Natural History along the Natchez Trace Parkway

Classroom Lesson:

Spotted Salamanders (code 2SS)

- **Grade Level:** 2nd Grade
- **Subject Areas:** Science
- **Setting:** Classroom
- **Duration:** 50 minutes or more
- **Skills:** Listening, drawing,
- **AL Objectives:** 6
- **Vocabulary:** Salamander, gills, cold-blooded, larva

Summary:
The students will learn about the life of a salamander by illustrating a book about the spotted salamander.

Materials Needed: A blank copy of the Spotted Salamander Booklet for each student. Photos of spotted salamanders at different life stages or the life stages worksheet. A picture of a frog tadpole is optional but helpful. (option: spotted salamander life stages for each student)

Instructional Information

Alabama Objectives:
6) Identify characteristics of animals, including behavior, size, and body covering.
Learning Objectives: The students will learn 1) the life cycle of the spotted salamander 2) where it lives 3) the life needs of the spotted salamander.

Teacher Set: Discuss the life history of salamanders with students using photo from books, the internet or the drawings provided. The students will learn that spotted salamanders live in their neighborhoods (see range map) and along the Natchez Trace Parkway. Option: Have the students do the Spotted Salamander Life Stages work sheet.

Teacher Overview: Spotted Salamanders like most other amphibians lay their eggs in water and live their adult lives on land. Salamanders and lizards are basically different because salamanders lay eggs in water and juveniles metamorphose and lizards lay eggs on land and juveniles are precocious. (see attached for more information)

Student Instruction: Students will participate in a class discussion about the needs and characteristics of the spotted salamander. They will then draw pictures to illustrate the pages in the booklet, "The Spotted Salamander". On the range map, the student may also color in the state where the student lives. (Option: Spotted Salamander Life Stages worksheet put numbers or short descriptions on the line under the drawing.)

Student Task: Look at the spotted salamander pictures provided by the teacher. Draw a picture to illustrate the words on each page.

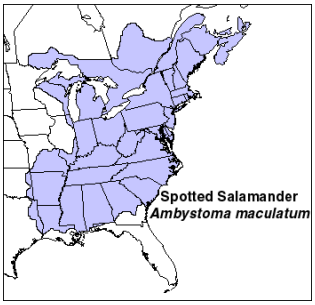
Teacher Closure: Tell students that salamanders are similar to frogs because frog lay eggs in the water too. Ask the students if they have ever seen tadpoles. Explain that a frog tadpole starts with only back legs and a salamander larva starts with only front legs.

Student Assessment: Participation in discussion. Assess if the students illustrated the booklet appropriately.

Suggestions for re-teaching: Review the spotted salamander when teaching about other animals.

Teaching extension: The teacher may introduce the students to the concept that the salamanders have trouble crossing the roads. When they go to lay their eggs, they are often run over by cars. They do not know to look both ways before they cross the street.

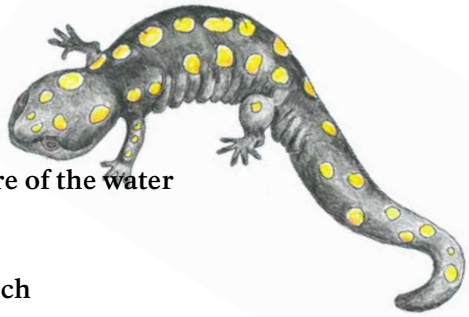
Teacher Information Fact Sheet for
Spotted Salamander *Ambystoma maculatum*



Kingdom: Animalia
Phylum: Chordata
Class: Amphibia
Order: Caudata
Family: Ambystomatidae - Mole Salamander

Description: Spotted Salamanders are black, dark grey or brown with 24 to 45 round yellow or sometimes orange spots. The belly is dark grey. The females may grow up to 10 inches (25cm) long. The males are usually 6 inches (15cm) or less. Glands on their backs and sides produce a mildly toxic nasty tasting liquid if the spotted salamander is grabbed by a predator.

Habitat: They usually live in shallow burrows they have found and only leave them during breeding season or when they cannot find enough food in their burrow. They are territorial and protect their burrows from other spotted salamanders. Each salamander only uses about 9 square yards (9 m^2 or 29 ft^2) of forest floor.



