

Educator's Guide to the Assembly Program:

Reptiles Alive!

Animals you might meet in this program.

(8-9 animals in the 50-minute show; 5-6 animals in the 30-minute show)

For detailed information about each animal, visit our website: www.reptilesalive.com and click on "Animals". You will find a picture album of our animals. Move your arrow over the pictures for the animal's species name and click on the picture for more information.

1. Giant Madagascar Hognose Snake or Bullsnake
2. Bullfrog or Cane Toad
3. Bearded Dragon or Blue Tongue Skink
4. Leopard Tortoise or African Spurred Tortoise
5. Spiny Softshell Turtle or Spotted Turtle
6. Nile Monitor Lizard or Water Monitor
7. American Alligator
8. Ball Python or Milk Snake or King Snake
9. Burmese Python or Boa Constrictor

A brief overview of reptiles and amphibians:

Shared characteristics of reptiles and amphibians:

1. Vertebrate animals that have internal skeletons made of bone
2. Ectothermic
3. Most do not protect their eggs or young (except crocodilians and a few others.)

Differences between reptiles and amphibians:

1. The skin of amphibians is glandular, highly permeable to air and water, and is usually covered in slimy mucus. The skin of reptiles is covered in dry keratin scales and is not very permeable to air or water.
2. Amphibian eggs do not have a shell and are usually laid in water. Reptiles either lay shelled-eggs on land or give birth to live young.
3. Amphibian young are born physiologically different from their adult form and must go through metamorphosis to develop into adults. Reptiles do not go through metamorphosis.

The 4 orders of the class Reptilia:

1. Chelonia – turtles, tortoises
2. Crocodylia – alligators, caimans, crocodiles, gavials
3. Rhynchocephalia – tuatara
4. Squamata – amphisbaenians, lizards, snakes

The 3 orders of the class Amphibia:

1. Anura – frogs and toads
2. Caudata – newts and salamanders
3. Gymnophiona - caecilians

Vocabulary words you might hear during the Reptiles Alive! Show:

- **Adaptation:** characteristics and behaviors that help an animal or plant survive
- **Albino:** an animal that lacks melanin, or dark colors, on its body
- **Amphibian:** ectothermic, vertebrate animals (frogs, salamanders & caecilians) that typically have moist, slimy skin, usually lay jelly-like eggs in water, and go through metamorphosis to become adults
- **Amphisbaenians:** a group of elongate, snake-like reptiles.
- **Antivenin:** medicine derived from snake venom used to treat venomous snakebites.
- **Caecilians:** a group of legless, snake-like amphibians found mostly in the tropics.
- **Carnivore:** an animal that eats other animals
- **Competition:** a demand by two or more individuals for the same resource (food, water, shelter.)
- **Conservation:** protecting natural resources
- **Deforestation:** to clear a forest of all trees and vegetation
- **Decomposer:** animals that eat decomposing or rotting plants, animals, and animal wastes.
- **Ectothermic:** (cold blooded) an animal that has a body temperature dependent on the temperature of the environment (reptiles and amphibians are ectothermic)
- **Endothermic:** (warm blooded) an animal that has the ability to maintain its temperature above the temperature of the surrounding environment (mammals and birds are endothermic)
- **Extinct:** a species that once existed that has died out completely.
- **Fang:** a specialized tooth with a closed canal or groove that channels venom into a bite.
- **Habitat:** a combination of climate, plants, geology and other factors combined to create an animal species home.
- **Herbivore:** a plant-eating animal. Iguanas and tortoises are herbivores.
- **Herp:** a reptile or amphibian – from Latin “to creep or to crawl”
- **Herpetology:** the scientific study of reptiles and amphibians
- **Hibernation:** a state of inactivity or torpor, usually involving physiological changes, that

many animals enter to survive winter.

- **Keratin:** hard, tough material that makes up reptile scales, mammal hair, and bird feathers.
- **Metamorphosis:** a process of physiological change that some animals (including amphibians) go through to become an adult
- **Invertebrate:** an animal that does not have a backbone or spine
- **Natural Resources:** material supplied by nature
- **Niche:** the position or function of an organism in a community of plants and animals
- **Nocturnal:** animals that are active at night and sleep in the day
- **Photosynthesis:** the ability of plants and certain other organisms to create complex organic materials (including sugar) by using sunlight, water, carbon dioxide, and inorganic salts
- **Poisonous:** an organism that contains a substance that can cause irritation, illness, or death if another organism handles or eats it. Most amphibians are poisonous.
- **Reptile:** ectothermic, vertebrate animals (snakes, lizards, crocodilians, turtles, tuataras) that have dry, scaly skin and lay eggs with a shell or give birth to live young.
- **Species:** groups of plants or animals that reproduce young like themselves
- **Territory:** an area within a larger environment that an individual protects from invasion from others of the same species. Iguanas will fight to protect their territory.
- **Tropics (tropical):** region of our planet lying between the Tropic of Cancer and the Tropic of Capricorn, 23-27 degrees north or south of the equator.
- **Tuatara:** a reptile resembling, but not related to, a lizard – Tuataras live on islands near New Zealand.
- **Vertebrate:** an animal with a backbone or spine
- **Vomer nasal Organ/Jacobson's Organ:** a sensory organ usually located in the roof of the mouth that helps an animal taste or smell its environment.

Suggested activities for before and after the show:

Anatomy and physiology: Have your class compare a human, a salamander, and a snake. Draw or find a picture of each, and list similarities and then the differences under each picture.

Ask your class: What makes them similar? What makes them different?

A few suggestions to get you started:

We all share backbones, hearts, and brains. What else do all three share? Our skin has hair growing on it. Reptile skin has scales. Both hair and scales are made of keratin. Salamanders, however, have skin covered in slime made of mucus.

