

K-2 Animal Habitats Activity

Overview

Focus Question

What do salamanders and other animals need to survive?

Activity Synopsis

The teacher will read aloud the book *The Salamander Room* by Anne Mazer and discuss it with the students. Discussion will include some characteristics of the spotted salamander. Students should consider what they would do to ensure a salamander would survive if they were to keep one as a pet. Students will then discuss what they would do to keep a river otter, an American alligator or a bottle-nosed dolphin as a pet. Students will create a mural to show how they would meet the habitat needs of the chosen animal.

Time Frame

1-2 60 minutes sessions

Objectives

The learner will be able to:

- Explain that animals need air, food, water, shelter and space to survive
- Create a representation of a habitat that meets the basic needs of an American alligator, a bottlenose dolphin or a river otter

Student Key Terms

- alligator
- dolphin
- habitat
- river otter
- salamander
- shelter

Teacher Key Terms

- carnivore
- herbivore
- omnivore
- respiration

Standards

South Carolina College- and Career-Ready Science Standards 2021

Kindergarten: **K-LS1-1**, K-ESS2-2, **K-ESS3-1**, K-ESS3-3

1st Grade: **1-LS1-1**, 1-LS1-2, **1-LS3-1**

2nd Grade: **2-LS4-1**, **2-ESS2-2**, 2-ESS3-1

* **Bold standards are the main standards addressed in this activity**

2014 Academic Standards and Performance Indicators for Science

Kindergarten: **K.P.1A.1**, K.P.1A.7, K.P.1A.8, **K.L.2A.1**, K.L.2A.5, **K.L.2A.6**

1st Grade: **1.S.1A.1**, 1.S.1A.7, **1.S.1A.8**, 1.L.5A.1, 1.L.5B.2

2nd Grade: **2.S.1A.1**, 2.S.1A.7, **2.S.1A.8**, **2.L.5B.1**, **2.L.5B.2**

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South Carolina College- and Career-Ready Science Standards 2021

Kindergarten Performance Expectations

- K-LS1-1** Use observations to describe patterns of what plants and animals (including humans) need to survive.
- K-ESS2-2** Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
- K-ESS3-1** Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.
- K-ESS3-3** Obtain and communicate information to define problems related to human impact on the local environment.

First Grade Performance Expectations

- 1-LS1-1** Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.
- 1-LS1-2** Obtain information from multiple sources to determine patterns in parent and offspring behavior that help offspring survive.
- 1-LS3-1** Make observations to support an evidence-based claim that most young are like, but not exactly like, their parents.

Second Grade Performance Expectations

- 2-LS4-1** Make observations of plants and animals to compare patterns of diversity within different habitats.
- 2-ESS2-2** Develop a model to represent the shapes and kinds of land and bodies of water in an area.
- 2-ESS3-1** Design solutions to address human impacts on natural resources in the local environment.

2014 Academic Standards and Performance Indicators for Science

Kindergarten Performance Indicators

- K.P.1A.1** Ask and answer questions about the natural world using explorations, observations, or structured investigations.
- K.P.1A.7** Construct scientific arguments to support explanations using evidence from observations or data collected.
- K.P.1A.8** Obtain and evaluate informational texts, observations, data collected, or discussions to (1) generate and answer questions about the natural world, (2) understand phenomena, (3) develop models, or (4) support explanations. Communicate observations and explanations using oral and written language.
- K.L.2A.1** Obtain information to answer questions about different organisms found in the environment (such as plants, animals, or fungi).
- K.L.2A.5** Construct explanations from observations of what animals need to survive and grow (including air, water, nutrients, and shelter).
- K.L.2A.6** Obtain and communicate information about the needs of organisms to explain why they live in particular areas.

