Time: 30 minutes

Barred Tiger Salamander

Explore the life cycle of an amphibian.

OBJECTIVES

Students will:

- recognize similarities and differences in living organisms
- recognize the salamander as an amphibian
- know that amphibians go through a metamorphosis
- recognize the barred tiger salamander as the state amphibian of Kansas

MATERIALS FROM TRUNK

Graphics

#9 - Life Cycle of a Salamander

#10 - Barred Tiger Salamander

Worksheet

#3 - Matching the Animals

OTHER MATERIALS

- Pencils, markers or crayons

TEACHER PREPARATION

- Copy worksheet #3 for each student.

HISTORICAL BACKGROUND

The barred tiger salamander became the state amphibian of Kansas in 1994. Alice Potts's second-grade students at the OK Elementary School in Wichita began the process by nominating it to state representatives and senators from Wichita. Students from across the state joined in the letter-writing campaign. Of the thirty-one species of amphibians found in Kansas, the barred tiger salamander is one of two found statewide. It is the only salamander found west of the Flint Hills.

The word amphibian comes from the Greek word *amphibios* which means "living a double life." Amphibians spend part of their lives in the water and part on land. The eggs of amphibians are laid in the water where the young hatch into aquatic larvae. The young then

live in the water until they metamorphose into their more terrestrial adult form. The amphibian most people are familiar with is the frog.

As an amphibian salamanders go through a metamorphosis. In the late fall adults go to small ponds and cattle tanks where forty to fifty eggs are laid in clusters attached to twigs and stems under water. The adults then leave the water and spend most of their time underground. The eggs hatch in the water and the next stage of life begins, that of the larvae. Salamander larvae differ from those of frog and toad tadpoles in two basic ways. They have external gills and four legs. After several months their gills are absorbed, they grow eyelids, and they leave the water to begin life as an adult.

Salamanders are the least well-known amphibian. They spend most of their adult life hidden beneath stones or other objects and are chiefly nocturnal. They have four legs of nearly equal length and a long tail. *Salamanders often become confused with lizards. Lizards are reptiles.* Unlike lizards, salamanders have smooth moist skin and do not have claws, scales, or external ear openings. The thin skin of adult amphibians allows for quick dehydration so they rarely wander far from water. As further protection from dehydration and disease the skin of some amphibians, like the salamander, produces a mucus that is slimy to the touch.

The barred tiger salamander has the distinction of being the world's largest land-dwelling salamander. It has a maximum length of thirteen inches although it generally reaches only from six to eight inches. The tiger salamander has been known to live in captivity for over twenty years. It is black with yellow bars, stripes, or spots. This salamander is not picky about its diet and eats everything from grasshoppers, crickets, and earthworms to fish, tadpoles, and even mice. Like all salamanders in Kansas the barred tiger salamander makes no sound.

VOCABULARY

Amphibian	Cold-blooded animals with backbones that go through a metamorphosis as they change from an egg, to a larvae, to a land-dwelling adult.
Gills	The body part a water animal uses for breathing.
Larvae	The newly hatched form an amphibian takes before becoming an adult.
Life Cycle	The sequence of changes each living thing passes through during its life.
Metamorphosis	The series of changes amphibians go through in shape and function as they change from eggs to adults.

Symbol — Something that stands for something else. Symbols are used to communicate words, emotions, directions, etc.

ACTIVITY

1) Hand out worksheet #3, Matching the Animals to each student. Have each student draw a line from the baby animal to its parent.

   Once the class has completed this go through their choices one by one and ask how they were able to pick out which parent went with which baby. The salamander should have the least similarities.

   - ***For most of the animals the baby looks similar to the parent in many ways:***
     - ***the same number of arms or legs,***
     - ***the same beak on the chicken and chick, etc.***

   - ***The salamander larvae and adult both have a head, four legs and a tail, but other than this they bear little resemblance to each other.***

2) Explain to the class that salamanders are amphibians. Have them repeat the word, clapping their hands in the rhythm of the syllables, **am-phib-I-an**.

   Amphibians live in the water when they are young and on land when they grow up. Ask the class where the other babies and adults on the worksheet live.

   - ***Baby horses live in the pasture or barn like adult horses.***
   - ***Human babies live in houses like their parents.***
   - ***Chicks live in hen houses like chickens.***
   - ***Baby fish live in the water like adult fish.***

3) Show the class graphic #9, Life Cycle of a Salamander. Explain the images to the class:

   - Eggs
     - ***Salamanders hatch from eggs that have been laid in the water.***
     - ***In the late winter adult salamanders look for water (like a pond or cattle tank) to lay eggs in. They lay their eggs in the water by twigs, stems, etc.***
   - Larvae
     - ***Larvae, young salamanders, hatch from the eggs.***
     - ***The larvae live in the water. Like fish they would die if they were taken from the water.***
     - ***The collar of feathery growth on the larvae is external gills. Gills allow the larvae to breathe underwater.***

± Adult Salamander

® ***As the salamander larvae grows into an adult salamander it loses its gills. Without gills the adult salamander can not breathe underwater. Adult salamanders need to breathe air just like humans.***

® ***Adult salamanders live on the land.***

Tell the class that they are going to learn a new word - metamorphosis. Have them repeat the word after they hear it and clap their hands with each syllable - **met-a-mor-pho-sis**. Explain that the changes the salamander goes through as it grows is called a metamorphosis. All amphibians, like frogs and toads, go through similar changes.

4) Show the class graphic #10, The Barred Tiger Salamander. Explain that all animals need water to drink, but the salamander needs to live close to water for other reasons. Ask them if they can think of one reason adult salamanders need to live near water.

® ***The need water to lay their eggs in.***

Point out how shiny the skin of the salamander is. Tell them that salamanders have very thin skin that drys out very easily. They need to be near water so that they can keep their bodies moist. Because of their thin skin many salamanders are covered with a slimy coating that helps them stay moist.

5) Tell the class that Kansas is a fairly dry state. The barred tiger salamander is the only salamander found everywhere in Kansas, even in the driest parts of the state. Because it is such a special salamander in Kansas a school class in Wichita thought that it should be given the title of State Amphibian for Kansas. The children wrote many letters and the barred tiger salamander was given this title.

Being the state amphibian makes the barred tiger salamander a symbol of Kansas. Ask the class if they know what a symbol is.

® ***Something that represents something else. Examples: stop signs mean stop and look for traffic before continuing on, and railroad crossing signs mean stop and look for a train before crossing the tracks.***

EXTENDED ACTIVITIES

1) Life Cycle Exploration - Explain to the class that this process, being born, developing into adults (larvae), living as an adult (laying eggs to create more salamanders), is called a life cycle. Point out on graphic #9, Life Cycle of a Salamander that a life cycle is like a big circle.

2) Contact Kansas Wildlife and Parks for information about or education materials on the barred tiger salamander: Wildlife Education Service, 512 SE 25th Avenue, Pratt, KS 67124; 316-672-5911, ext. 176.

3) Ask for possible explanations of how the barred tiger salamander got its name. Is it a good name for this salamander?

If you're planning on keeping a salamander in your classroom please read this:
Keeping a reptile or amphibian as a pet can provide a learning opportunity, but make sure you know what you're getting into. "Many reptiles and amphibians require special care in captivity, so a trip to the library or a visit with a local wildlife professional may be necessary to learn how to keep the critter happy and healthy. Also, reptiles and amphibians in Kansas are protected by collection laws and limits." For more information contact the Milford Nature Center, 3115 Hatchery Drive, Junction City, KS 66441; 785-238-LEAF.