

Salamander Habitat Hunt

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People, plants, and wildlife share simple basic needs known as habitat. The four main components of habitat are food, water, shelter and space. Some living things can only survive in very specific habitats like in limestone outcroppings. Organisms with specific needs are called **specialists**. Organisms that have general needs are called **generalists**.

Around one-third of the known salamander species are found in North America with the highest concentration of these species in the Appalachian Mountain region. Salamander lifestyles are diverse with some species being entirely aquatic (ex: hellbender (*Cryptobranchus alleganiensis*)) and others spending most of their time in terrestrial environments. As amphibians, salamanders often start their lives in wet environments or in water. Some of the lungless salamanders (Plethodontidae) lay their eggs in rotting logs and under wet leaves while some mole salamanders (Ambystomatidae) lay their eggs in water.

Salamanders are predators and are usually opportunistic with the prey that they take. Invertebrates such as slugs, earthworms, snails, insects, and spiders generally make up the diet of most North American salamander species. Salamanders will occasionally consume other salamanders, as well, particularly when other food resources are lacking.

This activity will introduce students to the concept of habitat and will challenge them to look for habitat components throughout their schoolyard that might support local salamander species. For the purposes of this activity, we will focus mostly on terrestrial salamander habitat needs, but this activity can also be adapted for aquatic salamander species as well.

Grade Levels: Grades 3-8

- **3-LS4-3** Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
- **MS-LS2-1** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

Objectives:

Following the activity, students will be able to:

- Define the term habitat and identify the needs of different types of salamanders.
- Evaluate areas to determine if suitable habitat is available for salamanders.

Materials:

- Bug jars (optional)

- Clipboards
- Magnifying glasses (optional)
- Plastic baggies (optional)
- Printouts of habitat hunt worksheets for appropriate age level
 - Habitat Hunt (Upper Elementary)
 - Habitat Hunt (Middle School)
- Smart device with iNaturalist or Seek apps (optional)
- Books or other resources to research local salamander species (middle school)

Directions:

1. Ask students if they know what habitat is. **Habitat** is a natural home or environment for organisms. Ask students if they know what are the 4 components of habitat. If they need a prompt, have them think about what items they need to survive. Here is a rhyme to remember: *Food, water, shelter, and space in the right arrangement makes habitat a wonderful place.*
2. Ask students why arrangement of habitat components might be important. If they are having trouble, then ask them to imagine how they would feel if they had to walk 5 miles to get to the grocery store (or pizza shop!). If they were an animal, would they want to live in an area where you had to go long distances to get food and water? Or, would you rather live close to the items you need? Some wildlife can walk long distances for habitat, but others, like salamanders, need to live in an area where habitat components are close together.
3. Ask students what they know about salamanders. Are salamanders amphibians or reptiles? Why or why not? What kinds of salamanders can they name? Where do salamanders live? What do salamanders eat? Consider developing a Know/Wonder/Learn (KWL) chart on the board and writing down ideas and questions.
4. For younger students, consider reading one of the recommended books listed in the Resource Section of this lesson plan to have students learn more about salamanders and their habitat needs. For older students, provide resources like field guides or allow them to search online to research local salamander species and their habitat needs. State wildlife agency websites are often helpful for getting information about local wildlife species.
5. Once students learn a bit more about local salamanders and their habitat needs, tell them they are going to go outside on a salamander habitat hunt. Before they go outside, hand out the age appropriate habitat hunt worksheets and review the different items you will be looking for.
 - a. *Note:* for older students, break them into groups and have them pick a local salamander species and write its habitat needs on the top of the sheet.
6. Prepare students to head outside by giving them directions on where they can search and if they should stay with a trip leader or can search on their own. Remind students not to pick up salamanders with their bare hands so they don't accidentally hurt the salamanders. Bring plastic baggies as an optional way to safely catch and view salamanders in the field. To prevent spread of disease, only one salamander should be placed in each bag, and once a bag is used, then it should be thrown away. Other

optional search items could include bug jars to capture and safely observe invertebrates that salamanders might eat as well as magnifying glasses to view items under a lens.

7. Once outside, help encourage and guide students with their observations. Ask guiding questions that begin with '*I wonder....*' Use resources like the iNaturalist or Seek app to help with identification of plants and animals that students find.
8. While outside, have students fill out their habitat hunt sheets. Encourage them to create a map of the habitat while exploring and label it with what they find. Give students a minimum of 15 minutes to conduct their searches and up to 30 minutes to explore the area. Make note of different wildlife and potential hazards that are found along the way.

Discussion:

1. After the habitat search, get the students back together in a group and discuss their findings. What food, water, and shelter did they find? Were there any hazards like roads or pollution that might affect salamanders? Did they find any salamanders?
2. After discussing findings, have students determine if the habitat is suitable for salamanders and explain why or why not based on their findings.
3. If there were hazards, and/or if the habitat was not suitable, ask students what ways they might be able to enhance the habitat for salamanders. Perhaps that could include adding more logs for shelter or native plants to attract insects for salamanders to eat. If time allows, consider making a plan and goals to enhance local habitat.
4. Have students write down the four main components of habitat on a sheet of paper. Under each component, have them write an example of what a salamander would need for each category. Example: food = insects.

Extensions:

1. Instead of a worksheet, create a bingo board to make it a competitive process to find the different components of habitat that would support salamanders.
2. Use a shoebox and create a salamander habitat diorama for a local salamander species. Include food, water, shelter, and space.
3. Have students create a PSA to address hazards they found during the habitat hunt. For example, they could address the threats of roads to salamanders, particularly during migration season.

Resources:

1. **Suggested Books:**
 - a. Salamander Season by Jennifer Keats Curtis (Gr 1-4)
 - b. Shady Streams, Slippery Salamanders by Jason Patrick Love (Gr 3-7)
 - c. The Salamander Room by Anne Mazer (Gr K-3)
 - d. Peterson First Guide To Reptiles And Amphibians by Robert C. Stebbins, Roger Tory Peterson, and Roger Conant (Gr 5-7)