Life History:

Eggs:

- laid in water in jell-covered groups of 100-300 eggs
- attached to vegetation or debris on bottom of pool
- take 28 to 49 days to hatch, depending on the temperature of the water

Larval stage:

- has gills and weak front legs when they hatch
- about 12 to 17 mm (1/2" to 2/3" inch) long when they hatch
- are dull olive green
- live in leaf litter on the bottom of vernal pool
- take 60-120 days to metamorphose into small adult (27 to 60 mm)

Adult:

- active only at night
- eats insects, worms, spiders, millipedes
- take two to three years to become an adult (or in the north, up to 7 years)
- may live up to 30 years

Breeding behavior: Vernal ponds are ponds that exist during rainy seasons but disappear during warmer dryer seasons. They lay eggs in vernal ponds because these ponds do not contain fish that would eat the salamanders' eggs. The pond where a salamander lays its eggs is usually the very same one from which it hatched. Salamanders return to the same pond year after year to breed. They will bypass closer ponds to find their home pond.

Their breeding routine starts with spring rains. They migrate en masse from their forest habitat areas to the ponds. They move to the ponds only on rainy nights. The males get to the ponds before the females and do a special "dance", bumping each other and coming up to the surface to gulp air.

Of the approximately 200 eggs laid, only about 40 survive to leave the pool. Of those 40, perhaps only one will survive to adulthood.

Information from: Pajerski, L., G. Hammond and N. Stout. "Ambystoma maculatum" (On-line), Animal Diversity Web. Accessed May 25, 2010 at http://animaldiversity.ummz.umich.edu/site/acccounts/information/Ambystoma_maculatum.html.

Every year spotted salamanders go back to the pond where they were born to lay eggs.

The End

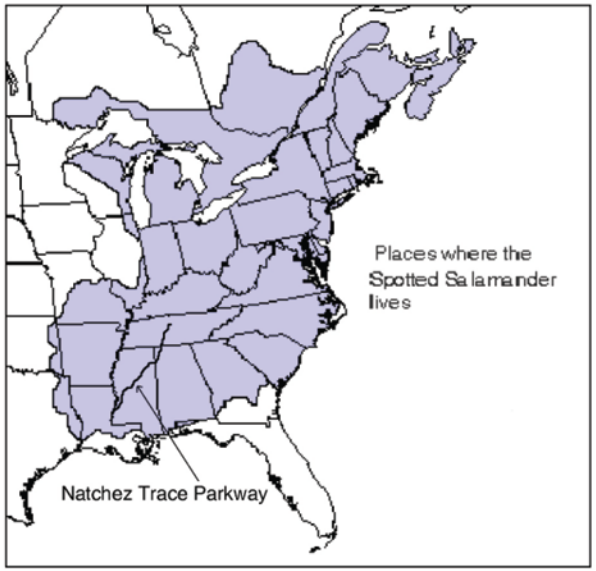
The Spotted Salamander

The spotted salamander starts life in an egg that is soft like jelly. It is laid in a pond with hundreds of other eggs. The eggs must be in water or they will dry up.

Salamanders are cold-blooded. The earth and sun warm their bodies. They cannot keep themselves warm.

It grows bigger and grows two more legs. It lives under the water and eats water insects. It must stay in the water and cannot breathe air.

When it gets bigger the gills get smaller. It grows lungs and it can live on the land. It turns black with yellow spots.

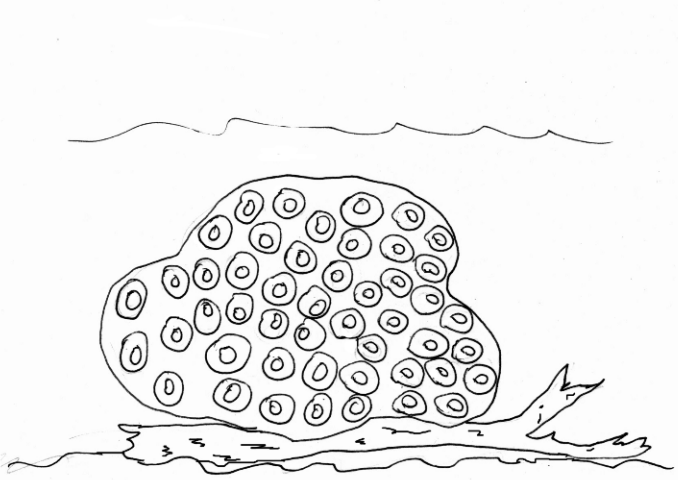


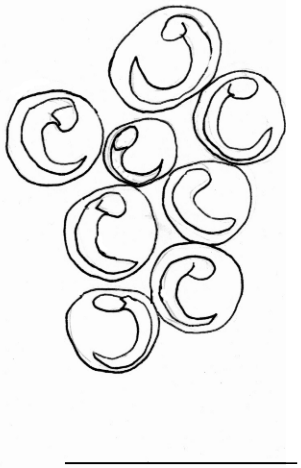
Spotted salamanders live in my neighborhood.

