

# Reptiles & Amphibians for Homeschoolers

Educational Resource Packet



Woodlands Nature Station  
Land Between The Lakes  
Golden Pond, KY 42211



## In Cold Blood: Reptiles vs. Amphibians

The word “herpetology” means the study of reptiles and amphibians. Even though these two are grouped together, reptiles and amphibians do not actually have much in common. The biggest similarity between the two is that they are **cold-blooded**. This does not mean that their blood is cold to the touch! It means that reptiles and amphibians depend on outside heat sources, like the sun, to regulate their body temperatures. Another word for this is **ectothermic**. **Thermoregulation** is how these ectothermic critters maintain a constant internal body temperature. Reptiles and amphibians can only achieve thermoregulation by manipulating their external environment. For example, a snake might bask in the sun to stay warm or bury itself under the dirt to stay cool. This is also why reptiles are difficult to find in the winter time. The cold weather puts these animals into a state of **torpor**, or sleep, because their body temperature is so low. Therefore, most reptiles and amphibians are hiding in warm nooks all winter long. Being ectothermic may seem like a lot of work, but it actually allows reptiles and amphibians to go without food for longer periods of time.

Other than this major internal similarity, reptiles and amphibians are very different. They even develop differently. Amphibians lay soft, squishy **eggs** in the water. The young must also pass through **metamorphosis** to reach adulthood (Learn more on pg. 13). Reptiles, on the other hand, emerge from a hard egg looking like a small adult. Reptiles also have more defensive skin, often having leathery **scales**, cartilaginous **spikes**, and calcium **shells** for additional protection. But the amphibians' **permeable skin** does not provide much protection. Their soft, moist skin can be easily torn by even the slightest human touch. Make sure your hands are wet if you touch an amphibian! However, both reptiles and amphibians use skin color and patterns to blend into their surroundings.

Want to learn more about Herps?  
Check out the cool activities in this packet!

# How many Reptiles and Amphibians can you list?

Directions: List as many reptiles and amphibians as you can. Then ask your parents to help you look up some reptiles and amphibians you have never heard of!  
Use scrap paper if you need to!



Reptiles:

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Discussion:

Did you find any surprising reptiles or amphibians?

Are there more reptiles than amphibians, or more amphibians than reptiles?

Did you notice anything interesting about the different types of reptiles and amphibians?

# Hot 'n' Cold:

## Investigating Cold-Blooded Reptiles & Amphibians

### Objective:

Students will investigate different reptile and amphibian temperature preferences. By attempting to keep an air thermometer in a given temperature range, the students will achieve **thermoregulation**. This exercise should enable students to define and describe how reptiles and amphibians regulate their ectothermic body temperatures in order to achieve thermoregulation.

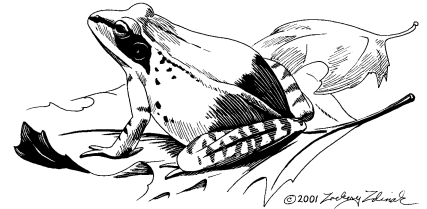
### Materials:

Thermometer for each student/group

Copies of reptile temperature ranges (found on next page)

List of known temperature ranges and habitats for different reptiles and amphibians for discussion (found on next page)

Computer and/or reptile and amphibian resource materials



### Procedure:

Pass out temperature range cards and thermometers.

Have students try to maintain the temperature range on their card for about 10 minutes. Encourage students to be creative in maintaining their temperature range. They may have to do a variety of things to achieve thermoregulation.

### Assessment:

What have they discovered? Was it hard to stay in the range? Discuss the different ways that reptiles might control their body temperatures, for example, moving into sun or shade, burrowing, swimming in water, climbing trees, etc.

### Discussion:

Discuss what reptiles might do in winter? Or in the desert? Why is it important for the reptiles and amphibians to stay in their preferred temperature range? What are the advantages of being cold-blooded? Warm-blooded?

Compare your results with the known temperature ranges and habitats for reptiles and amphibians listed on the next page. Could these critters survive in your area? If yes, how and when? Some of these critters have wide ranges and some have small ranges. Would this affect where they choose to live? Some people keep pets from other parts of the world. Would it be a good idea to release these pets outside?

