

Cloverbud Investigators: Taking the Adventure Outside

Scales, Shells, & Salamander Tails

Background: *Is a salamander a reptile or an amphibian? What in the world is a Caecilian? Why should I care about creepy crawlies? Why are amphibians slimy? The objective of this lesson is to answer those questions and more, as Investigators discover the characteristics of reptiles and amphibians, learn about their habitat needs, and why humans should protect them.*

The science behind reptiles and amphibians:

Did you know that amphibians and reptiles come in all shapes, sizes, and colors? They can be found on every continent except Antarctica. Did you know that at one time they ruled the Earth but now most have gone extinct? Did you know that fossil records show evidence of flying reptiles, of huge marine reptiles and of amphibians that grew to be six feet long? Why did so many species go extinct? Theories suggest that being cold blooded, the larger species died off due to a changing world climate and competition from more evolved warm-blooded species. Cold-blooded animals use energy from the sun to heat their bodies. In the absence of that energy, they become sluggish or if they absorb too much heat, they can overheat or dry out. However, there is one advantage to being cold blooded that may have helped smaller reptiles and amphibians survive. Cold-blooded animals have a slower metabolism. This allows them to require much less food than warm blooded animals like mammals. Some adult reptiles and amphibians can go up to four weeks without needing to eat.

Scientists believe that on the evolutionary scale, animals developed in the following order: fish amphibians, and reptiles. They believe, at some point in time, some reptiles evolved into dinosaurs, and then evolved into birds. Some other reptiles may have evolved into primitive mammals. Why do we still have reptiles and amphibians if they evolved into other classes? It could be that “adaptability” also allowed them to survive and coexist with more advanced animals such as birds and mammals. This theory would also explain the many “exceptions to the rule” that we see when we look at the amphibian and reptile classes.

Reptiles and amphibians share many similarities that support the theory that one led to the other; both are cold blooded, both are vertebrates (have a back bone), both lay eggs, both have a three chambered heart (with the exception of crocodiles) both have small brain mass to body size (again with the exception of crocodiles), both have evolved from a four legged ancestor and most are carnivores as adults. However, when we investigate closely, we find many differences between the two classes.

April



Amphibians

There are three main orders of amphibians: frogs/toads, salamanders/newts, and strange worm-like limbless vertebrates called “caecilians”. The word “amphibian” means “two or both life,” this describes the fact that most amphibians spend the first part of their life in water using gills to breathe and the second part on land breathing air. The process they go through to change from life in water to life on land is called **metamorphosis**. Most amphibians are hatched from eggs laid in water. A few species of salamanders and caecilians lay their eggs in moist soil or keep the eggs inside their body to give birth to live young. The adult amphibian lays hundreds to thousands of clear jellylike eggs in large masses or long strings. The water or moist soil keeps the eggs from drying out because they do not have a shell-like bird or reptile eggs. The eggs hatch into nymphs which have gills to breathe underwater as well as a tail to help them swim. At this stage they are called “tadpoles” or “polliwogs.” As they grow, they shed their gills and tail, grow legs and develop primitive lungs. Because these lungs are not as developed as reptiles and mammals, they have a limited ability to take in oxygen. To make up for this they depend on their permeable skin to absorb oxygen. Amphibian skin is thin and must remain moist or they will dry out. As adults, they secrete mucous which helps them absorb oxygen and makes them feel slimy. These same mucous glands can also produce toxins that make them taste bad or even poisonous to animals that would try to eat them. Some of these toxins are so poisonous that they could kill a human. Like many reptiles, amphibians don’t chew their food but swallow it whole. They have “vomerine teeth,” which are small teeth-like structures in the front of their mouth which hold prey but are not affective at chewing. Many amphibians have a long sticky tongue that aid in catching prey. Adult amphibians are carnivorous while the nymphs are more herbivorous. Unlike reptiles who can inhabit many different biomes, amphibians are dependent on water. Because of this and their permeable skin, they are highly susceptible to water pollution. In fact, amphibians are one of the world’s most endangered classes. They are threatened not only by water pollution, but also habitat destruction, invasive species, erosion of the ozone layer, and the “chytrid fungus” which has been linked to global warming. This fungus is decimating amphibian species populations worldwide. Today, scientists believe there are only about 6,000 species of frogs, 600 species of salamanders, and about 200 species of caecilians left worldwide of that number many of these are threatened or endangered.

Reptiles

There are four main orders of reptiles: snakes, turtles/tortoise, lizard and alligators/crocodiles. The word Reptile means “to creep or crawl.” Like amphibians, most reptiles are hatched from eggs, but there are a few species who hatch the eggs inside their body to give birth to live young. Unlike amphibian eggs, reptile eggs have a shell that keeps them from drying out. Unlike bird eggs, most reptile eggs are soft and leathery. Reptiles lay their eggs on land, not in water and often bury them. When the young hatch, they look like miniatures of their parents; they do not go through metamorphosis. Reptiles also have the advantage of scales; scales allow them to inhabit lots of habitats without worry of drying out. In some cases, scales are modified into shells like

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turtles or body armor as seen with alligators. Scales are shed as the animal grows. Some reptiles like snakes shed all their scales at one time exposing new scales underneath. Like adult amphibians, most reptiles are carnivores, except for a few species of turtles and iguanas, who are herbivores or omnivores. Scientists estimate that there are 11,000 species of reptiles around the world. Like amphibians, reptiles are also facing population losses. There are over 400 species listed as threatened or endangered, mainly due to habitat loss and pollution.