First Grade Performance Indicators

- 1.S.1A.1** Ask and answer questions about the natural world using explorations, observations, or structured investigations.
- 1.S.1A.7** Construct scientific arguments to support claims or explanations using evidence from observations or data collected.
- 1.S.1A.8** Obtain and evaluate informational texts, observations, data collected, or discussions to (1) generate and answer questions about the natural world, (2) understand phenomena, (3) develop models, or (4) support explanations. Communicate observations and explanations clearly through oral and written language.
- 1.L.5A.1** Obtain and communicate information to construct explanations for how different plant structures (including roots, stems, leaves, flowers, fruits, and seeds) help plants survive, grow, and produce more plants.
- 1.L.5B.2** Develop and use models to compare how the different characteristics of plants help them survive in distinct environments (including deserts, forests, and grasslands).

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Second Grade Performance Indicators

- 2.S.1A.1** Ask and answer questions about the natural world using explorations, observations, or structured investigations.
- 2.S.1A.7** Construct scientific arguments to support claims or explanations using evidence from observations or data collected.
- 2.S.1A.8** Obtain and evaluate informational texts, observations, data collected, or discussions to (1) generate and answer questions about the natural world, (2) understand phenomena, (3) develop models, or (4) support explanations.
- 2.L.5B.1** Obtain and communicate information to describe and compare how animals interact with other animals and plants in the environment.
- 2.L.5B.2** Develop and use models to exemplify characteristics of animals that help them survive in distinct environments (such as salt and freshwater, deserts, forests, wetlands, or polar lands).

Cross Curricular Standards

South Carolina College and Career Standards for Social Studies

K.H.1, K.H.2, K.H.3, K.G.2, K.G.3, K.E.1, 1.G.4, 2.G.2

South Carolina College and Career Standards for ELA

Writing (W) – K-2.1, 1-2.1, 2-2.1

Communication (C) – K-1.1, K-1.5, K-2.1, K-2.2, K-3.1, 1-1.1, 1-1.5, 1-2.1, 1-2.2, 1-3.1, 2-1.1, 2-1.5, 2-2.1, 2-2.2, 2-3.1

Common Core ELA Standards

Reading Literacy – K.1, K.3, K.4, K.7, 1.1, 1.3, 1.7, 1.9, 2.1, 2.3, 2.5, 2.7, 2.10

Foundational Skills – K.1, 1.1

Speaking/Listening – K.1ab, K.2, K.3, K.4, K.5, K.6, 1.1ab, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1abc, 2.2, 2.3, 2.4, 2.5

Language – K.1bcdef, K.4a, K.5c, K.6, 1.1bcdefghij, 1.4ab, 1.5bc, 1.6, 2.1abcdef, 2.3a, 2.4abcd, 1.5a, 1.6

Writing – K.7, 1.7, 2.7

Background

Key Points

Key Points will give you the main information you should know to teach the activity.

- An animal needs air, food, water, **shelter** and space to survive. An animal's **habitat** is the place where it can find these things to survive.
- Animals need air because oxygen is necessary in animals' bodies for the chemical process that allows usable energy to be released from food.
- Animals need food because it provides energy and nutrients necessary to the body to perform life functions.
- Animals need water because it transports nutrients and wastes in the body, it regulates body temperature and it is necessary as an ingredient in internal chemical reactions.
- Animals need shelter because it protects them from the elements and from predators.
- Animals need space because overcrowded areas lead to starvation and disease.
- For concise information on spotted **salamanders**, **river otters**, American **alligators** and bottlenose **dolphins**, scroll down to "Featured Species" section.

Detailed Information

Detailed Information gives more in-depth background to increase your knowledge, in case you want to expand the activity or you are asked detailed questions by students.

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Animals need food, water, air, **shelter** and space to survive. No matter where an animal lives, it must attain these things. The world is comprised of many environments with varied climates. Animals develop specialized adaptations to get the things they need to survive from a variety of environments. Animals found in the ocean are not the animals found in the tropical rainforest or the desert or the tundra, yet they all share the need for food, water, air, shelter and space.