## Temperature Range Cards:

53-59°F	60-66°F	68-73°F	75-80°F
82-87°F	89-85°F	97-102°F	104-109°F

## Known Temperatures Ranges and Habitats:

Mudpuppy  
41-86°F – Nocturnal/Aquatic

Sea Turtle  
71-89°F - Diurnal/Aquatic

Southern Redback Salamander  
37-71°F – Nocturnal/Terrestrial

Aldabra Giant Tortoise  
73-89°F – Diurnal/Terrestrial

Cricket Frog  
46-95°F – \*Diurnal/Terrestrial

Ornate Box Turtle  
59-95°F – Diurnal/Terrestrial

Timber Rattlesnake  
55-91°F – Nocturnal/Terrestrial

American Alligator  
73-98°F – Nocturnal/Aquatic

Six-lined Racerunner  
86-107°F – Diurnal/Terrestrial

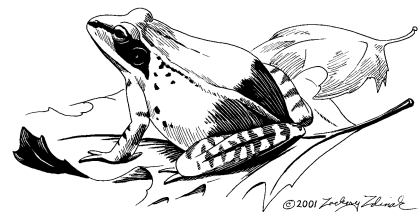
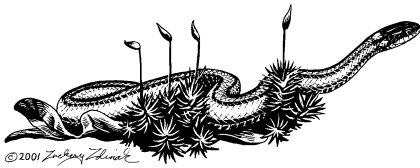
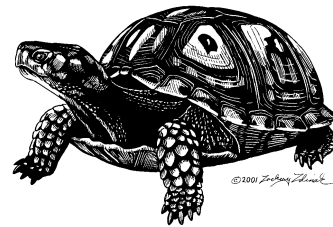
Worm Snake  
57-87°F – Diurnal/Terrestrial

\*Diurnal – active by day

# Reptile Fun Facts

Reptiles have been around for a long time; fossil evidence shows that they have been around for more than 200 million years! People have gone crazy for these cool and crawly critters. The word reptile comes from the Latin derivative 'reperere,' which actually means "to creep." These **ectothermic** critters fascinate people with their unique adaptations. One of the reptiles' coolest adaptations is their skin! Reptiles have very protective skin that acts as **camouflage** and as **armor**. The camouflage protects reptiles by concealing them from predators with the use of color and patterns. Their skin also acts as armor with leathery **scales**, cartilaginous **spikes**, and calcium **shells** for additional protection. Reptiles are born with this cool skin adaptation as soon as they crack out of their hard egg. They are born looking like miniature adults!

Do you know which animals are included in this cool Reptile Group?  
Circle only the animals that are Reptiles!

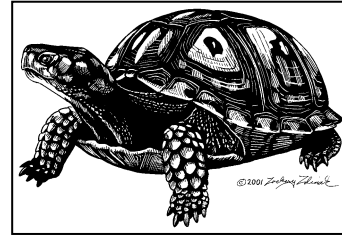


# Reptile Fun Facts Key

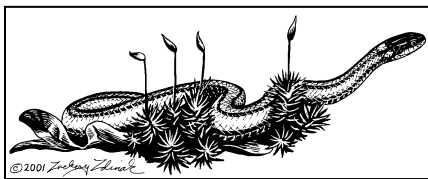
Flower



Turtle



Snake



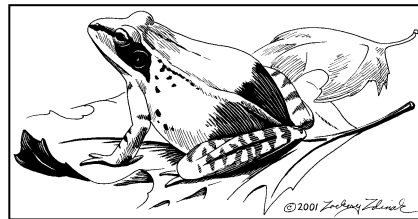
Mouse



Owl



Frog



## Meet Tom-Tom

Directions: Read about Tom-Tom; a snapping turtle.  
Then do the activity on the next page!

My name is Tom-Tom, and I'm a mean, green, fighting machine! That describes me, a snapping turtle, to a T. But don't get me wrong, I never go looking for trouble. But I don't let anyone push me around either. Not that anyone would actually want to push me around - I weigh close to twenty pounds.

I've got to be tough. I spent most of my childhood hiding under pond weeds from herons, gulls, muskrats, minks, raccoons, bigger turtles, bull frogs, and fish. I ate a lot of pond scum in those days.

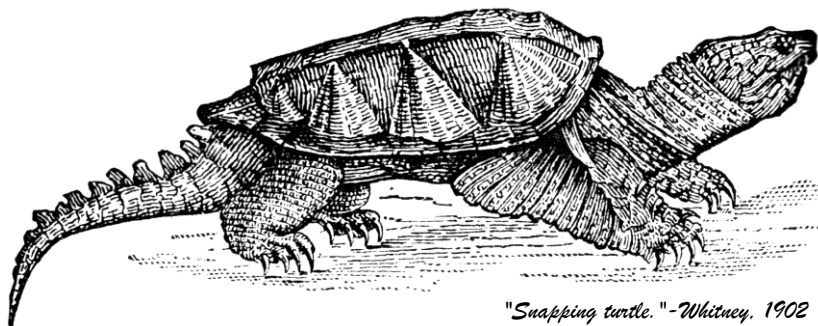
But now, I surprise everyone with my **camouflage** and speed. I just wait under the water looking like a moss-covered rock because of all the algae growing on my **carapace** – that is what my top **shell** is called. I look so much like a rock that no one ever notices me! I don't have to worry about my **plastron** – that is my bottom shell – because I spend most of my time on the pond floor, so no one ever sees it!

In addition to this camouflage, my shells are also really strong. Both my carapace and plastron are covered by protective **scutes** or scales, which are made from the same stuff that your fingernails are made from, **keratin**!

Whenever I get hungry, it's a cinch! I simply sit as still as a rock and use my powerful **nostrils** to smell my dinner as it swims by, because I love fish! Then, quick as a wink, I shoot out my **neck** and grab lunch with my strong **jaws** and my razor-sharp **beak**. That's right; birds are not the only ones with beaks! Turtles have no teeth, but our jagged beaks have notches that help hold and slice our food.

