



# REPTILES AND AMPHIBIANS AT WOODLAND PARK ZOO

## PRE-VISIT INFORMATION FOR TEACHERS

We have put together an overview of key concepts related to reptiles and amphibians, a list of basic vocabulary words, and a checklist of reptile and amphibian species at Woodland Park Zoo. For more zoo information and activities focusing on reptiles and amphibians, please call 206-548-2500 or download the Reptiles & Amphibians teacher packet at [www.zoo.org](http://www.zoo.org).

### OVERVIEW:

There are approximately 5,000 species of amphibians and 8,000 species of reptiles currently identified worldwide (actual numbers vary among scientists), inhabiting a number of different biomes and exhibiting a range of adaptations. Woodland Park Zoo exhibits a wide variety of reptile species and several amphibian species (see attached checklist) in a few different areas of the zoo. A reptiles and amphibians field trip to the zoo could focus on the characteristics of reptiles and amphibians (see “Concepts” below), comparing/contrasting different reptiles and/or amphibians or learning about biomes and observing the physical characteristics of reptiles and amphibians in different biomes.

### CONCEPTS:

Although not closely related taxonomically, these two groups are often considered together in books and other materials. This may be due to the fact that some amphibians and reptiles, such as salamanders and lizards, closely resemble one another. Reptiles and amphibians do have some similarities:

- Most reptiles and amphibians lay eggs (although eggs differ in appearance, strength and texture)
- Both reptiles and amphibians are vertebrates
- Both reptiles and amphibians are ectothermic (often called cold-blooded), meaning they rely on the outside environment to control their body temperature



### AMPHIBIAN CHARACTERISTICS

Amphibians live part of their lives in water and part on land. Like reptiles, they are ectothermic. These vertebrates hatch from eggs laid in the water and go through stages of metamorphosis, from egg to larva to adult. Frogs and toads are amphibians.

There is no single, broad defining characteristic that sets amphibians apart from other animals, but most amphibians share the characteristics below:

- A gilled, aquatic larval stage and an air-breathing, terrestrial adult stage
- Gelatinous eggs with no hard shell or membrane
- Permeable skin, no protective skin covering (such as fur, feathers or scales)



- No claws or nails on their toes

The fact that there are exceptions to every “rule” used to define amphibians is a testament to their diversity and to how they have adapted to survive in many different habitats. Amphibians are considered to be the first vertebrates to have colonized land. This occurred during the late Devonian period, approximately 360 million years ago, and over the subsequent 140 million years amphibians became a very diverse group. During those years, amphibians had little competition on land and were the dominant terrestrial life form.

## REPTILE CHARACTERISTICS

Reptiles are vertebrates with scaly skin to protect their bodies. Their young look like miniature versions of the adults when they hatch. Snakes and lizards are reptiles. Reptiles can only control their body temperature by basking in the sun or finding shady areas to cool down because they are ectotherms or “cold blooded.”

Like amphibians, reptiles do not have one major defining feature that sets them apart from all other classes of animals. There are, however, combinations of characteristics that separate reptiles from amphibians and from other vertebrates, including:

- Offspring are replicas of parents
- Eggs with hard or leathery shells
- Skin with scales (no feathers or hair and few skin glands)
- Claws on toes

Although amphibians were the first vertebrates to colonize land, reptiles, which share a common ancestor with amphibians, adopted several physiological and behavioral adaptations that enabled them to become fully terrestrial, reach larger sizes, and, eventually became the dominate vertebrates on land for a long period of time.



The first early reptiles inhabited the earth roughly 300 million years ago, after which time they diversified greatly, becoming the most prominent terrestrial vertebrates during the Mesozoic Era, 265 to 65 million years ago. One group of ancient reptile-like animals familiar to most people is the dinosaurs. Most dinosaurs went extinct at the end of the Mesozoic era.

Birds are related to dinosaurs, as are crocodilians. The first birds coexisted with dinosaurs but birds have survived into present times. Modern crocodilians have existed from the latter part of the Mesozoic era until the present times and are considered to be the nearest living relatives of birds. Other reptiles that inhabit the earth today are descended from reptile species that survived the extinction at the end of the Mesozoic Era.

## VOCABULARY:

**Adaptation:** Any change in the structure or functioning of an organism that is favored by natural selection and makes the organism better suited to its environment.