Animals cannot produce their own energy so they must eat other organisms to get energy. Some animals, such as deer and elk, are **herbivores**, and eat only plants. They make use of the energy the plant has produced through photosynthesis. Some animals, such as eagles and hawks, are **carnivores** that eat other animals and get their energy from the organic compounds stored in their prey. Some animals, such as humans, are **omnivores** that can eat both plants and animals. Some animals, such as turkey vultures, are scavengers that live off of dead animals and get energy from the organic compounds remaining in the animal's carcass. Some animals, such as blue crabs, are opportunistic feeders, meaning they will eat almost anything they can get their mouths around. All animals depend on food to receive energy and nutrients to carry out life functions.

Water is a major component of all body fluids and the protoplasm of each individual cell. Water is also important as a solvent for chemicals and nutrients in the body. Water makes up 60-90% of the composition of all organisms. For this reason, all animals must intake water on a regular basis.

All animals must obtain oxygen to convert food energy into usable energy through some form of **respiration**. Terrestrial animals, such as reptiles and mammals can pull oxygen out of the atmosphere. Aquatic animals, such as fish, can pull oxygen out of the water. Amphibians can do both. Because life processes occur 24 hours a day and they all require energy, an animal would soon die without oxygen.

Shelter protects an animal from the elements and from predators, and thus increases survival. Shelter can take many forms including the shells of snails and other mollusks, the nests of birds and the burrows and dens of mammals.

If animals are competing for space, they also are competing for food, water and shelter. Crowding makes animals more prone to disease and parasites, which spread more quickly and easily. An environment can only support a certain number of organisms and removing predators sometimes has negative effects on their prey. Without the limiting factor of predators, the prey can multiply rapidly causing a loss of space and leading to diseased and malnourished animals.

A habitat is the place where animals can get air, food, water, space and shelter. If you remove an animal from its habitat, or remove the habitat from the animals, the animal may not survive. This is why a habitat that is suitable for one animal, such as a house for a human, may not be suitable for another animal, such as a house for a salamander. The house cannot meet the salamander's habitat needs.

Featured Species

Spotted Salamander (*Ambystoma maculatum*)

The spotted **salamander** is the state amphibian of South Carolina. This 6-10 inch salamander is found near shallow pools in deciduous forests in Eastern North America from Louisiana to Canada. In South Carolina, it is most common in the Piedmont and Mountain regions. These salamanders avoid areas prone to flooding or pools populated with fish. They tend to stay in burrows underground or under trees and are difficult to find.

Spotted salamanders prey on insects, worms, slugs and other small invertebrates. They can be found on a rainy night on the forest floor looking for food. In the wild, they can live over 30 years.

Though they spend most of their adult life on land, they lay their eggs in water and spend their larval stages in water. Therefore, spotted salamanders tend to stay near aquatic habitats. In the spring, the female will move to a shallow pool and lay 200-250 eggs in a mass on submerged sticks. The eggs will hatch within 2 months. Larval salamanders remain in the pool for another 2 months, maturing and developing until they look like adult salamanders. They then move on land to begin their terrestrial life.

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River Otter (*Lutra Canadensis*)

The largest mammal predator in the mountain stream, the **river otter**, occurs throughout North America except for the extreme northern portion of Alaska, the Southwest desert and the arid Plains states. Locally common in South Carolina, it ranges across the state in virtually all freshwater and estuarine habitats. A member of the weasel family, the otter has short legs, webbed toes, a broad tail and an elongated body. An adult otter will grow from 3.5-4 feet in length and weigh from 10-25 pounds. Otters travel within a home range of 15 square miles in family units of 4-5 individuals.

Otters have webbed toes, a water repellent coat, and the ability to close their ears and nostrils while diving. Otters also have long whiskers that help detect prey underwater. These adaptations allow otters to exist on a diet of fish. Otters are known to eat amphibians, turtles, snakes, crayfish and an occasional bird.

Beavers play an important role in the lives of otters. If beavers frequent a particular area, otters will probably be found there. Ponds created by beaver dams are prime habitat for otters, and they often use abandoned beaver dens as shelters. If a beaver den is not available, they may be found in hollow trees or between rocks or roots, building nests out of sticks, leaves and grass.