My **claws** help too! Not only do we use our claws to eat, but female snappers also use them when they go onto dry land to lay eggs! I also use my powerful webbed **flippers** for digging in the mud and to impress the ladies!

So if you go swimming in my pond, you will not have to worry about me. I don't go after people in the water. I'm too smart for that. I pull inside my shell as much as I can - I kind of stick out around the edges - and then make my getaway. Besides, I like you. Later!



"Snapping turtle." - Whitney, 1902



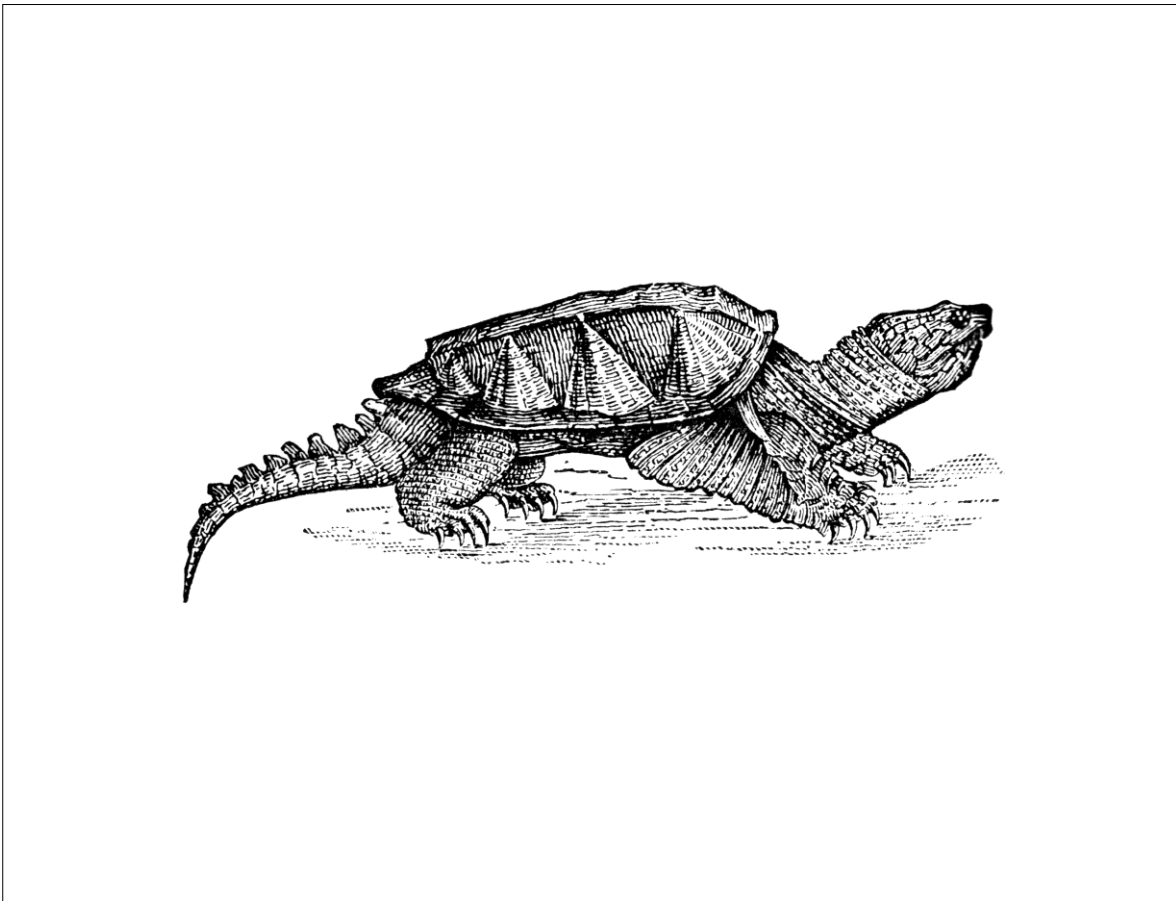
# Turtle Parts:

## Reading Comprehension

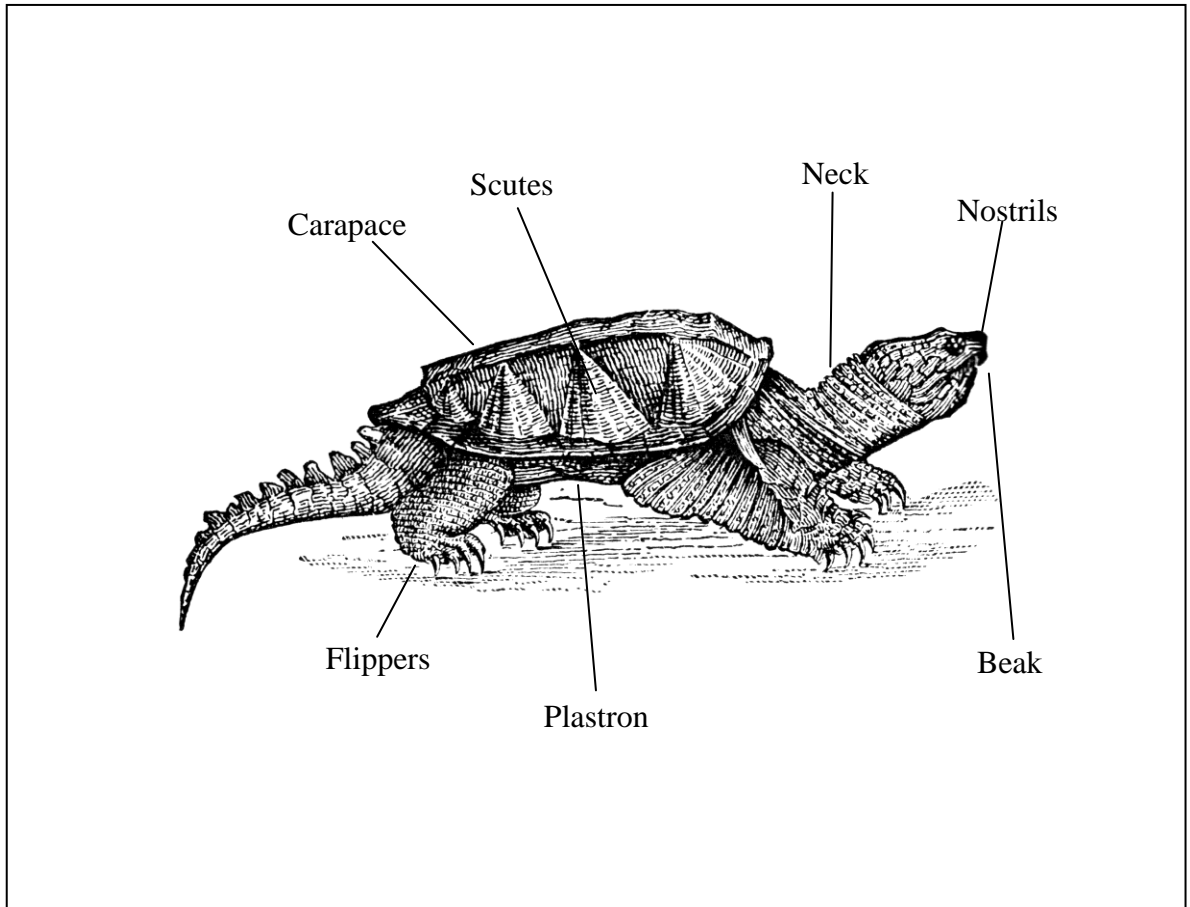
Directions: Did you learn a lot from Tom-Tom? Let's put your new knowledge to the test! Write the name of the turtle body part next to the body part in the picture. Use the word bank if you need help!

### Word Bank:

Beak	Flippers	Plastron (hint: also an outgrowth of bone)
Carapace (hint: an outgrowth of bone)	Neck	Scutes
	Nostril	



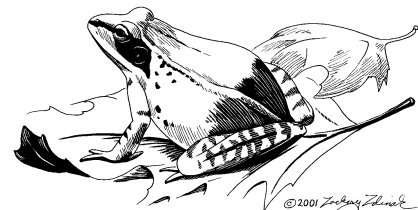
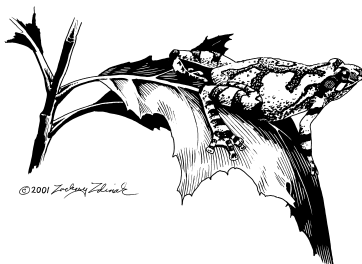
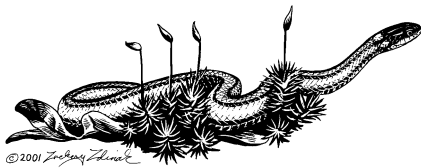
# Turtle Parts Key



# Amphibian Fun Facts

The word Amphibian originates from the Greek word 'amphibios,' which translates to “a being with double life.” This is the perfect name because many amphibians, like frogs, lead two stages of their lives. The first stage is in the water, as a tadpole, and the second stage is on land. This unique adaptation is called **metamorphosis** (Learn more on pg. 13). These **cold-blooded** animals also have several cool adaptations. One important adaptation is the **water permeable skin** which helps these critters survive and breathe in water. How can skin help amphibians to breathe? They actually use their skin as a **respiratory surface**, allowing oxygen to enter the body! This means that amphibians must stay wet. Therefore, most amphibians have developed mucous glands that keep the skin moist. This is probably why frogs seem so slimy!

Do you know which animals are included in this cool Amphibian Group?  
Circle only the animals that are Amphibians!



