K-2 Habitats Activity

South Carolina Aquarium

Overview

Focus Question
What is a habitat? What do living thing need from their habitat?

Activity Synopsis
Students will learn about what a living thing needs in order to survive in a habitat as well as get acquainted with different types of habitats.

Time Frame
60 minutes

Objectives
The learner will be able to:

- Define the word habitat
- List the things all living things need to survive
- Use clues to answer habitat riddles

Student Key Terms

- air
- food
- gills
- habitat
- living thing
- lungs
- shelter
- space
- water

Teacher Key Terms

- biodiversity
- consumer
- diffusion
- food chain
- organism
- photosynthesis
- producer

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
2nd Grade: 2-LS2-1, 2-LS4-1, 2-ESS2-2, 2-ESS2-3, 2-ESS3-1

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

2014 Academic Standards and Performance Indicators for Science

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Kindergarten: K.P.1A.1, K.P.1A.8, **K.L.2A.1, K.L.2A.2, K.L.2A.5, K.L.2A.6**
1st Grade: 1.S.1A.1, 1.S.1A.8, **1.L.5A.1, 1.L.5B.2**
2nd Grade: 2.S.1A.1, 2.S.1A.8, 2.L.5B.1, **2.L.5B.2**, 2.L.5B.3

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

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.

Second Grade Performance Expectations
2-LS2-1 Plan and conduct an investigation to determine what plants need to grow.
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-ESS2-3 Obtain information to identify where water is found on Earth and that it can be solid or liquid.
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.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.2 Conduct structured investigations to determine what plant need to live and grow (including water and light).
K.L.2A.3 Develop and use models to exemplify how animals use their body parts to (1) obtain food and other resources, (2) protect themselves, and (3) move from place to place.
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.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).

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.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).
2.L.5B.3 Analyze and interpret data from observations to describe how animals respond to changes in their environment (such as changes in food availability, water, or air).

Cross Curricular Standards

South Carolina College and Career Standards for Social Studies
K.H.1, K.H.3, K.E.1, 1.H.1, 1.H.3, 1.G.4, 2.G.2

South Carolina College and Career Standards for ELA
Inquiry (I) – K-1.1, 1-1.1, 2-1.1
Reading Informational Text (RI) – K-2.1, K-2.2, K-8.1, K-9.1, K-9.2, 1-8.1, 1-9.1, 1-9.2, 2-9.2
Writing (W) – K-2.1, 1-2.1, 2-2.1
Communication (C) – K-1.1, K-1.2, K-4.3, K-5.1, K-5.2, 1-1.1, 1-1.2, 1-4.3, 1-5.1, 1-5.2, 2-1.1, 2-1.2, 2-4.3, 2-5.1, 2-5.2

Background

Key Points

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

- A **habitat** is a place where an organism can get the air, food, water and shelter/space it needs to survive.
- All **living** things need a habitat.
- Any place where air, food, water and shelter/space are available has the potential to be habitat for an organism. If an organism can obtain each of these things, even where they are scarce, it is still a habitat.
- Common South Carolina habitats include the ocean, beach, saltmarsh, pond, swamp and forest.
- Common habitats not found in South Carolina, but in other parts of the US/world are the arctic, desert and rainforest.

Detailed Information

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

A **habitat** is the place where a **living** thing, an organism, can get all the things it needs to survive. Organisms need **air**, **food**, **water** and **shelter**/**space** to survive. The Earth has great variability in climate, topography and accessibility of water. Despite this variability, almost every part of the planet is a habitat for some living thing because living things have evolved great variability in body structures and behaviors.
A habitat can be as large as continents (for the birds that migrate from South America to North America) or entire oceans (for migrating fish, sea turtles and whales) or as small as a moist piece of bread (for fungus) or your intestines (for the bacteria that help you digest your food). Put a whale on land or a bird in the ocean, though, and suddenly they are in big trouble. It is not a suitable habitat for them because they are not built to get air, food and water from this type of environment.

Air can be found all over the Earth. Air in the atmosphere is made up of about 78% nitrogen, 20% oxygen, 1% argon, 0.04% carbon dioxide and a small percentage of other gases (neon, helium and methane). Animals depend on atmospheric oxygen to breathe using their lungs. Plants need carbon dioxide for photosynthesis. Animals that live in water get their air (oxygen) from the water (H_2O). These animals use gills to breathe underwater like a fish or diffusion through their body like a sea star.