Otters are active and curious. They spend much of their time playing with each other and exploring their environment. While other animals may play to practice hunting and survival skills, otters often play for enjoyment, a rare trait in animals and a sign of higher intelligence.

Mating takes place in the Fall after males battle for a mate. After a gestation period of up to 270 days, female otters give birth to 1-3 young, called kits, in a den with an underwater entrance constructed beneath the bank of a stream, river or lake. The female otter defends her kits and they remain with her as a family unit for over a year.

Otters have few natural enemies other than man, who trap them for their rich, thick pelt, and who also have lowered populations through **habitat** destruction and roadkill. Look for otters in larger streams or rivers where food is abundant and the water is unpolluted and quiet. The best time to look is early morning or evening.

American Alligator (*Alligator mississippiensis*)

American **alligators**, the largest reptile in the United States, are found throughout the Coastal Plain of South Carolina. These crocodylians grow from 8-12 feet in length, though individuals up to 18 have been found. Despite their size and reputation, they are generally not a threat to people. In 25 years, there have been only 6 documented alligator attacks on people in South Carolina, and none were fatal. An alligator's diet consists mainly of fish, birds and small mammals. Normally, if a person is attacked, it is because the alligator was protecting itself or its young and not because it was seeking a meal. Like any wild animal, keep a respectful distance from an alligator, and do not engage in any activity the animal finds threatening including approaching it.

Alligators need freshwater to survive and are found in freshwater swamps, marshes, impoundments, lakes, ponds and the backwaters of large rivers. Alligators are cold-blooded, aquatic animals that depend on the sun for warmth and freshwater aquatic habitats for food. For this reason, they are found only in the Southeastern United States, where the climate is warm and water is plentiful. Alligators need at least pond-sized bodies of water and areas of land easily accessible for basking in the sun.

Adult alligators feed on fish, turtles, birds, snakes and small mammals. Many alligators also feed on carrion. Alligators are opportunistic carnivores and will not turn down an easy meal.

Alligators are large animals with hard scales for protection, and therefore, they do not have any natural predators as adults. For this reason, shelter is not as much of a requirement for alligators as it is for other animals. They do need to protect themselves from the elements, and they will dig holes in the ground, called dens, to stay warm or to find moisture.

Often, alligators are found in the day basking on the shoreline. Unable to maintain a constant body temperature, alligators depend on external sources to raise or lower their body temperature. Absorbing sunlight warms the alligator and prepares it for evening hunting.

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If it becomes too warm, it will move to the water to cool off. In the winter, when temperatures drop, alligators go into a semi-dormant state, and generally do not become active until March.

Female alligators are protective mothers. In June, the female builds a mound made of dirt and vegetation about 7 feet in diameter and 1-2 feet in height. In the middle of this mound, she digs a hole and lays 15-80 eggs. This nest acts as an incubator that keeps the temperature in the upper eighties. During this time, the mother protects the nest. When the eggs begin hatching in September, the mother helps the young by digging them out of the nest and gently carrying the young in her jaws to the water. The jaws are capable of exerting 3,500 pounds of pressure per square inch, but they also can be used for delicate actions. For one year, the mother will stay with the young to protect them from predators. During this time, the young alligators feed on insects, crayfish and amphibians.

Atlantic Bottlenose Dolphin (*Tursiops truncatus*)

The Atlantic bottlenose **dolphin**, commonly misidentified as a porpoise, occurs from Cape Cod through the Caribbean and Gulf of Mexico to South America. Common along the entire Southeastern coast, it frequently ventures up tidal creeks and rivers into freshwater. The bottlenose dolphin grows to 12 feet in length.

Dolphins typically breed in the spring, and after a gestation period of 12 months, one calf is born. At birth, the 3 foot calf weighs approximately 25 pounds. The calf will stay with its mother and nurse for 12-18 months before fending for itself. Dolphins live for 25-40 years on a diet comprised primarily of fish, squid and shrimp. The bottlenose dolphin requires about 10% of its body weight in food daily.