Why should we care about creepy crawlers and slimy critters? Both reptiles and amphibians are environmental indicators, especially for critical habitats like wetlands. We can think of them as alarms of larger issues of pollution, climate change and habitat loss. As an indicator species they also play critical roles in our ecosystems. They provide a delicate balance. As we lose them, we will also lose the species that prey on them, and the species that they prey on like insects and rodents could explode.

Characteristic Chart

Characteristic	Reptiles	Amphibians
Eggs	Dry hard or leathery eggs. Eggs do not dry out. Lay individual eggs. Lay eggs on land or a few rare species give birth to live young.	Clear jellylike. Wet slimy and can dry out. Lay masses of thousands of eggs. Lay eggs in water.
Young	1-20 young per hatch Young look like miniature adults.	1000's of young per hatch. Young go through metamorphosis, do not look like the adults.
Oxygen	Breath air with lungs.	Young have gills and get oxygen from water. Adults breath air with primitive lungs and absorb oxygen through skin.
Skin	Feel dry, have scales or horny plates like shells, or both.	Feel moist, slimy. Have porous skin and no scales.
Species	Snakes, Turtles, Lizards, Alligators/Crocodiles	Frogs/Toads, Salamanders/ Newts Caecilians





Month's Mystery: How are Amphibians different from Reptiles?

Activity 1. Reptile vs. Amphibian Touch Station

Do ahead: Set up a touch station to help Investigators understand the differences between a reptile and an amphibian. Using the simple comparison chart included in this lesson to compare eggs, young, how they breath, and skin texture.

What to do: (Procedures)

Step 1. Gather supplies to set up the station.

Step 2. Make label cards for stations.

Step 3. Egg comparison station – Take grapes and put them into the small container of sand to represent buried reptile eggs. Add water to the tapioca or water beads and allow them to expand. Add some additional water to represent amphibian eggs laid in water.

Step 4. The baby or young station- Using a model that shows frog metamorphosis or the enclosed metamorphosis pictures, show how amphibians do not look like adults when hatched. Have the two sizes of snakes to represent reptiles looking like miniature versions of the adult.

Step 5. Skin Comparison – Use the stress ball and add a little baby oil to make it “slimy” to represent what an amphibian skin feels like. Use the orange and pineapple to show what a reptile skin might feel like.

Step 6. Breathing Comparison – Have the set of lung pictures and gill pictures with explanations of how each works.

Step 7. Using the information shared in the “science behind reptiles and amphibians” section of this lesson and the comparing characteristics chart (also included with this lesson), talk about what reptiles and amphibians have in common and what makes them different. Explain that they will get the chance to investigate the differences as they explore the touch station.

Step 8. Optional: Allow investigators to touch reptiles and amphibians. When teaching with live animals it is always best to give some basic ground rules. We take turns touching, we only use our fingers (two finger touch), we listen to how to touch, so that we don't harm the animal, we wash our hands before and after touching the animals. This protects the animal from any germs we might pass on to it, and it protects us from any toxins or bacteria it could pass to us.

Supplies:

- Grapes for reptile eggs
- Sand in a small container
- Tapioca or water beads in a small container for amphibian eggs
- Frog life cycle model or pictures of frog life cycle included with this lesson
- Rubber or plastic snakes, one large and one small
- Pictures of gills and lungs found in this lesson
- Smooth stress ball
- Large orange
- Small pineapple
- Small amount of baby oil
- Pictures of common reptiles and amphibians in Ohio
- Optional real amphibian and reptile
- Station label cards



Animals that are safe options for children include turtles, toads, frogs (with frogs the child should wet their fingers before touching so as not to harm the mucus membrane on the skin). Turtles, especially water turtles, are capable of biting, so caution should be used to touch the back of the shell. Lizards or snakes that are comfortable being handled are also options. Salamanders and newts, while not necessarily dangerous are fragile.

Alternatives to live animals – snake skins and turtle shells can often be found in nature or ordered from nature educational sources. Natural life like models are also available for order from nature education sources. *The Gallia County Extension office does have some models that can be checked out by volunteers for use.*

Activity 2. Ohio Turtles

Do ahead: Print turtle pictures and pictures of shells

Introduction: Turtles have remained relatively unchanged over millions of years, however our classification system of them has changed. The previous classification said that all turtles that lived on land were considered a tortoise, all hard-shelled turtles that lived in fresh water were considered terrapins and all turtles that lived in the sea were turtles.

Today, all aquatic forms of turtle are considered “turtles.” “Tortoises” are used for most land turtles and “terrapins” for edible turtles living in fresh or brackish water. The use of the word “turtle” is acceptable for all.