# Amphibian Fun Facts Key

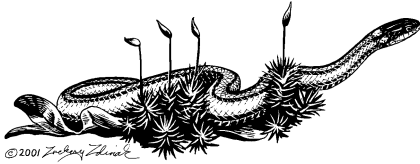
Flower



Salamander



Snake



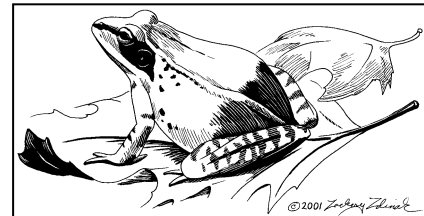
Mouse



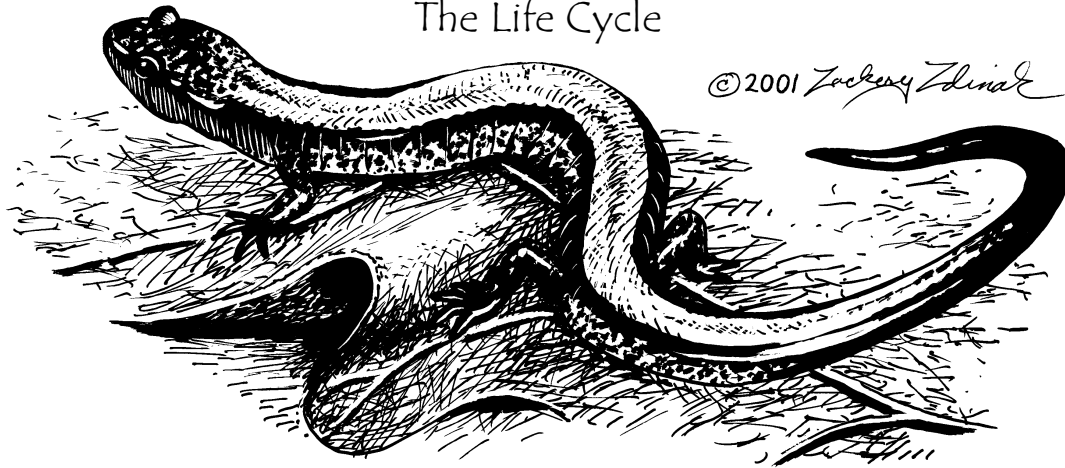
Frog



Frog



## Amphibian Metamorphosis: The Life Cycle



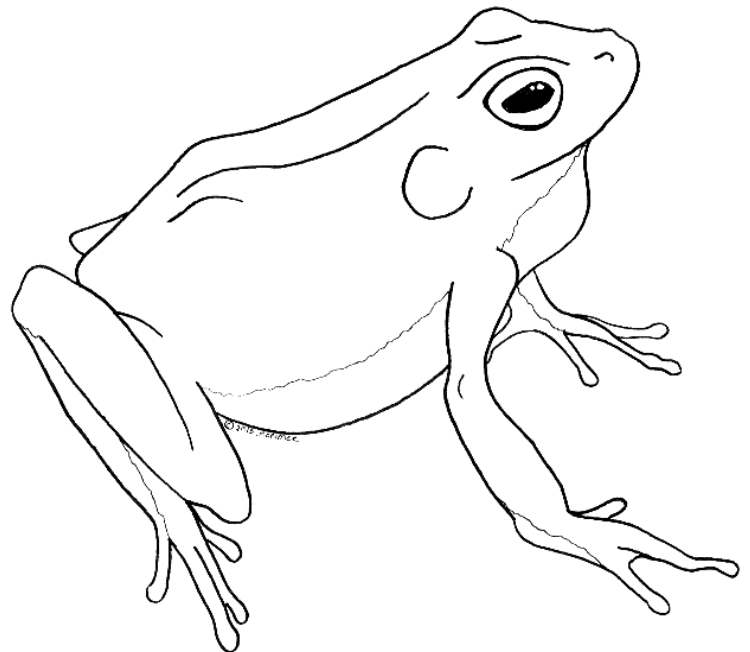
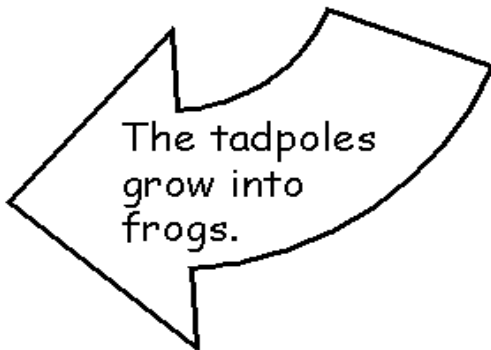
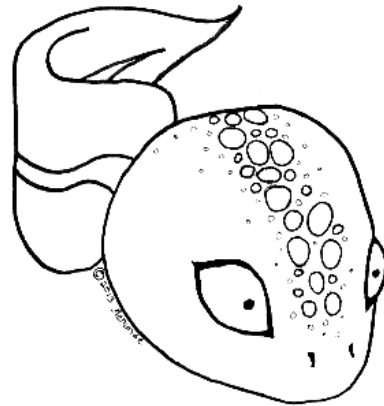
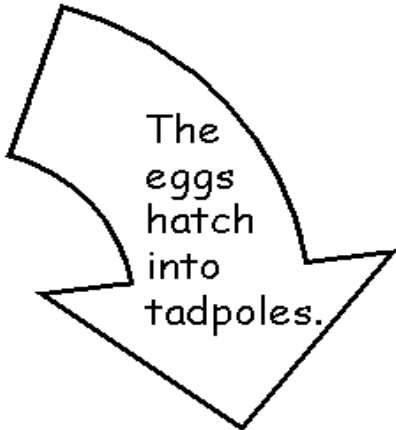
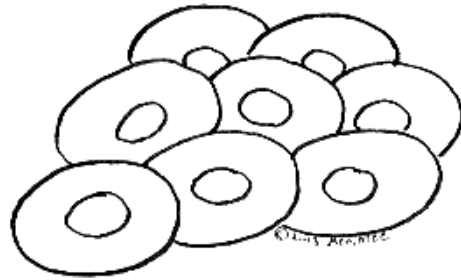
**Metamorphosis** is one of the crazy **adaptations** that make amphibians such cool animals. It is the process of change that causes a plant-eating, aquatic animal to slowly change into a semi-terrestrial, meat-eating animal. The first stage, of course, is the **egg** stage. Most amphibians lay their eggs in shallow water such as ponds, marshes, and even ditches. These eggs, numbering from dozens to thousands when laid, look like gooey globs because of the protective layer of “jelly.” They then hatch into the next stage: the **larva** or **tadpole** stage. This stage is all about eating and growing in preparation for the final stage of metamorphosis: the **adult** stage.

