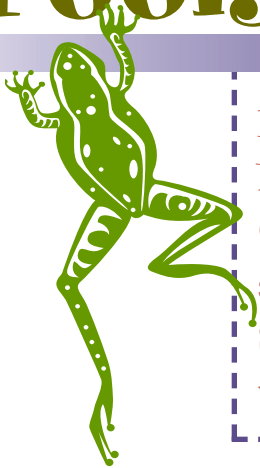


Pools of Life

AGE LEVEL
9-12



Life Skill: Critical thinking

Project Skill: Identifying where amphibians live

Objective: Decide whether various bodies of water are suitable for amphibian growth and development

Success Indicator: Participants identify several locations where amphibians might reside

Provisions Needed

- Pencil or pen
- Graph paper
- Maps of nearby wetlands and water bodies
- Books or other resources about amphibians



Trailhead

Have you ever seen little black tadpoles swimming around in a puddle of water? Did you know that those tadpoles would soon become frogs or toads? Frogs and toads, along with salamanders, make up the group of animals called **amphibians**. When amphibians first appeared on earth about 350 million years ago, they were the only animals with backbones that could live and breathe out of water. Amphibians are the ancestors of all four-limbed creatures.



Trailblazing

A majority of amphibians spend part of their lives in or near water. So when you set out to find amphibians, it makes sense to start near a source of water. Like all other animals, amphibians have a preferred **habitat**. A habitat is a place where a particular animal can fill all of the following needs: food, water, shelter (protection from enemies such as predators), and space to breed and raise young.

Locate and visit puddles, streams, ponds, or lakes in your neighborhood or community. Observe the characteristics of each water body and make notes. Size, location, surrounding vegetation, and other animals are just a few things to look for. After visiting several locations, organize your data and record it in a table, photograph, or drawing. The record should include the types or names of all the water bodies you visited and describe the

wood frog lifecycle



tadpole



adult frog



18 U.S.C. 707

Pools of Life

Suggested Reading

- Conant, Roger, and Joseph T. Collins. *Reptiles and Amphibians: Eastern and Central North America (Peterson Field Guide Series)*. 3rd Edition. New York: Houghton Mifflin Company. 1998.
- Behler, John L., and F. Wayne King. *The Audubon Society Field Guide to North American Reptiles and Amphibians*. New York: Alfred A. Knopf. 1979.
- Duellman, W. E., and L. Trueb. *Biology of Amphibians*. Baltimore, Md.: The Johns Hopkins University Press. 1986.

presence or absence of characteristics necessary for amphibian growth and development. Which places do you think were the best and worst amphibian habitats? Why?

Observe the characteristics of each water body and make notes.



Facts to consider:

- Fish often eat amphibian eggs or adults.
- Plants along the edge of shallow ponds and lakes provide sites for egg attachment for some types of amphibians, especially frogs.
- Small puddles of water often dry up before amphibian larvae completely develop.
- Puddles near roads or homes may contain toxic substances like motor oil or pesticides.
- Different types of amphibians prefer different water depths, temperature, clarity, or flow.
- Some salamanders and frogs breed during the late fall and winter in the southeastern United States, while most frogs breed during the spring and summer.

slimy salamander



Internet Resources

- <http://www.parcplace.org/default.htm>
- <http://www.uga.edu/~srelherp/index.htm>
- <http://www.fhwa.dot.gov/environment/wildlifecrossings/salamand.htm>
- <http://www.ces.ncsu.edu/nreos/steward/www19.html>

Pools of Life



Field Guide

Amphibians, like reptiles, are **cold-blooded**. This means their body temperature changes with the temperature of the surrounding air.

Most amphibians (all of those found in North America) **do not have claws** on their toes as do lizards.

green
treefrog



Most amphibians have **soft, moist skin** free of scales, feathers, and hair. Their skin contains mucus glands, which supply a clear fluid to keep the skin moist and in some cases to protect them from predators. During their time in water, amphibians breathe using gills. But most amphibians that move onto land replace their gills with lungs. Some amphibians have neither gills nor lungs as adults, but instead breathe through their moist skins.

A few amphibians grow and develop in ways not typical of most amphibians. The **waterdog** salamanders never develop lungs and never travel onto land. On the other hand, the red-spotted newt has an extra stage of development called an **eft** before returning to water and changing into an aquatic adult. Efts spend one to three years on land.



you can search for salamanders

Minimize handling of the animals, and remember to return the animals and the leaves, logs, or stones to their original positions.

Amphibians are most **active after dark**. Salamanders generally prefer dark, damp places, such as caves, rock crevices, or the undersides of rocks and logs. Frogs hang out along wetland borders, especially during the spring and summer, and can be heard singing most often on rainy nights. Salamanders like hellbenders, waterdogs, amphiumas, and sirens are the most difficult to observe because they rarely move out of the water and generally are active only at night.

Pools of Life



The Extra Mile

Visit at least two potential amphibian habitats that look similar at first glance. You might choose to visit two streams or two low-lying areas with fallen logs scattered about. Inspect the sites, searching for salamanders or other amphibians. Salamanders are most easily found by sifting through leaves, rolling over logs, or turning over small stones. Minimize handling of the animals, and remember to return the animals and the leaves, logs, or stones to their original positions. Keep records of the types and numbers of amphibians seen, and compare the records for the two sites. Were there differences? Why do you think there were or were not differences?



Field Notes

SHARE

- What types of water bodies turned out to be the best amphibian breeding habitats?
- What evidence did you find of amphibians breeding near your neighborhood?
- Did you rule out any bodies of water as being unsuitable without visiting them? Why or why not?

PROCESS

- How did you decide how to go about looking for amphibians?
- Why can't you locate tadpoles in every puddle or pool of water during the breeding season?
- Why do you think the following statement is true or false? "Bigger is always better when it comes to bodies of water for amphibians to breed."

GENERALIZE

- Why are declining amphibian populations often considered early indicators of bigger environmental problems?
- During their lives, most amphibians change the way they breathe. How do humans experience changes during their development?

APPLY

- How might you use the thought process from this activity to investigate another subject?
- How can you investigate issues when you get older?