Ohio has 11 species of turtle that live across the state. (For a detailed list, see below.) Some like the **Midland Painted Turtle** can be found in just about every county in Ohio. Others like the **Ouachita Map Turtle** may only be found in one or two counties, with a very limited habitat, in this case the Scioto River and its oxbows. The largest turtle in Ohio is the **Snapping Turtle** which can weigh over 35 pounds. This turtle can be highly aggressive and is sometimes hunted for its meat. The smallest turtle in Ohio is the **Spotted Turtle**, which only reaches 3-4 inches in length. It prefers shallow wetlands and marshy areas. Due to habitat destruction, the numbers of this species have greatly declined, and it is considered a threatened species in Ohio. **The Eastern Box Turtle** is the most terrestrial of the Ohio turtles. It spends most of its life on land in the woodlands throughout Ohio but mainly in Southern Ohio. This turtle gets its name from its ability to close its shell and box itself in to avoid predators. Ohio has two soft shelled turtles, the **Midland Smooth Softshell** and the **Eastern Spiny Softshell**. Both turtles are considered river turtles, rarely leaving water. Both prefer shallow areas with sandy or muddy bottoms. Both are extremely fast swimmers and are aggressive if handled. Both turtles eat fish, crayfish, salamanders, tadpoles, frogs, snails, and aquatic insects. Except for the soft-shelled turtles, all of Ohio’s turtles are temperature dependent for determining the sex of the young. For example, snapping turtle eggs that develop at around 77 degrees Fahrenheit will hatch as males, eggs that are developed at much lower or much higher temperatures will hatch as female. Most of the aquatic turtles in Ohio will only swallow food while under water, and a few can absorb oxygen through the lining of their mouths.

What to Do: (Objective) *In this lesson Investigators will look at two different Ohio turtles, the Eastern Box Turtle and the Snapping Turtle. They will make observation about each and learn*

Supplies:

- Eastern Box Turtle shell or picture of the shell
- Snapping Turtle shell or picture of the shell
- Pictures of Ohio’s 11 species of turtle.



about the similarities and differences between land turtles like the Eastern Box Turtle and aquatic turtles like the snapping turtle.

Step 1: Observation of the two shells.

Ask, what similarities do they see? (Discuss)

Ask, what looks different about them? (Discuss)

Step 2: Two types of Ohio Turtles – Explain they are both Ohio turtles, but their lifestyle is very different. One lives in the water and only leaves water to lay eggs or to sun, and the other lives in wooded forest. Ask them to guess which is which.

Step 3: Show the pictures of the Box and Snapping turtles – Using the information included in this lesson have the investigators guess what they might eat, how they would protect themselves, and where you might see them in nature.

Step 4: Finally, look at the pictures of the remaining Ohio turtles included in this lesson. Have the investigators decide if they are “land turtles” or “aquatic turtles” and read the brief summary of each to see if they were correct.

Types of Ohio Turtles:

Land Turtles

Eastern Box Turtle: Have a hinged shell that allows them to completely close their shell, boxing them in, hence the name. They are found in wooded areas. They bury themselves in the winter to hibernate and sometimes in the summer to escape hot dry days. They come out in the mornings and evenings to eat and can be seen after rains. Young turtles diet consist of mainly slugs, worms, and insects, in addition adults will eat carrion, fish, amphibians, eggs, seeds, fruits, roots, fungi and grasses. One of their biggest dangers they face is being run over by cars.

Spotted Turtle: Found in mainly shallow waters of bogs, marshes, and wetlands but can live in wet wooded areas. It is sometimes seen in early spring, along streams or pond banks. Habitat loss has caused population decline throughout Ohio, causing it to be on the threatened species list.

Blanding’s Turtle are limited to the northern counties along Lake Erie where they inhabit the marshy shorelines, inland streams, wet meadows, and swamp forests. It often travels overland as it moves to different wetlands throughout the year. Its most distinctive mark is a bright yellow throat and chin. Like the box turtle, it has a hinged bottom shell, but it cannot close as tightly. It is named for William Blanding, a naturalist who discovered it.

Aquatic Turtles

Northern Map Turtle: This turtle gets its name from the lines on its body which look like a topographic map. These lines fade at the turtle ages. Males are about 5” long while females can be up to 10” long. They prefer to live in large deep bodies of water like rivers and lakes. Their

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diet is mainly snails, crayfish, and clams. They are thought to be active year-round as they have been seen moving around under the ice.

Eastern Spiny Softshell Turtle: This turtle has a tough rubbery shell with a row of small spines at the front which gives it the name “spiny”. It can be found in lakes and small streams, preferring shallow water with sandy or soft muddy bottoms. It likes to bury itself in the sand or mud with only its head remaining. It has an extremely long neck with a long-pointed snout that it pokes up to the water’s surface to breath. However, it can pump water in and out of its mouth using a highly vascular lining in the pharynx to remove oxygen from the water allowing it to stay submerged for long periods of time. It is an extremely fast swimmer and is quite aggressive. This turtle is mainly carnivorous and will eat any aquatic life it can capture like crayfish, clams, insect larva, and small fish.

Midland Smooth Softshell: It looks a lot like the Eastern Spiny Softshell, but the Midland Smooth Softshell has no spines on the top of its shell; its nostrils are not ridged, and its feet are not spotted or streaked. It has irregular small dots and dashes on its shell, not spots like the Spiny turtle. It is also limited to southern Ohio, where it inhabits the larger tributaries of the Ohio River. It is fond of shallow water areas along sandbars and the female is much larger than the male.