The changes that occur during metamorphosis are both behavioral and physical. Frogs go from eating pond scum as a tadpole to eating bugs as a frog! The body of the frog undergoes a lot of physical change. The tadpole exchanges its **gills** for **lungs** as it morphs into a frog. They also grow front and back **legs** as they lose their tadpole **tail**. These changes occur because amphibians must adapt to life first in water and then on land.

Did you learn a lot about Metamorphosis? Let's test out your knowledge!  
Do the Frog Life Cycle Craft on the next page.

# Frog Life Cycle: Craft

Directions: Cut out the different stages of the frog life cycle and glue them onto a blank sheet in the correct order. Be sure to place the correct arrows between the stages. Decorate as you like!



# Reptile & Amphibian Coloration

Why is **color** so important for the survival of reptiles and amphibians? Color could be used as **camouflage**. Camouflage is the use of color and patterns to help animals blend into their surroundings. Blending in gives critters additional protection from **predators** as well as helping them ambush their own **prey**. Some critters actually use color to **communicate** with other animals. Some colors could say “don't eat me, I'm **poisonous!**” Other colors might just say “this is my **territory!**”

Let's learn more about how color is important for the survival of some reptiles and amphibians!

Materials:

Computer and/or reptile and amphibians resource materials

Large sheets of blank paper

Colored pencils and/or crayons

Pencils

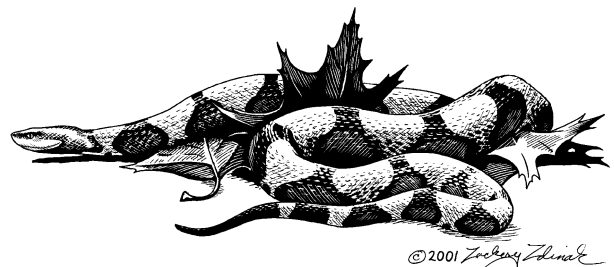


Procedure:

First, show students visual examples, using the internet or other resource materials, of reptiles and amphibians using their colors for camouflage, warning and communication purposes. Ask your students why they think some of the critters try to stand out, while others try to blend in.

Next, tell your students that they are genetic engineers and they are responsible for the creation of new reptile and amphibian species. They must make these critters adapted to different environments.

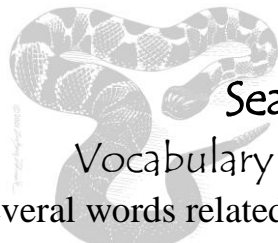
- among the autumn leaves on the forest floor
- in the desert sand and gravel
- on a lily pad of a big pond
- in a bark and moss covered tree



Use these example environments to list the best possible coloration and characteristics for their new species. Once they have brainstormed some good ideas, have them draw their critters on blank paper. Make sure they also consider body shape and behavior!

Assessment and Discussion:

After they are done, have students explain and identify their color, body, and behavior choices.