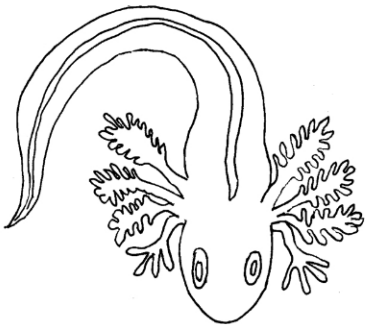
They make their homes in holes in the ground or under leaves.

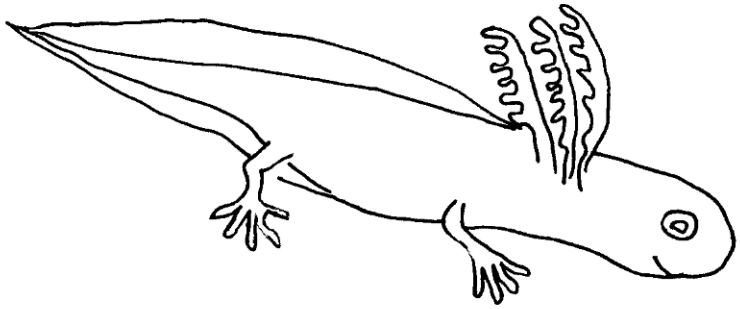
When it comes out of the egg it has gills. It must breathe under the water. It only has two legs. It is green.