Ouachita Map Turtle: It has very limited distribution in Ohio and is only found in the Scioto River and its oxbows. These turtles have a yellow spot behind the eye which is shaped like a sickle and extends to the top of the head. It also has two yellow spots below the eye and one on the upper jaw and one on the lower.

Snapping Turtle: This turtle is the largest of the Ohio turtles and can weigh over 35 pounds. It mainly stays in the water but can be seen on land especially when females are laying eggs. This turtle is extremely aggressive and has a powerful bite which has been known to snap sticks in half. Snapping turtles are omnivorous, eating both plants and animals. Their favorite foods are tadpoles, fish, frogs, salamanders, smaller turtles, leeches, snails, snakes, worm, crayfish, and birds. They will also eat algae, yellow pond lilies, water fern, water lettuce, common duckweed, and other aquatic plants. They tend to be most active at dusk and dawn. Snapping turtles are hunted by some humans for their meat.

Eastern Musk Turtle: This turtle is also known as “stinkpots” and prefer the deep, still water in lakes and ponds. Their most distinctive marks are the two-bright yellow stripes on each side of the head. They get their name from the foul odor they expel when caught. The odor comes from the yellowish fluid secreted by glands on the sides of their upper shell. They are seldom found out of water except when laying eggs.



Midland Painted Turtle: These turtles are one of the most abundant turtles in Ohio. They enjoy basking in the sun and can be seen by the dozens on logs and along the banks of most bodies of water throughout the summer. The deep green top shell is brightly patterned with red and black along the underside of the edges in a pattern that looks painted on, which gives it the name “painted turtle”. While there are several subspecies of painted turtles in the United States, only the midland painted turtle occurs in Ohio. When handled, these turtles usually become very tame. Like most highly aquatic turtles, they usually will not swallow food unless they are at or beneath the surface of the water. In the winter, they seek deep water and burrow into the mud at the bottom. During this time, the small amount of oxygen they need is absorbed from the water through the inner lining of the mouth.

Red-Eared Slider: This turtle is a small green turtle sometimes sold as a pet. It has a distinctive reddish patch behind each eye that can sometimes be yellow or even dark colored. Outside of southern Ohio, populations of red-eared sliders are probably the result of discarded pet turtles. Their diets are aquatic vegetation, small fish, and decaying material. They can often be seen in ponds, lakes, marshes, and slow-moving rivers.



Eastern Box Turtle Shell – activity 2



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Snapping Turtle shell – activity 2