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Food is an important need for all living things. Without energy, no living thing can withstand life for too long. Animals consume their food for energy, whereas plants make their own food using energy from the sun (photosynthesis), water and carbon dioxide. This is why animals are called consumers in the food chain and plants are called producers. Food to organisms can be a dead lion decaying in the sun, an acorn from a tree, berries from a bush or a mouse hiding in the forest. It is important for biodiversity to remain high on Earth so that all organisms can find a source of food.

Water is necessary for all life. Humans should drink 8 glasses of water a day. Some animals live in water and therefore need it for drinking as well as their shelter. The 3 main types of water are freshwater, saltwater and brackish water (the mixture of fresh and salt water). Freshwater is found in ponds, lakes, rivers, streams, swamps, and more habitats. Saltwater is found in the ocean. Brackish water is found in estuaries, harbors, saltmarshes and more. Most organisms can only survive by living in or drinking one type of water (fresh or salt). Some organisms are adapted to survive in a variety of salinities (amount of salt) such as a stingray or dolphin.

Shelter and space are often confused. Animals need shelter in order to protect them from the elements or a predator. Shelters can be a log for a snake to hind under or dark water for an alligator to camouflage. Plants needs space in order to grow. Some plants need a small amount of space to thrive (like a palm tree) where as some plants have roots that spread 50 feet for stability (cypress tree).

Even in environments that are limited in certain crucial needs, organisms evolve methods to find enough of those things to make that environment their habitat. For example there is much more oxygen in the atmosphere than in oceans and yet oceans are teeming with life. This is because animals living in the ocean have adaptations that allow them to pull air out of the water. Another example is deserts with little water in them but still support life. When camels find water, they can drink 20 gallons at a time and store this water in the fat in their humps. They can then go weeks without water, living off their storage hump. Cacti have shallow roots that extend a great distance from the plant and allow the cactus to collect a lot of water during the brief rainy periods. The water is stored in the thick stems for dry times.

South Carolina is a very small state in relation to the other states (40th state in size), yet because of its varied topography and landform regions, South Carolina has many different types of habitats and therefore many different species (15th state in biodiversity). Here is a list of some common South Carolina habitats and their characteristics:

Habitat	Description	Type of Water	Common Organisms
Forest/Woods	Large area covered by trees and other vegetation	Fresh	Songbirds, birds of prey, trees, snakes, lizards, mice, deer, squirrels
Mountain	A large landform that stretches to high altitude	Fresh	Trees, moss, goats, bears, cougars, eagles
Meadow	Field habitat with grasses and non-woody plants	Fresh	Grasses, flowers, shrew, mice, deer, fox, spiders
Pond	Small body of standing water (smaller than a lake)	Fresh	Cattails, grasses, lily pads, frogs, turtles, fish, insects, snakes
Lake	Large body of water that is fed by multiple sources and drains from a river	Fresh	Large fish, turtles, beaver, bullfrogs
Stream	Water flowing from high to low elevations, but smaller than a river	Fresh	Small fish, crayfish, insects, mussels
River	Water flowing from higher elevation to lower elevation	Fresh	Fish, otters, turtles, insects, beavers, snakes, mussels
Swamp	Low-lying area that collects water and slowly moves water to lower elevation; flooded forest	Fresh	Cypress trees, Spanish moss, snakes, alligators, turtles, birds

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Freshwater Marsh	Grassland that is covered by freshwater	Fresh	Grasses, fish, turtles, alligators, frogs, salamanders
Salt Marsh	Coastal grassland that is regularly flooded with tidal water from the ocean and water flowing downstream from a river	Brackish	Spartina grass, fish, wading birds, oysters, plankton, otters, dolphin, crabs, diamondback terrapins
Estuary	Coastal are where a river meets the ocean	Brackish	Fish, dolphin, sharks, plankton, crabs
Beach	Sandy area where the ocean meets the land	Salt	Sea oats, anoles, ghost crabs, hermit crabs
Ocean/Sea	Covers 71% of the earth and connects all places on earth	Salt	Fish, dolphins, whales, sea turtles, snails, urchins, crabs, sea stars
Coral Reef	Ocean habitats that was created by corals (and sponges)	Salt	Fish, sharks, sponges, urchins, sea stars, crabs, octopus
Urban	A city or town	Location dependent	Humans, birds, dogs, cats, mice, rats, cockroaches