Art, language, reading, public speaking, and science: Turn your students into herpetologists.

Each student should pick their favorite herp and then research their animal. Information can be gathered from books or by interviewing professional herpetologists at zoos, nature centers, museums, or universities. Size, physical description, food preferences, habits, habitats, and any other interesting facts should be compiled. Ask students to find out if there are any threats facing this animal (habitat destruction, pet trade, etc...) and what people can do to help protect the animal.

After completing their research, the students can create posters with pictures and information or have them write papers on their animal.

Now it's time to hold your "Herpetology Conference" in which each herpetologist (student) must present their poster or paper to their colleagues (classmates). Each student should be ready to answer a few questions from their colleagues, just like at a real conference!

Math: The longest snakes in the world are believed by most herpetologists to be the Anaconda of South America and the Reticulated Python of Southeast Asia. Both of these snakes have been known to grow nearly 30 feet long!

Use a tape measure to let your class see exactly how long 30 feet really is. You might have to go outside or into the hall if your classroom isn't big enough!

Now find out:

1. How many students does it take to form a 30 feet long line?
2. How many inches are in 30 feet?
3. Herpetologists, like all scientists use the metric system so, how many meters are in 30 feet? How many centimeters? How many millimeters?

Drama: Assemble your students into groups of 4 or 5.

Assign each group a situation relating to herps such as: encountering a snake; seeing a person trying to hurt a snake; finding out a friend has caught a wild herp to keep as a pet; discovering an injured turtle; seeing a turtle in the middle of the road; etc...

Have each group decide what they should do in each situation and have them act out their situation for the class.

When each group is done, have the whole class discuss what happened and what they might have done differently.

Visual Arts: Make pictures, paintings, or clay sculptures of favorite herps.

Dance/Movement/Anthropology: The Hopi are a nation of Native Americans living in the Southwest United States who believed snakes were very important. Learn about the Hopi's snake dance and create your classroom's very own snake dance.

Music: In India, snake charmers play a flute in front of a cobra to “charm” the snake and make it dance. If possible, find a video recording of an Indian snake charmer “charming” a cobra and play it for your class.

Discuss with your class the fact that snakes do not have external (outside) ears the way we do and although snakes can hear low frequency sounds (truck engine), snakes probably do not hear the snake charmer’s music. The cobra is afraid of the snake charmer, and is following the movement of the flute to make sure it doesn’t get too close. By swaying the flute, the snake charmer can make the snake appear to “dance.”

How can students learn more about reptiles & amphibians?

There are many ways students can pursue their interest in animals and learn more about reptiles and amphibians.

1. Visit your local library for great books about herps.
2. Take a trip to a nature center, museum, zoo, or aquarium. Be sure to read the information about the animals on display. There are usually staff members available to answer your questions.
3. Check out nature and animal programs that are offered at nature centers, libraries and other venues across the area. Visit the website of your local nature center or library for a list of upcoming programs.
4. You can email animal questions to Reptiles Alive! LLC. Our email is reptilesalive@gmail.com

How can students help reptiles and other wild animals?

The best way students can help herps and other wildlife is to educate themselves and teach others what they have learned.

Let your students know that they should always leave wild animals alone! Never attempt to capture or bother a strange or wild animal. It can be dangerous for you and for the animal if you don’t stay away from wild animals.

Reptiles and other wild animals do not make good pets. Reptiles require very special care and diets. Reptiles will never become your “friend” and can even be dangerous when they are kept at home. Do not buy reptiles from pet stores and never try to catch wild reptiles.

Practice good conservation habits: recycle, cut down on gasoline, water and electricity usage, and don’t litter. By helping keep the environment healthy, you’re keeping herps healthy.

How can students become Zoologists or Herpetologists?

It can be tough to land a career in herpetology. Math and all the sciences are a requirement for anyone interested in working with animals. Reading, writing, and communication skills are also required for a career in herpetology. Remind students to learn as much as they can in these basic areas to help them succeed when they get to college.

Older students seriously interested in herpetology may want to join a herpetological society such as The Virginia Herpetological Society <http://fwie.fw.vt.edu/VHS>
Other states and areas have herp societies as well.

High school students should consider volunteering at a local nature center or zoo to gain real life experience working with animals.

Suggested Reptile Related Field Trips:

National Zoological Park's Reptile Discovery Center exhibits a wide variety of live reptiles and amphibians from all over the world. You can schedule a class tour of the RDC by calling 202 673-4734.

Smithsonian Museum of Natural History displays a variety of preserved reptiles and amphibians from all over the world, including extinct species as well as living species.

Baltimore's National Aquarium has a variety of live reptiles and amphibians, especially in its rainforest exhibit.

Nature Centers are located throughout the area and usually display live reptiles and amphibians native to this area. Staff naturalists are usually available to do programs and guided nature walks, but you need to call the nature center in advance to schedule a visit.

Further Resources:

If you have specific questions about this program, please call Reptiles Alive! at 703 560-0257. You can also visit our website www.reptilesalive.com

Reptiles Alive! is the most popular traveling wildlife education organization based in the northern Virginia and Washington DC area. Our award winning live animal shows feature amazing animals and dynamic wildlife educators. Audiences of all ages agree that Reptiles Alive! is a fantastic experience.

Since 1996, Reptiles Alive! has performed thousands of animal shows at schools, birthdays, fairs, libraries, and special events. Each year, our reptiles are featured at venues including The Smithsonian, The Discovery Channel, Celebrate Fairfax, Virginia State Parks, and hundreds of school, park, and library systems.

Book your show now! Call Reptiles Alive! at 703-560-0257.

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