Eastern Box Turtle



Red Eared Slider



Midland Painted Turtle



Spotted Turtle



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Blanding's Turtle



Northern Map turtle



Ouachita Map Turtle



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Snapping Turtle



Common Musk Turtle



Eastern Spiny Softshell Turtle



Midland Smooth Softshell Turtle



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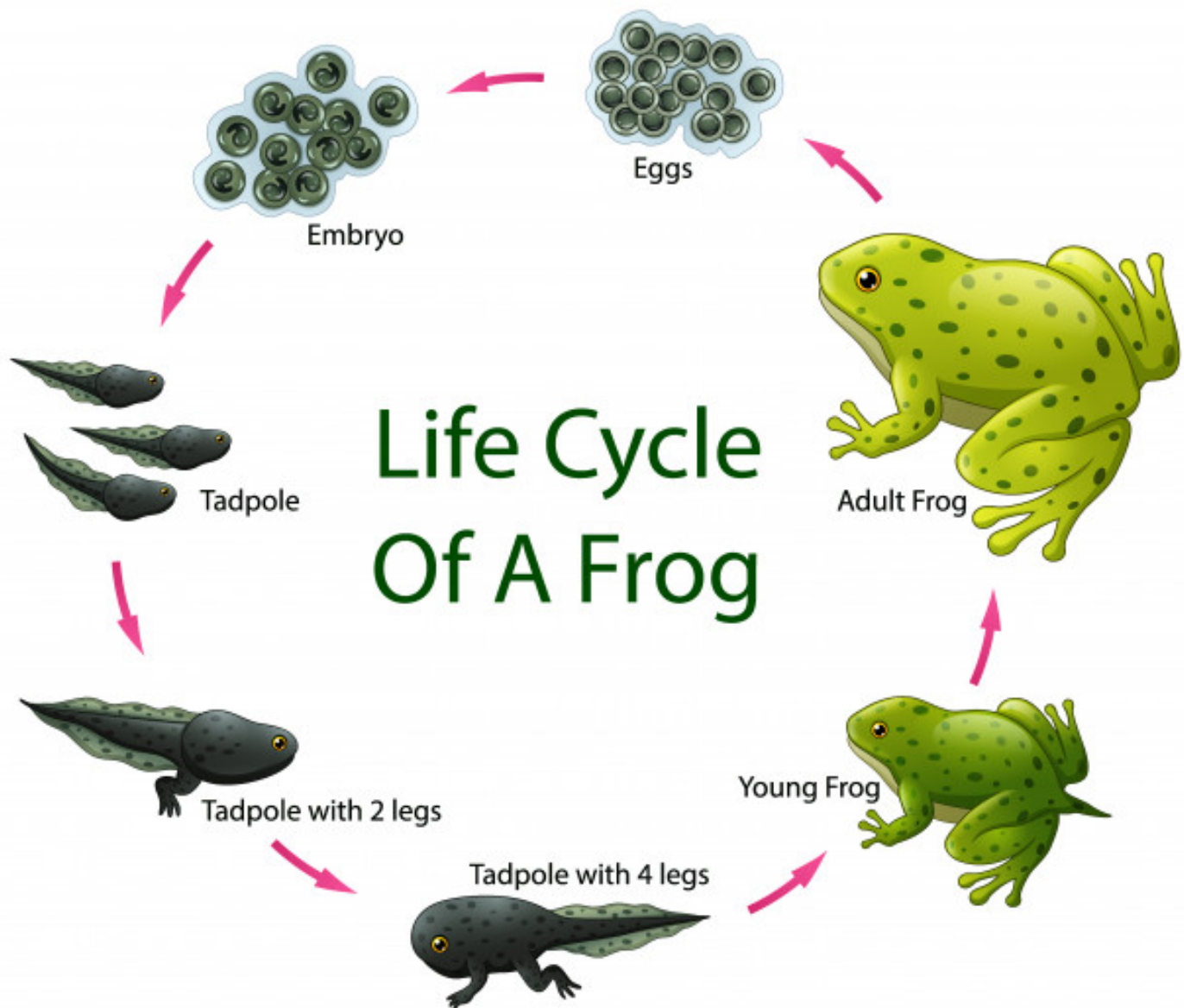
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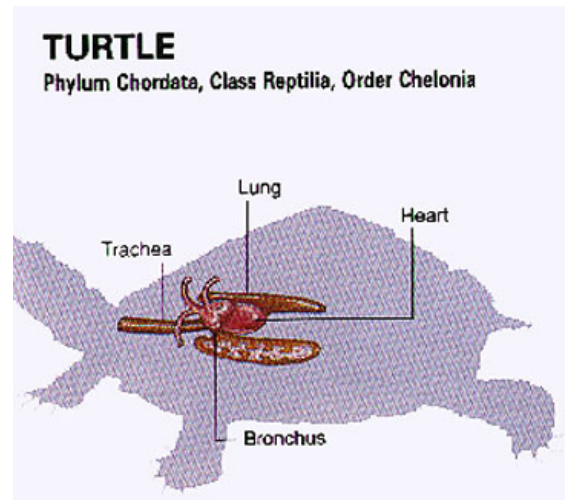
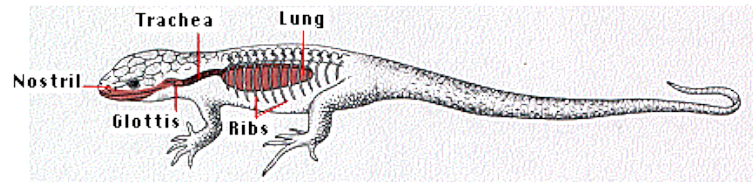
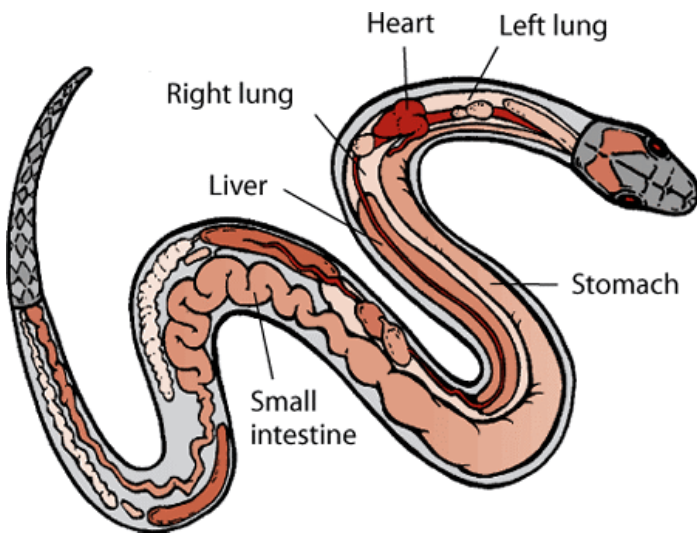
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Frog Life Cycle for activity one**THE OHIO STATE UNIVERSITY**COLLEGE OF FOOD, AGRICULTURAL,
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Amphibian gills vs. Lungs



Station Labels for lesson one

Egg Comparison Station

Skin Comparison Station

Young Comparison Station

Breathing Comparison Station



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Activity 3. Snakes Monsters or Misunderstood?

Introduction: Snakes. Just mentioning them to some people will cause them to shiver. What is it about snakes that sends fear down our spine? One theory is that the fear of snakes is a left-over reaction from human evolution, that we recognize them as dangerous, and thus fear them. Another is that we are conditioned to fear them by those around us, a young child may not fear them, but seeing their parents react with fear teaches them that the snake is something to be fear. Think about it, what roles do snakes play in movies? What about in fairytales? Can you think of any example where the snake is the good guy, the hero?