# Search:

## Vocabulary & Detection

Directions: There are several words related to reptiles & amphibians and their ecology hiding horizontally, vertically, and diagonally, both forwards and backwards in the puzzle below. Can you find them all?

g	r	d	m	a	r	a	t	a	u	t	o	s	f	t	r	r	h
n	a	e	a	o	e	e	m	l	l	y	a	t	a	a	u	i	p
i	t	l	p	o	h	h	a	p	y	w	o	y	a	m	d	e	p
k	o	t	n	t	t	a	r	m	h	n	a	r	e	e	e	s	b
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d	r	a	z	i	l	e	c	n	e	f	n	r	e	t	s	a	e
e	a	w	e	c	m	e	t	a	m	o	r	p	h	o	s	i	s
d	c	r	v	l	i	u	r	e	b	u	l	l	f	r	o	g	o

### Easy:

- Shell
- Hide
- Skink
- Slither
- Climb
- Slimy
- Creep
- Smooth
- Crawl
- Tail
- Eggs



### Medium:

- Teeth
- Spiked
- Spotted
- Tongue
- Lurking
- Armored
- Pit Viper
- Reptile
- Turtle
- Terrapin
- Gila Monster

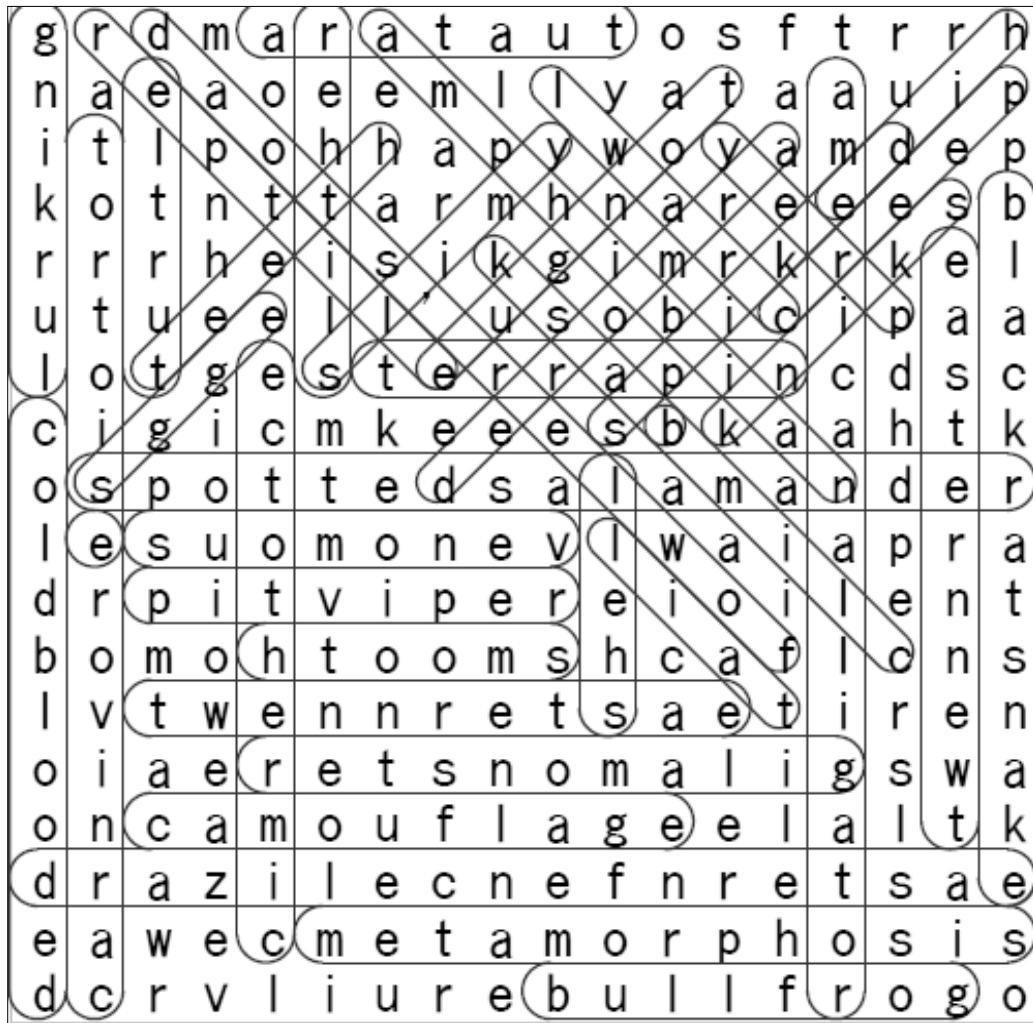
### Hard:

- Black Rat Snake
- American Alligator
- Bullfrog
- Camouflage
- Carnivore
- Salamander
- Venomous
- Amphibian
- Cold Blooded
- Metamorphosis
- Eastern Fence Lizard



## Word Search Key:

Did you find any hidden words not in the word bank? Look hard before you check the Key!



# Have you seen some BIG words in this packet today?

## Vocabulary

This packet has a lot of important words about reptiles and amphibians. Some of them have been highlighted throughout the packet. Some words are hidden in the word search.

Write any of the words that you did not understand here on this page. Then work with your parents to find the meaning of the words and then write it down.

Use more scrap paper if you need to!

