

- Make “adaptation posters” with arrows pointing to special reptile features that other animals don’t have, along with brief explanations of the feature’s survival value. (You can assign the students certain reptiles to work with or have them choose their own.) Have them choose an adaptation that they think would be beneficial for humans to possess and explain their choice.
- Have students create an informative pamphlet from a reptile’s point of view that outlines what cautions should be observed if they should come in contact with a human.
- Scientists who classify animals on the basis of ancestry say: “Birds are reptiles!” Explain to the class that the process of organizing the animals and plants of the world into categories has no single right answer, but is an attempt to describe the relationship of living things. Explain that scientists once classified reptiles and amphibians as closely related but discovered that they are very different. Using references, have students work in groups to create a family tree for reptiles, going back to the era before the dinosaurs.

Internet Resources

- www.sdnhm.org/exhibits/reptiles/reptiles.html
This site by the San Diego Natural History Museum is an excellent resource for students and teachers alike, answering basic questions about reptiles and providing the latest information on classification in a readable format.
- educate.si.edu/resources/lessons/siyc/herps/start.html
The “Reveled and Revered” Web site from the Smithsonian Institution explains similarities and differences between reptiles and amphibians and has lessons designed to engage students and meet science standards for grades 3–8.
- www2.cdepot.net/~walsner/worldofscience/Biology/Pictorial%20Help/Vertebrate%20Zoology/reptile_evolution.htm
This page has a clear image depicting reptile classification and may be useful when discussing the evolution of reptiles.
- magicnet.net/~mgodwin
Called “The Gator Hole,” this Web site focuses on the American Alligator, answering questions about its habitat, behavior and history, and discussing some alligator myths. It has links to great photographs.
- www.ifas.ufl.edu/www/agator/htm/aligator.htm
An alligator site with information about the alligator population, what to do if you encounter an alligator and practical safety tips.
- www.umass.edu/umext/snake/myth.html
This site discusses snake mythology and reality.

Suggested Print Resources

- Behler, John. *Reptiles (National Audubon Society First Field Guide)*. Scholastic Trade, New York, NY; 1999.
- Braus, Judy, ed. *NatureScope: Let's Hear It for Herps*. National Wildlife Federation, Washington, DC; 1987.
- Carrol, David M. *The Year of the Turtle*. Camden House Publishing, Charlotte, VT; 1991
- Howell, Catherine H. *Reptiles & Amphibians (National Geographic Nature Library)*. National Geographic Society, Washington, DC; 1993.
- Montgomery, Sy. *The Snake Scientist*. Houghton Mifflin, Boston, MA; 1999.
- Wexco, John, ed. *ZooBooks: Snakes* (1992), *Alligators and Crocodiles* (1995), *Rattlesnakes* (1994), *Turtles* (1993). Wildlife Education Ltd., San Diego, CA.

TEACHER'S GUIDE CONSULTANT

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TITLES

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| • AMPHIBIANS | • ENDANGERED & EXTINCT ANIMALS |
| • ANIMAL ADAPTATIONS | • EVOLUTION |
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Reptiles

Grades 5–8

Students in grade 5-8 classrooms possess a wide range of background knowledge. Student response to this video program is sure to be varied, so the teachers for these grades need all the help they can get! This guide has been designed to help science teachers in grades 5-8 by providing a brief synopsis of the program, pre-viewing and follow-up questions, activities, vocabulary and additional resources.

Before Viewing: Extensive research tells how important it is for the teacher to discover what the students know — or think they know — about a topic, before actually starting a new unit. Therefore, after prompting discussion with the pre-viewing questions, lead your class to create a “Everything We Think We Know About...” list. You may also wish to preview key vocabulary words, and have students raise additional questions they hope will be answered.

After Viewing: Have your students share video excerpts that fascinated or surprised them, then challenge your students to prove or disprove the accuracy of the facts they put on their “Everything We Think We Know About...” list. Discuss what else they learned and use the follow-up questions and activities to inspire further discussion. Encourage students to research the topic further with the Internet and reading resources provided.

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Program Summary

Reptiles have roamed the Earth for over 200 million years, dating back to a time before the extinction of the dinosaurs. Since then, these animals have captured our imagination, as countless myths and legends from around the world have commented on their perceived strength and power.

Reptiles are identified as having five basic characteristics. They are all vertebrates and have scales for protection. They are also cold-blooded, lay leathery eggs and have lungs to breathe air. The groups of reptiles living today are turtles, lizards and snakes, alligators and crocodiles, and a rare species of reptile called the tuatara.

One of the most notable members of Class Reptilia is the snake. All snakes eat other animals; some swallow them live, some use constriction (squeezing the victim to death) while others kill their prey with a venomous bite. The toxins released in a snake's venom can either paralyze the victim or cause it to bleed to death. In order to combat a poisonous snake's bite, herpetologists are able to "milk" some snakes for their venom, collecting enough to develop vaccines to counteract the poison.

Despite the villainous light in which they are often portrayed, reptiles are beneficial to the Earth's environment. They play an important role in the world's food web and should be respected, not feared.

