from the American Heritage Dictionary



Rare Sightings at the Zoo

In April 2001, The Washington Post published this list of 130 endangered or threatened species that can be seen at the National Zoo. Select one of the animals to research. The following questions are provided as guidelines for the information you need to find.

African crowned crane	Fox squirrel	Palawan peacock pheasant
African elephant	Galapagos tortoise	Palm cockatoo
African pancake tortoise	Geoffroy's cat	Panther chameleon
African pygmy falcon	Gharial	Pete David's deer
African spurred tortoise	Giant panda	Persian onager
Aldabra tortoise	Gila monster	Phantasmal poison arrow frog
Amakihi	Goeldi's monkey	Przewalski's wild horse
Amazilia hummingbird	Golden lion tamarin	Pudu
American alligator	Golden-headed lion tamarin	Pygmy hippopotamus
American bison	Goliath heron	Red kangaroo
American flamingo	Greater one-horned Asian rhinoceros	Red Panda
Andean condor	Greater rhea	Red tuffed lemur
Arabian oryx	Green iguana	Red-billed hornbill
Asian elephant	Green tree python	Red-collared lorikeet
Bactrian camel	Green-and-Black poison arrow frog	Red-crested cardinal
Bald eagle	Green-winged teal	Red-crowned crane
Bali mynah	Grevy's zebra	Red-tailed hawk
Black gibbon	Guam rail	Rhinoceros iguana
Black-and-white colobus monkey	Harris' hawk	Ruffed lemur
Black-footed ferret	Hippopotamus	Sable antelope
Black-necked swan	'T' iwi	Sapphire spangled emerald hummingbird
Blue poison arrow frog	Indian flapshelled turtle	Sarus crane
Boa constrictor	Jaguarundi	Savanna monitor
Bobcat	Johnson's crocodile	Scarlet ibis
Brazilian rainbow boa	King cobra	Scarlet macaw
Burmese brow-antlered deer	Kodiak bear	Scimitar-horned oryx
Burmese python	Komodo monitor	Secretary bird
Cayman Island iguana	Kori bustard	Senegal bushbaby
Cheetah	Large tree shrew	Serval
Chinchilla	Laysan teal	Sianang
Clouded leopard	Leopard cat	Sloth bear
Coati	Lesser tree shrew	Spectacled bear
Common tree shrew	Lion-tailed macaque	Stanley crane
Common white-eyed duck	Madagascar giant day gecko	Sumatran tiger
Costa's hummingbird	Malay great argus	Tegu lizard
Cuban crocodile	Malayan tapir	Tibet white-eared pheasant
Dama gazelle	Maned wolf	Toco toucan
Darwin's rhea	Mariana crow	Von der Decken's hornbill
Demoiselle crane	Matschie's tree kangaroo	Western grey kangaroo
Dorcas gazelle	Micronesian kingfisher	Western lowland gorilla
Dying poison arrow frog	Ne-ne goose	White-belly hummingbird
Eurasian wigeon	Nicobar pigeon	White tiger
False water cobra	Orangutan	White-naped crane
Florida sandhill crane	Oriental small-clawed otter	Yellow-spotted Amazon River turtle

NAME _____

What's in Name?

What is a good name for a Sumatran tiger?

Should the name reflect abilities? Tigers can swim across rivers and lakes that are three to five miles wide. What is the name of a great swimmer?

Should the name reflect physical appearance? No two tigers have the same pattern of stripes. This is similar to your fingerprint. Take a close look at the pattern on the cub's coat. What do you see?

Should the name be yours? In 1999 triplets born at the National Zoo were named Mike after Mike Robinson, the National Zoo Director at that time, and Chrissie and Eric, after the students who won the grand prizes in a Save the Tiger Fund art contest in 1996.

Should the name mean something? A female South China tiger at the Shanghai Zoo is named Lele, which means "Double Happiness." Tigers related to the new cub have interesting names:

Kerinci was the 16-year-old mother of Mike, Chrissie and Eric. Kerinci is named after the highest mountain, an active volcano, in Sumatra.



NATIONAL ZOO

Tony, Morris, Sylvester? What should zoo officials name this cub?

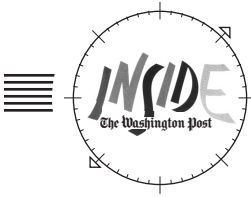
Kerinci Seblat National Park is home to rare and endangered species, including the Sumatran tiger.

Soyono is the eight-year-old mother of the cub. She is named after a man. Ir. Suyono is Dr. John Seidensticker's Indonesian counterpart. Suyono worked with Seidensticker in surveying the last Javan tigers and in developing conservation plans for the Sumatran tiger.

Eleven-year-old Rokan is the father of all four cubs. He is named after a major river in central Sumatra.

You have the opportunity to decide on a name for the cub. This is a very special Sumatran tiger.