**Camouflage:** The natural coloring or patterning of an animal that allows it to blend in with its surroundings.

**Ectothermic (cold-blooded):** Animals that rely on their external environment to control their body temperature.

**Ecosystem:** A natural unit consisting of all plants, animals, and microorganisms (biotic factors) in an area functioning together with all of the nonliving physical (abiotic) factors of the environment.

**Food chain:** The eating relationships among organism within an ecosystem where food energy is transferred from one organism to another as each consumes a lower member and in turn is preyed upon by a higher member.

**Food web:** The complex eating relationships among species within an ecosystem. In a diagram of a food web organisms are connected to the organisms they consume by arrows representing the direction of energy transfer.\*

**Nutrients:** A food or chemicals that an organism needs to live and grow, or a substance used in an organism's metabolism that must be taken in from its environment.

**Oxygen:** An atmospheric gas necessary for the process of aerobic respiration.

**Permeable:** allowing liquids or gasses to pass through.

**Skeleton:** The bony, internal structure that provides support and protection for a vertebrate organism's body and internal organs.

**Predator:** An animal that obtains food by killing and eating other animals.

**Prey:** An animal that is killed and eaten by other animals.

**Vertebrate:** organisms that have a spinal column.

**Warm-blooded (endothermic):** Refers to an organism that can control its internal body temperature, maintaining a relatively constant body temperature regardless of the external environmental conditions.

## PRE- AND POST- ASSESSMENT:

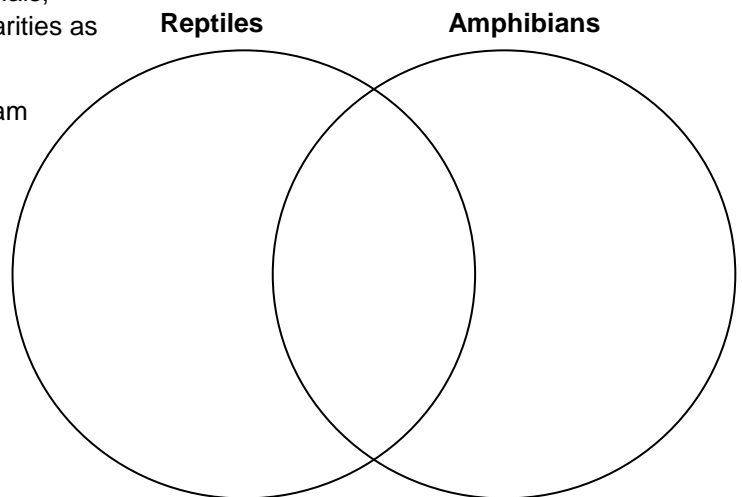
The following activity will provide you with an understanding of your students' current knowledge of the differences between reptiles and amphibians. In order to encourage their creativity and expression, remind your students that this exercise is not a test, but is a way of seeing what they already know and what they haven't yet learned. After your students have participated in their zoo field trip focusing on reptiles and amphibians, repeat the activity and compare student work from before and after.

### Reptiles and Amphibians Venn Diagram

### Venn Diagram

**Materials:** chalkboard and chalk (or poster paper and pens)

- Discuss with your students the idea that groups of animals, such as reptiles and amphibians, can have many similarities as well as many differences.
- On the chalkboard or poster paper, draw a Venn diagram (example provided here).
- As a class, make a list of characteristics common to both reptiles and amphibians in the area where the two circles overlap. Depending on the level of your students, you can provide a list, students can brainstorm or students can research reptiles and amphibians using books and/or the Internet. Include both physical and behavioral characteristics and a list of characteristics





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### CHECKLIST OF REPTILES AND AMPHIBIANS AT WOODLAND PARK ZOO

#### Trail of Adaptations

##### Reptiles

- ☐ Komodo dragon

#### Tropical Asia – Trail of Vines

##### Reptiles

- ☐ Indian rock python
- ☐ Reticulated python

#### Tropical Rain Forest

##### Reptiles

- ☐ Yellow-spotted side-necked turtle
- ☐ Yellow anaconda
- ☐ Bushmaster
- ☐ Emerald tree boa
- ☐ Tiger rat snake

##### Amphibians

- ☐ Dyeing dart frog
- ☐ Green-and-black poison dart frog
- ☐ Bicolored poison dart frog
- ☐ Orange-and-black poison dart frog

**Note:** This list is current as of March 2017. The zoo's collection is subject to change.

**Questions about this information or your zoo visit?**

**Please call 206-548-2500 or visit our website at [www.zoo.org](http://www.zoo.org).**