Most reptiles are not harmful to humans, and they help to maintain a balance in the world's animal population by eliminating the weaker members of other species.

Vocabulary

The following words are included for teacher reference or for use with students. They are listed in the order in which they appear in the video.

adaptation — A trait, inherited by members of a species over a long period of time, that increases the ability of an organism to survive and reproduce.

scales — A covering of plate-like structures on reptiles that provides protection from the environment and predators while absorbing sunlight that warms the reptile.

cold-blooded — A term describing animals that cannot control their own body temperature, but assume the temperature of their environment.

Class Reptilia — The classified group of animals that possess the characteristics of reptiles.

carapace — The protective upper shell of a turtle, made up of large, bony plates and specialized scales.

plastron — The underside of a turtle shell, made up of nine bony plates.

shedding — The process by which reptiles grow a spare skin under the one they have, eventually replacing the old skin with the new.

egg tooth — A temporary baby tooth that reptiles have at the tip of their snouts, used to break through the leathery eggshell.

fangs — Long, sharp teeth, such as those on a snake, used to deliver toxins deep into their prey. *(Continued)*

constriction — The method by which some snakes wrap their bodies around their prey, squeezing tighter and tighter until they crush or suffocate their victim.

venom — The poisonous secretion of an animal, used as a defense or to kill prey.

neurotoxin — An active ingredient in the venom of snakes that attacks the prey's nervous system, causing its muscles to become paralyzed and its breathing to cease.

hemotoxin — An active ingredient in the venom of snakes that attacks the blood and circulatory system of prey, causing it to bleed to death internally.

herpetologist — A scientist who specializes in reptiles and amphibians.

snake milking — The process by which samples of venom are extracted from a snake in order to make vaccines for a snakebite.

antivenin — A serum that is created to combat the effects of venom; also known as antivenom.

natural selection — The natural process that results in the survival and reproduction of individuals that are best adapted to their environment.

Pre-viewing Discussion

Before students generate their list of "Everything We Think We Know About..." for this topic, stimulate and focus their thinking by raising these questions so that their list will better reflect the key ideas in this show:

1. What is a reptile? What are the defining characteristics of a reptile?
2. What does it mean to be a cold-blooded animal?
3. What are some common reptiles?

After the class has completed their "Everything We Think We Know About..." list, ask them what other questions they have that they hope will be answered during this program. Have students listen closely to learn if everything on their class list is accurate and to hear if any of their own questions are answered.

Focus Questions

1. About how long ago did reptiles appear on the Earth?
2. What are the different groups of animals that make up the Class Reptilia?
3. What are scales and why do reptiles depend on them?
4. How are the scales of a turtle and an alligator different from other reptiles?
5. Why do reptiles shed their skin?
6. How can reptiles such as the Gila monster survive long periods of hibernation?
7. What two characteristics do humans and reptiles have in common?
8. How are the eggs of a reptile different from those of a bird?
9. What are two methods that snakes use to kill their prey?
10. What are the effects of neurotoxins and hemotoxins on the body?
11. Why do herpetologists "milk" poisonous snakes? *(Continued)*

12. What is the purpose of the flicking forked tongues that some reptiles have?
13. What unique adaptation does the American chameleon (also called anole) possess?

Follow-up Discussion

Research indicates that students will retain their previous misconceptions about a topic, in preference to new information, until they actively recognize and correct their own errors. Therefore, it is important to have your students re-examine the facts/beliefs they put on their "Everything We Think We Know About..." list. It might also be helpful to review the list by marking each entry with a "+" or "-" to show which facts were correct and which were incorrect.

Discussions that ensue from thought-provoking questions provide a good way to assess the overall depth of student understanding. The following are some suggested discussion questions.

1. Early American colonists depicted a rattlesnake on flags representing the 13 colonies. Crocodile mummies have been found in ancient Egyptian tombs. In ancient Greece, snakes were believed to have healing powers, and doctors used them to treat many different illnesses. Discuss the "reputation" of reptiles, past and present, and the reasons behind the formation of this reputation.
2. Citing specific examples, have students discuss the ways in which the mouths of reptiles have adapted to their diets.
3. What animals eat reptiles? Do humans eat reptiles? What do reptiles eat? Have your students draw a food web that includes reptiles and humans.
4. Discuss with students the reasons why fishermen might become concerned when the population of alligators in a given area begins to decrease.

Follow-up Activities

- Have students create a mock "Wanted Poster" that shows a photo or drawing of a poisonous snake with a description, relevant facts and statistics.
- Ask students to research the reptiles that can be found in a chosen region, organizing them into categories based on size, color, life cycle, habitat and feeding behavior. Have them create a bar graph showing the number of species represented from each group in the area. From the data, have them report on the potential impact reptiles and humans may have on each other in this area.
- In the program, the idea of animals playing a role that benefits other animals is presented via the example about alligators digging water holes that later serve as homes for other animals. Through research, have students locate other examples of "helpful reptiles" and present their findings to the class. *(Continued)*