John Seidensticker, National Zoo senior curator, said, "We welcome the birth of this cub. It's an important and planned addition to this tiger's Species Survival Plan. SSP's are cooperative efforts among North American zoos to coordinate the propagation of highly endangered animals. Every birth of a Sumatran tiger is important because the species' future is very uncertain in the wild."



Word Study: A look at extinction

Today we are going to look at beginnings and an ending.

A prefix is placed at the beginning of a word. It comes before the root word. It is added to the root word to modify, or change, its meaning.

What do "exhale," "exhaust," "exit" and "exodus" have in common?

They all begin with the Latin prefix "ex." This prefix means out or away. Do you understand how the prefix modified the root word? For example, "exit" is created by adding the prefix "ex" before the root "ire" that means to go; so we have the idea of going out.

Why do you need a fire extinguisher?

You need to put out a fire.

What do you drink to quench your thirst?

You drink water to put out or send away that thirsty feeling.

"Extinguish," "quench" and "extinction" are all related. "Quench" is a very old word. For thousands of years "quench" has meant to put out. "Extinct" comes from the Latin word *extinctus* which is the past participle of *exstinguere*, which mean to extinguish. Take a closer look at *exstinguere*:

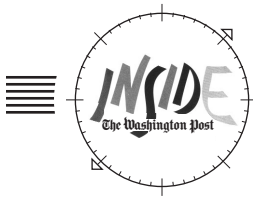
ex, which means out of +
stinguere, which means to
quench = extinguish

When a species is extinct, it no longer lives or exists. There are no living successors, no sons or daughters. Extinction is the final exit.

Match the word with its definition

- ___ 1. Exhale A. A departure of a large number of people
- ___ 2. Exhaust B. To go out of a place
- ___ 3. Exit C. To breathe out
- ___ 4. Exodus D. To drain or wear out

ANSWERS: 1. C, 2. D, 3. B, 4. A



Academic Content Standards

This lesson addresses academic content standards of Maryland, Virginia and the District of Columbia. Among those that apply are:

The main lesson addresses these academic content standards of:

Maryland

Science

Life Science (3.0): Students will use scientific skills and processes to explain the dynamic nature of living things, their interactions and the results from the interactions that occur over time. Ecology: By the end of grade 3, students know and are able to:

3.3.12 explain that habitats provide basic needs, for the organisms living in them. Evolution: By the end of grade 5, students know and are able to: 3.5.7 cite evidence to support the idea that when the environment changes some plants and animals survive and reproduce and others die or move to other locations.

Environmental Science (6.0): Students use scientific skills and processes to investigate the interrelationships of the natural world and to analyze environmental issues and their solutions.

Interdependence of Organisms: By the end of grade 8, students know and are able to: 6.8.2 identify and explain the interdependency of organisms within the environment in a given ecosystem.

Language Arts

Writing (3.0): Students produce informational, practical, persuasive and narrative writing that demonstrates an awareness of audience, purpose and form using stages of the writing process as needed. 3.5.2 Research: By the end of grade 5, students know and are able to understand and use the organizational features of printed texts to locate relevant information to accomplish writing tasks.

A complete list of State Content Standards of Maryland can be found at <http://www.mdk12.org/mspp/standards/>.

Virginia

Science

Living Systems, Grade 3, 3.5: The student will investigate and understand relationships among organisms in aquatic and terrestrial food chains. Key concepts include

- producer, consumer, decomposer;
- herbivore, carnivore, omnivore;
- predator-prey.

Life Science, Grade 7, LS.12: The student will investigate and understand the relationships between ecosystem dynamics and human activity. Key concepts include

- change in habitat size, quality and structure;
- change in species competition;
- population disturbances and factors that threaten and enhance species survival.

LS.14: The student will investigate and understand that organisms change over time. Key concepts include

- the relationships of mutation, adaptation, natural selection and extinction;
- how environmental influences, as well as genetic variation, can lead to diversity of organisms

English

Writing, Research 6.9: The student will select the best sources for a given purpose, including atlases, dictionaries, globes, interviews, telephone directories, encyclopedias, electronic databaes and the Reader's Guide.

A complete list of Standards of Learning of Virginia can be found on the Web at <http://www.pen.k12.va.us/>.

Washington, D.C.

Science

Life Science, Content Standard 2: Observe, investigate, describe and classify living things; explain life cycles, diversity, adaptations, structure and function of cells and systems reproduction, heredity, interdependence, behavior, flow of energy and matter and changes over time. By the end of grade 5, the student will explain how changes in an organism's habitat are sometimes beneficial to it and sometimes harmful. By the end of grade 8, students will identify inter-relationships between organisms within an environment and the influence of physical conditions on survival.

English Language Arts

Language for Research and Inquiry, Content Standard 3: Students use language and symbol systems to define problems and organize information.

A complete list of Standards for Teaching and Learning of the District of Columbia Public Schools can be found at <http://www.k12.dc.us/>.