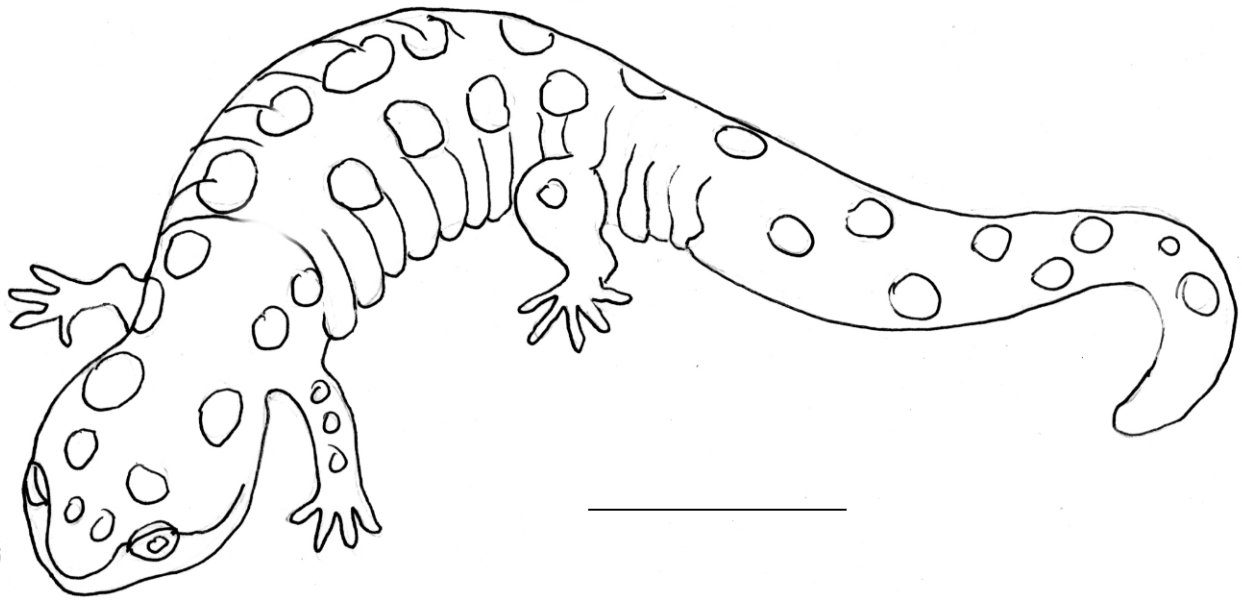
Spotted Salamander Life Stages





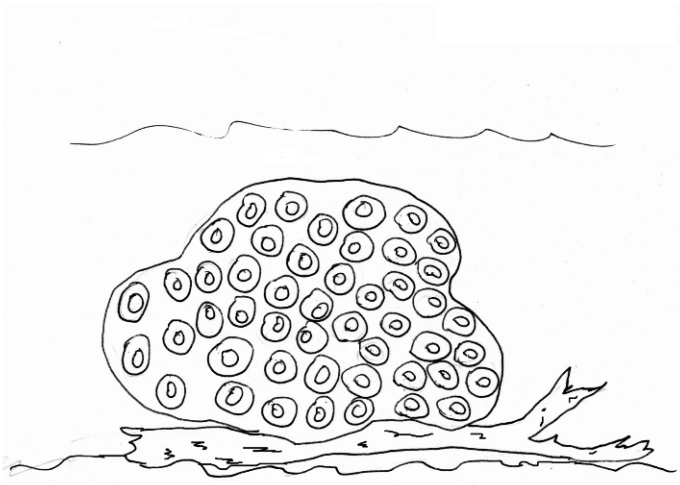




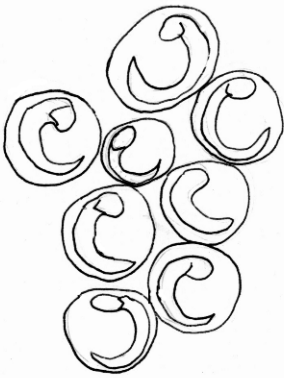


Spotted Salamander Life Stages

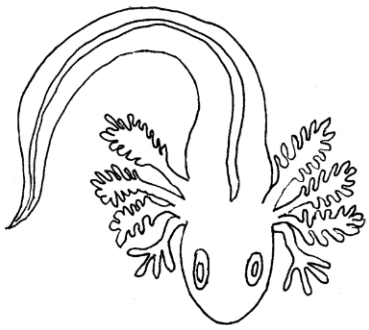
Answer Sheet



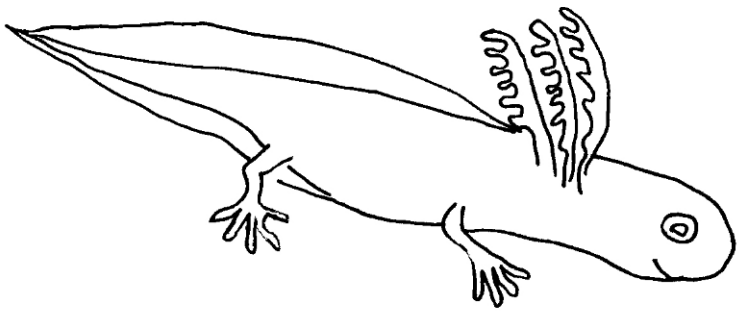
1 or eggs



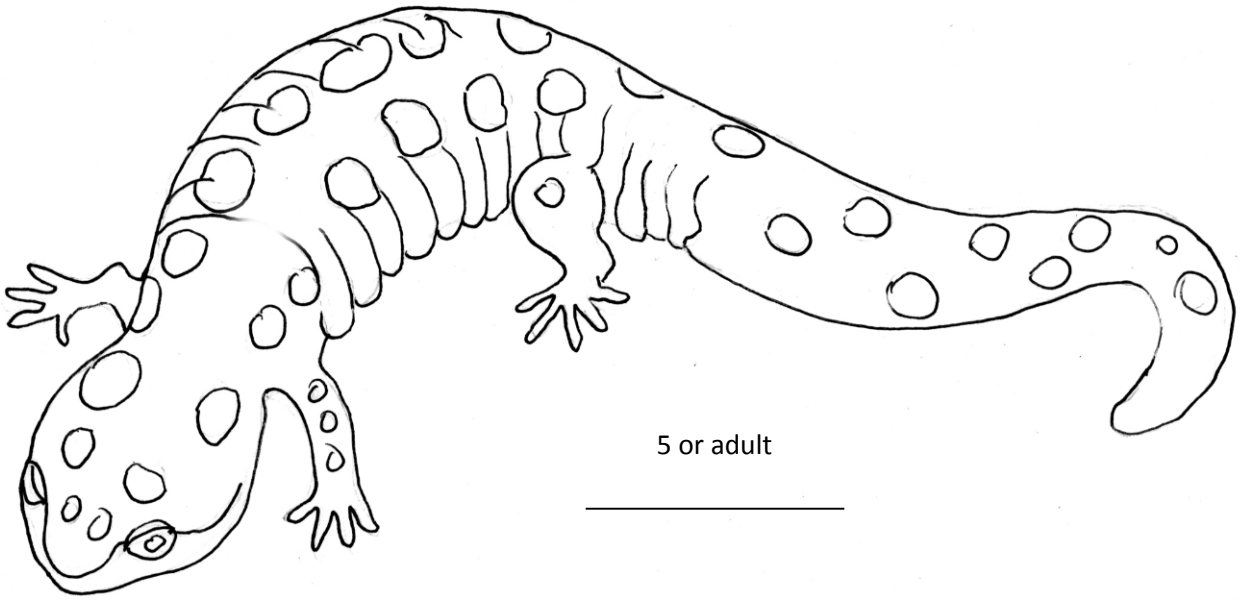
2 or small baby in egg



3 or small larva



4 or big larva



5 or adult