Maybe it's the physical characteristics of snakes that unnerve us? Snakes are all strict carnivores, they feed only on other animals. This makes them elite predators. Snakes have developed three ways to kill their prey. Some use venom, which they inject through their fangs. The venom, poisons the prey, immobilizing and then killing it. Other snakes called constrictors, grab their prey, and squeeze it until it suffocates. The last group of snakes simply grab their prey and just start swallowing it. These snakes have hook like teeth that prevent the prey from pulling loose and escaping. Once the prey is caught, it is swallowed whole. Snakes do not have connected jawbones. This means that their upper and lower jaw are made up of four separate pieces, allowing them to open their mouths wide, swallowing prey much larger than their head. Snakes play a huge role in the population control of rodents. In Ohio, we have 27 species of snakes, 3 of which are venomous.

All modern snakes are legless; however, fossil records show that at one time snakes had four legs, two in front and two in back. Scientist believe that snakes evolved from a four-legged ancestor thought to be a lizard. Why snakes lost their legs is still a mystery, but even without legs they are still very fast, moving between 5-8 miles per hour. The fastest snake is the black mamba which can reach speeds of 10-12 miles per hour. Using various methods of muscle movement, snakes are not only fast on the ground but can climb and swim. These abilities can have them turning up in unpredictable places, although we often do not see them until we are very close to them. The snake's ability to camouflage itself and remain still for many hours at a time helps to ambush prey. Most Ohio snakes are masters of hiding in plain sight, blending in using the color or patterns on its scales. Most snake encounters happen when the snake is leaving. Snakes have well developed tongues that help them smell and bones in their lower jaw that pick up on vibrations. They have already decided we are not prey long before we even see them. If you encounter a snake, it is best just to give it space; if it feels threatened, it may hiss, shake its tail or strike. This is not aggression on the snake's part but an act of self-defense. Millions of snakes are killed each year by humans to them we are the ultimate predator.

Snakes will never be considered cute, fuzzy, or loveable by most people. Their forked tongues, unblinking eyes, and scaly bodies slithering across the ground, are a lot for some people to get past. However, some will take the time to understand them, learn to respect them and even value snakes for their beauty and role they play in our environment.

Supplies

- Pictures of snakes include with this lesson.
- Cut out and fold the description behind the photo



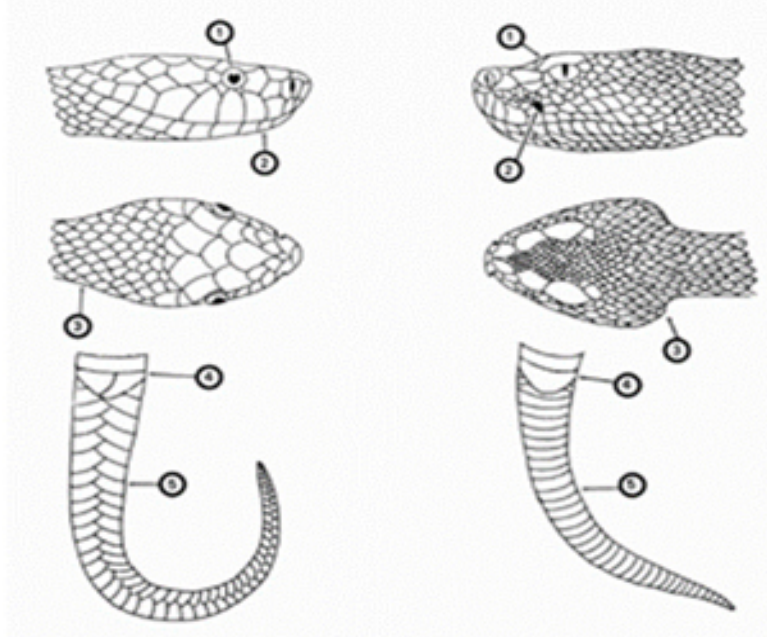
Do ahead: Print off the pictures of Ohio's snakes included in this lesson. Fold the information about the snake behind the picture.

What to do: In this activity, Investigators will learn how to tell Ohio's poisonous snakes from non-poisonous. Ohio only has three poisonous snakes. Using the chart below will help investigators learn what to look for when identifying poisonous and nonpoisonous snakes.

Step 1. Give each Investigator a snake picture to use for identification activity. They will answer the questions below to determine if their snake is poisonous or nonpoisonous.

1. Does my snake's tail have rattles?
2. Is my snake's head triangular shaped and a lot wider than its body?
3. Does my snake have round pupils like a human eye? Or elliptical like a cat's eye?
4. Are there pits or holes in my snake's face near the nostrils?
5. If you can see the underside of the tail does it have scales that look divided into or all one scale?

Ohio Snakes	Nonpoisonous	Poisonous
Tail	Never have rattles.	Can have rattles.
Head	Round same size or about the same size as the body.	Triangular- wider than the body.
Eyes (Pupils)	Round like a human.	Elliptical pupils like a cat.
Nose	No pits.	Pits near the nostrils.
Scales	Divided scales.	Undivided scales.



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Step 2. Once they have determined if their snake is poisonous or not have them group themselves by poisonous or non-poisonous. Let them read the information about their snake and share the name of their snake.