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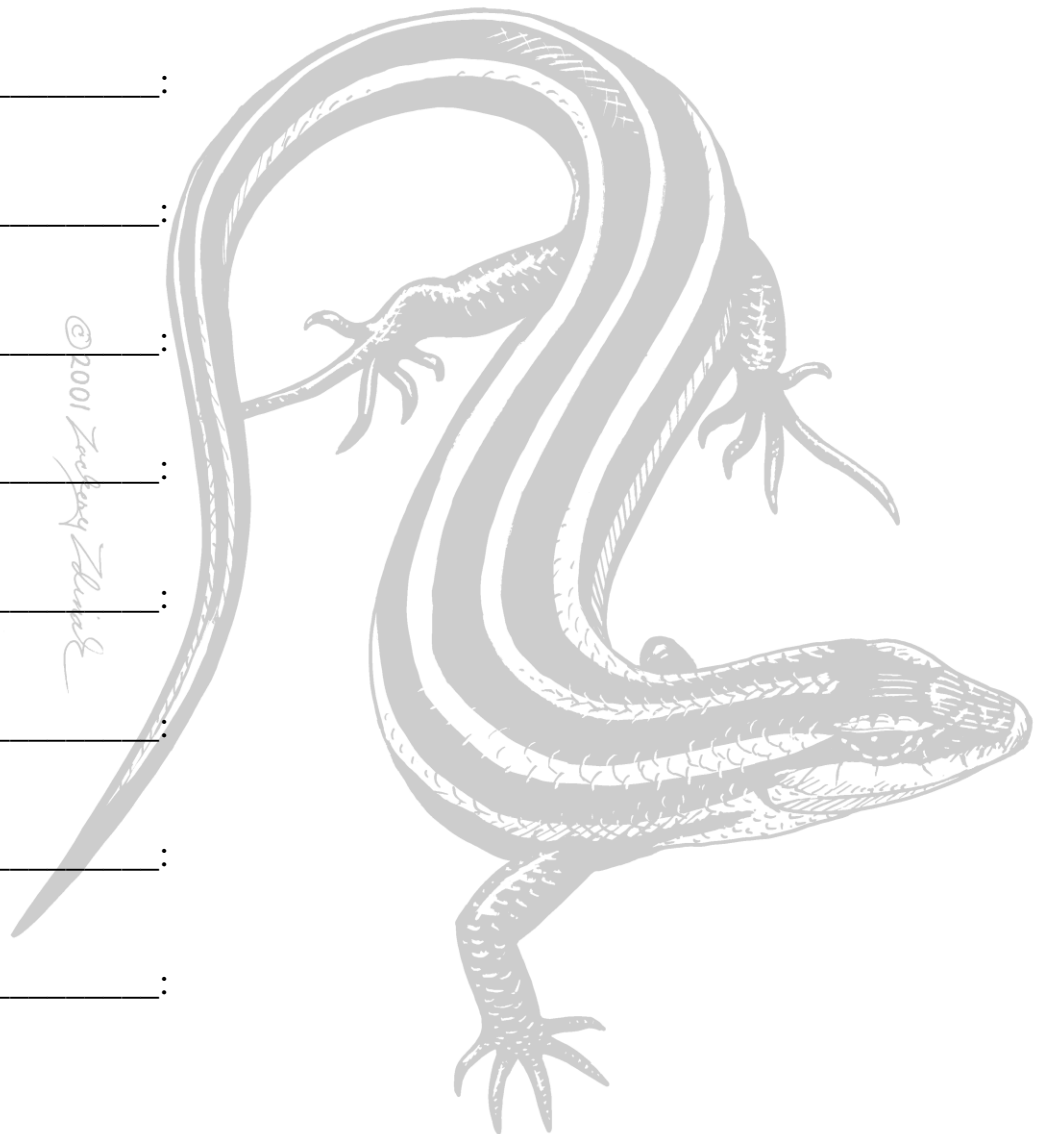
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## How Can You Help?

What can you do to help out these cool and crawly critters?

### FrogWatch USA

Frogwatch is a citizen science program that aims to help families learn about and help conserve amphibians in their communities. You can help conserve amphibians by reporting the calls of local frogs and toads. To learn more or participate, go to [www.aza.org/frogwatch](http://www.aza.org/frogwatch)

### North American Amphibian Monitoring Program

The NAAMP works with volunteers and the U.S. Geological Survey to assess frog and toad populations trends using unique amphibian breeding calls to identify different species of toads and frogs! To learn more or participate, go to <http://www.pwrc.usgs.gov/naamp/>

See if you can find other conservation opportunities in your community!

### In the Garden

Make a Toad Abode! Create an amphibian habitat in your own back yard. Toad abodes can be made from clay pots, turned upside down with an opening for the toad, and decorated as you like. You can find other designs on-line! Once you have made your abode, find a moist and shady spot in your home garden to place your toad abode!

### Around the House

You can create a healthy habitat for reptiles and amphibians at home by protecting your home habitat. Things like preventing erosion, keeping chemicals out of the drains, and avoiding exotic plants or animals can really help create a clean and safe habitat for these cool critters.



## References & Resources:

Green, Janice Schnake. 2002. Amphibians & Reptiles: A Teacher's Activity Guide. Conservation Commission of the State of Missouri.

National Wildlife Federation. 1987. Ranger Rick's Nature Scope: Let's hear it for the Herps. National Wildlife Federation.