Dolphins use echolocation to help them pinpoint their prey. Their technique is similar to the terrestrial echolocation used by bats. Dolphins occasionally use complex herding formations to capture fish. In shallow tidal creeks, a dolphin pod sometimes herds fish towards land. When the fish are cornered, the dolphins rush in and knock the fish onto a sand bar or mud bank with their powerful tails. The dolphin then comes out of the water to retrieve its stranded prey.

Dolphins are known to attack the sharks by ramming them in the gills with their rostrum (snout). On occasion, dolphins have been observed surrounding a shark and ramming the shark or tossing it into the air. It is unknown if this behavior is an attempt to injure the shark or simply a game.

Dolphins also display cooperative behavior. Healthy dolphins will aid another sick or weak dolphin. Two stronger dolphins will flank the sick animal and guide it to the surface by supporting it under a pectoral fin. On rare occasions, the bottlenose dolphin has helped humans in the water. This usually involves a drowning person that the dolphin pushed to the safety of shallow water.

Procedure

Materials

- *The Salamander Room* by Anne Mazer
- Large paper or whiteboard
- Construction paper
- Scissors
- Crayons
- Glue
- Tape
- Photographs and information:
 - [Spotted salamanders](#)
 - [River otters](#)
 - [American alligators](#)

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- [Bottle-nosed dolphins](#)

Procedure

1. Show students photographs of the spotted salamander and discuss its life history. Ask the students, "If you found a spotted salamander in the woods and wanted to take it home, what would you do to make sure it survived?". Discuss this and write down their predictions.
2. Introduce and read the book *The Salamander Room*, by Anne Mazer, to the students. Discuss the book and have students think about some questions:
 - Where could Brian find the salamander in South Carolina?
 - How did Brian change his bedroom so the salamander could live there?
 - How did he meet the salamander's (and its friends') needs?
 - Where did Brian end up sleeping?
 - Could the salamander live in the boy's room without changes?
 - Could the boy live in the salamander's habitat? Why or why not?
 - What are 4 things shown in the book that all animals need to survive? (Food, water, shelter and space)
 - How did Brian provide these for the animals in his room?
 - At the end of the story, would Brian's room be a good habitat for a little boy?
3. After reading the story, create a word web on a large piece of paper or on the board about the things the salamander needed to survive.
4. Show students photographs and information provided with this activity on river otters, American alligators and bottlenose dolphins. Have the students pick one animal and then as a class decide how they would turn the classroom into a habitat that is suitable for that animal. Write on a chart all the needs the students determine should be met to keep the animal in the classroom.
5. Next, with construction paper or other art materials create the habitat in the classroom. For example, if students choose a river otter, have them create water for swimming and land to walk on. Then have them make fish for food. Then have them create a log for shelter. Then have them create a river otter. Have students label "river otter" and the places where it can get "air", "food", "water", "shelter" and "space" in this habitat.

Follow-up questions

- If the students moved into a salamander's habitat, what would they need to change in order to make it suitable to them? How could they get air, food, water, shelter and space from the habitat?
- If the students changed the habitat, would the salamander still be able to survive?

Assessment

Have the students choose an animal they would like to have live with them (provide them a list of animals if they need one). Students should determine how they would change their room to meet the needs of the animal they have chosen. They should make a drawing and/or a written description of what they would do. In their drawings and/or descriptions, students will provide food, water, shelter and space to their chosen animal. For example, if the student chose a river otter, their description and/or picture might include: water to swim in and drink, fish to eat, a hollow log to sleep in and enough space to move around in. Space will have to be a judgment call. If the student opens up their rooms to the outside or expands it in some way, this would be acceptable.

Scoring rubric out of 100 points

Draws and/or describes the animal:	20 points
Draws and/or describes the animal with food:	20 points
Draws and or describes the animal with water:	20 points
Draws and/or describes the animal with shelter:	20 points

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Draws and/or describes the animal with space:

20 points

Cross-Curricular Extensions

STEM Extension

Students can design a short power point, Keynote or Google slide presentation about the spotted salamander, South Carolina's state amphibian. Using short phrases and photos, students can describe the animal's basic needs, habitat, concerns and steps we can take to protect them.