- For the next part of the activity, using the information on the back of their picture have them group themselves by size (large snakes - 3 feet or over or small snakes under 3 feet) *Discuss that the poisonous snakes are not the biggest snakes but they do prey on animals the same size as the bigger snakes. Therefore, they have adapted by having venom, which helps them catch and kill their prey.*
- Group together by the way the snake kills its prey (venom, eat alive, constrict). *Discuss how each of these ways to catch and kill their prey work.*
- Group by color of their snake. (Black, Brown, Green) *Discuss if the snakes coloring is to help them hide or to scare off predators that might want to eat them. (The ring neck's yellow belly is a sign to warn off predators)*

Making Scientific Connections to Nature: Reptiles and Amphibians play an important role in our ecosystem. They control pest populations by eating insects and rodents and at the same time they are food for predators like mammals and birds. They also provide warning signs. When our ecosystem becomes polluted or changes occur in our weather patterns their population numbers shift. The next time you see a creepy crawly, remember to respect its ability to adapt, the role it plays in our environment; and we can help keep reptiles and amphibians around for a long time.

Taking the Adventure Outside: In the early spring (late March or early April) take a creepy crawly hike to a local wetland, pond, or stream. Using aquatic nets and plastic containers with lids (mayo jars work well), look for amphibian eggs near the water's edge. Carefully collect a few eggs along with enough water to fill your jar. At home, transfer eggs into a small fishbowl. If the weather is warm, place your fishbowl in a shaded location, safe from animals. Add small rocks or gravel to the bottom of the fishbowl, with a couple of larger rocks for shelter. It will take about 6-12 weeks for your eggs to hatch. During that time be sure to add small amounts of rainwater (do not use tap water) to your bowl. If the water becomes cloudy, change out half of it at a time, using a turkey baster, so you don't disturb your eggs. Once your tadpoles hatch you can add some small plants, the tadpoles will enjoy nibbling on the roots. You can also boil romaine lettuce for 10-15 minutes, till leaves are soft and squishy. Drain and tear it into small pieces to feed them. Only a pinch a day is needed, don't over feed them; this will dirty the water. When your tadpole develops legs, you will need to add a large rock or a container with some dirt, to allow them to get out of the water and their lungs to develop. When arms appear, stop feeding them, as they will be using their tail as food to complete the metamorphic process. Once they have transitioned into a frog, it is time to release them back into nature. Return them to their original location or a similar location close by.

Career Connections: Wildlife Biologist, Ecologist, Herpetologist



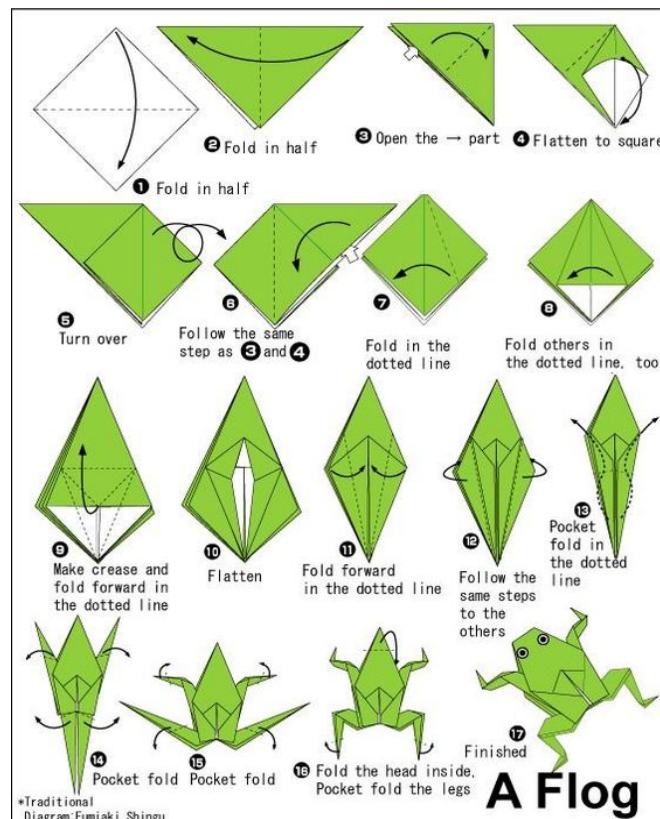
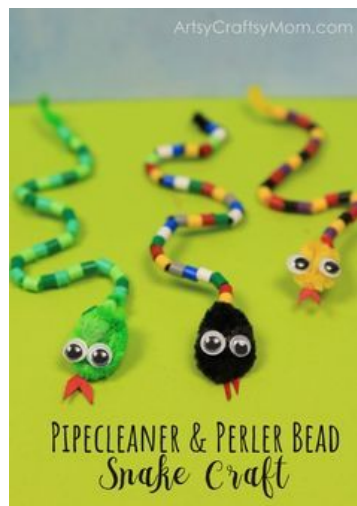
Go Over Findings:

1. Name three ways that amphibians and reptiles are different?
 - a. Skin - dry vs. slimy
 - b. Young - metamorphoses vs no metamorphoses
 - c. The way they breath - Lungs vs. Gills
 - d. Their eggs and where they lay them – wet slimy eggs vs. dry leather eggs
2. Name three ways that amphibians and reptiles are the same?
 - a. Both have back bones
 - b. Both are cold blooded
3. Name an Ohio turtle that likes to live on land?
 - a. Easter Box Turtle
 - b. Blanding's Turtle
 - c. Spotted Turtle
4. Name an Ohio snake that is poisonous
 - a. Copperhead
 - b. Timber Rattlesnake
 - c. Eastern Massasauga

Investigate, Create, & Take: Investigators can take with them:

Froggy Facts: Make a jumping frog and lily pads, add fun frog facts to the lily pads. Using a plastic jumping frog or an origami paper frog (instructions at <https://www.k4craft.com/paper-jumping-frog/>) see picture below, have the investigators jump their frogs onto froggy lily pad facts. Using colored paper or dyed coffee filters, tape questions on one side and answers on the other side.

Snake Tales: Investigators can make a snake out of a paper chain, pom poms, beads, or pipe cleaner with the characteristics they have learned about in this lesson. Let them write a bio about their snake including their color pattern and how they eat, its prey, habitat, and more.



**Black Racer**

Size: 3-5 ft.

Color: Black all over

Habitat: Rocky ledges, pastures, fields & woodlands

Prey: Small mammals, other snakes. Chases them and smashes them into the ground to kill them.

Interesting fact: The fastest snake in Ohio. They can move about 8-10 miles per hour. They are very aggressive and have been known to chase people which is where the name racer comes from.

**Black Rat Snake**

Size: The largest snake in Ohio, can reach 8 ft.

Color: Black with a splotchy pattern.

Habitat: Forest, Farmland, fields.

Prey: Small rodents, birds, eggs. It is a constrictor.

Interesting fact: excellent climber

If threatened they will vibrate their tail like a rattlesnake and strike.



Eastern Garter Snake

Size: is 1.5-2 ft.

Color: Yellowish stripes on a dark background

Habitat: Lives in woods, meadows, and around streams

Prey: Frogs, toads, salamanders, earthworms, minnows and mice. They kill their prey by swallowing it.

Interesting fact: Hooked teeth facing backwards to help them swallow prey without letting it escape.



Common Water Snake

Size: 3-4 ft.

Color: black, grey, brown or dark red color patterns

Habitat: around water, creeks, lakes and rivers

Prey: Fish and amphibians. They swallow their prey whole.

Interesting fact: Mistaken for a poisonous water moccasin or a cottonmouth but it is not poisonous. Ohio does not have water moccasins or cottonmouth snakes.



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**Eastern Hognose Snake**

Size: 1-1.5 ft.

Color: They can be yellow, brown or black and gray in color

Habitat: Dry sandy areas, fields

Prey: Toads, Frogs, Salamanders
(They have a turned-up nose that they use for digging out their favorite prey, toads which they swallow alive.)

Interesting fact: They will play dead, if threatened.

**Eastern Milk Snake**

Size: 2-3 ft.

Color: reddish-brown, black broader blotches on back. A Y or V shape near head

Habitat: fields, woodlands, rocky hillsides and river bottoms.

Prey: small mammals, birds, eggs, lizards. They constrict and kill their prey

Interesting fact: Often found in barns, people thought they drank milk from cows, which is how they got the name milk snakes.

**Ring Neck Snake**

Size: 10-15 inches

Color: black or dark gray with a yellow or orangish yellow band around the neck and yellow belly

Habitat: Rocky, wooded hillsides

Prey: Lizards, frogs, earthworms. They constrict their prey and have a slightly venomous saliva which paralyzes it.

Interesting fact: Nocturnal and hide under rocks and logs during the day

**Smooth Green Snake**

Size: 1-2 ft.

Color: Bright grass green, white or yellowish belly.

Habitat: Open grassy meadows, marshy grass areas in brushy areas.

Prey: Insects: crickets, grasshoppers, butterflies. The grab and swallow their prey alive.

Interesting fact: Secretive and rarely seen.

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**Worm Snake**

Size: 13 inches

Color: Brown

Habitat: Damp hilly woodlands and farmlands

Prey: Worms and soft bodied insects. The attack and eat it alive.

Interesting fact: Likes to bury into the soil

**Copperhead snake**

Size: 3ft

Color: Red, copper color head, hourglass shapes over gray brown color.

Habitat: Rocky, wooded, hilly areas

Prey: Small rodents, lizards, frogs. Kills with venom.

Interesting fact: Most numerous of the poisonous snakes in Ohio

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**Timber Rattlesnake**

Size: 3 ft.

Color: Light phase: gray or brown,
Dark phase black over brown.

Habitat: Woodland, rocky areas

Prey: Small mammals, birds and
snakes. Kills with venom.

Interesting fact: Can live up to 20
years

**Eastern Massasauga**

Size: 2- 2.5 ft.

Color: Dark colored gray or
brownish body with blotches in three
rows across body.

Habitat: Wet Prairies, meadows for
fields

Prey: Lizard, small rodents, small
snakes, young birds and amphibians.
Kills with venom.

Interesting fact: Endangered



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