Science Extension

Students could look at [pictures](#) of different animals to determine which look similar and which look different. This is a great opportunity to talk about the difference between mammals, reptiles, fish, amphibians and birds.

For example:

1. A river otter, a beaver, a raccoon and a snake
2. An alligator, a lizard, a snake and a fish
3. A salamander, a toad, a frog and an egret
4. A pelican, a woodpecker, a cardinal and an opossum
5. A fish, a shark, a stingray and a toad

Social Studies Extension

Have students think about their habitat, the local community. Have students discuss where they can get air, food, water, shelter and space in their community.

[Second Grade Math extension](#) by SCA Master teacher, Robin Rutherford, Porter Gaud School

Resources

Teacher Reference Books

Audesirk, Gerald and Teresa Audesirk. *Biology: Life on Earth*. Macmillan Publishing Company, New York, 1993.

College textbooks are often the best sources for detailed information on general subjects such as biology and food chain ecology.

Fortey, Richard. *Life*. Vintage Books, New York, 1997.

This well-written history of life on earth for the past 4 billion years provides insights into why and how living things developed into consumers to survive.

Halliday, Tim. *Animal Behavior*. University of Oklahoma Press, Norman, OK, 1994.

This book uses photographs and text to provide information on animal behaviors. Includes chapters on herbivores and carnivores.

Hickman, Cleveland, Allan Larson and Larry Roberts. *Integrated Principles of Zoology*. Wm. C. Brown Publishers, 1996.

This is another college textbook and another good source of information on animals.

Teacher Reference Videos

Attenborough, Sir David. *Trials of Life* (Video series), Turner Home Entertainment, 1995.

This series shows the various behaviors animals have adapted in order to survive, including much on feeding. Though the entire series may be too advanced for elementary students, it is a wonderful resource for teachers.

Teacher Reference Websites

Animal Planet

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<http://animal.discovery.com>

This site contains information and interactive games on a variety of animals.

National Wildlife Federation

<http://www.nwf.org/>

This site contains information on this conservation society and conservation issues and education programs. It includes a kid's page.

Smithsonian Science Education Center

<https://ssec.si.edu/habitats>

Online habitat game where students can drag and drop different animals into the correct habitats, while learning interesting facts as well.

Student Reference Books

The following books may be difficult for young children to read but could be understood if read aloud.

Arnosky, Jim. *Crinkleroot's Guide to Knowing Animal Habitats*, Simon & Schuster Books, New York, 1997.

This book introduces students to different habitats and animals found in wetlands, woodlands, cornfields, and grasslands.

Eyewitness Science: Ecology, Dorling Kindersley, New York, 1993.

These attractive books use photographs, illustrations and text to teach the readers about ecology, communities and the interactions of plants and animals. It includes information on food chains and producers and consumers.

Wildsmith, Brian. *Animal Homes*, Oxford University Press, Hong Kong, 1991.

This is a picture book that introduces students to animals found throughout the world and discusses their habitats.

Student Fiction Books

Carle, Eric. *The Very Hungry Caterpillar*. Philomel Books, New York, 1969.

The story of a caterpillar who eats a lot of stuff, including things that caterpillars do not normally eat, a potential topic for discussion.

Fleming, Denise. *In the Small, Small Pond*, Henry Holt and Company, New York, 1993.

This Caldecott Honor book takes a look at the pond habitat through the eyes of a frog.

Hoose, Phillip and Hannah. *Hey, Little Ant*, Tricycle Press, Hong Kong, 1998.

Have you ever squished an ant? As a reader of this book, you follow the trials and tribulations of an ant as it pleads for its life, while a kid contemplates the question "to squish or not to squish".

McDonald, Megan. *Is This a House For a Hermit Crab?*, Orchard Books, New York. 1990.

In this book, the reader follows a hermit crab as it searches for a new home.

Curricula

Project WILD

Project WILD is an interdisciplinary curriculum for K-12 teachers on a broad range of environmental and conservation topics.

For more information click on: <http://www.projectwild.org>