This is a list of other common habitats found in other parts of the United States and around the world:

Habitat	Description	Type of Water	Common Organisms
Arctic	Cold are of the upper north polar cap	Salt, fresh	Zooplankton, whales, fox, rabbits, moss
Tundra	Cold place where trees can't grow because of low temperatures	Salt, fresh	Fox, polar bear, caribou, ox, rabbits
Taiga	Cold boreal forest	Fresh	Conifer trees, fish, insects, bison, moose, elk, beaver, hares
Desert	Hot, dry are covered by sand	Fresh	Cactus, camels, lizards, snakes, hares
Savanna	Tropical grasslands, not as wet at a rainforest, but not as dry and a desert	Fresh	Trees, shrubs, giraffes, zebras, lions, elephants, vultures
Grassland	Area covered in grasses that receive low rainfall	Fresh	Grasses, insects, buzzard, chipmunk, coyote, mice, birds
Rainforest/Jungle	Area that receives high rainfall	Fresh	Trees, frogs, toucans, parrots, monkeys, lemurs, anaconda, insects

Because animals are dependent on habitat availability, we know that habitat loss is the main reason animals become extinct. Habitat loss can occur from natural processes such as hurricanes or volcanic eruptions. In recent centuries, though, it is the expansion of humans that has led to cataclysmic habitat loss. Not just urban development, but human activities such as farming, logging and mining take away the space other organisms need to survive. Pollution contaminates water and air which is another loss of habitat for organisms. Organisms with specialized habitat needs, such as wood storks or shortnose sturgeon, begin to die out, while organisms that use urban areas, such as pigeons, squirrels and cockroaches, thrive. The changes we make in the environment drastically reduce the habitat for other species.

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All living things need food, water, air and shelter/space, but they all have different methods of obtaining them. For this reason, every place on Earth is potential habitat as long as small amounts of these essential things are available. By preserving habitats, we help preserve other species and the biodiversity on Earth.

Procedure

Materials

- Habitat Intro
- Habitat Riddles – two different versions depending on what's best for your classroom
  - Riddles List
  - Riddles PowerPoint

Procedure

1. Review with students the definition of a living thing (an organism that has the ability to reproduce, grow, take nutrients for the environment, interact and has an organized structure).

2. Using the Habitat Intro PowerPoint, discuss that all living things need a habitat, a place to live and grow where they can get the things they need to survive. Ask them what their habitat is? Do they get the things they need from their habitat?

3. Go over the 4 things that all living things need in order to survive in their habitat (air, food, water, shelter/space). Be sure to talk about the difference between animals that have lungs and gills to breathe and how animals needs shelter for protection whereas plants need space to grow.

4. Show them pictures of different habitats and have the students describe what they see. Go over the habitat answers with them.

5. Now, use the Habitat Riddles to review what a habitat is, what living things needs from their habitats (air, food, water and shelter/space) and some common habitats of SC. There are 2 different versions of the riddles. You can choose to just say them out loud (use Riddles List) or you can use the Riddle PowerPoint to show them pictures along with the riddles.
   - Add more fun by singing the riddles using kid's songs (Wheels on the Bus, Itsy Bitsy Spider, 10 Little Indians, etc.)
   - Add even more fun by having them act out motions for the different clue words within the riddles

Follow-up Questions

- What habitat would you like to see in person that you've never seen before? Why?
- What animal would you choose to be if you could be any animal? What habitat does that animal live in?

Assessment

Give each student a piece of paper and have them pick one of these living things (cattail, alligator, shark, bear or great blue heron). They should write the organism at the top of the paper as well as the habitat in which it lives. Students should draw the habitat of the organism making sure to have air, food, water and shelter/space present in the picture. Have them label the air, food, water and shelter/space for their organism.

Cattail – Pond
Alligator – Swamp
Shark – Ocean
Bear – Forest
Great Blue Heron - Saltmarsh

Scoring rubric out of 100 points

Organism listed at top of paper	**10 points**
Habitat listed at top of paper	**20 points**

Picture is complete with air, food, water and shelter/space	**30 points**
Air is labeled	**10 points**
Food is labeled	**10 points**
Water is labeled	**10 points**
Shelter/Space is labeled	**10 points**

Cross-Curricular Extensions

STEM Extension
Give the students this scenario: Pollution (trash and fertilizers) is running into a pond when it rains. Have student groups of 2 or 3 work together to come up with a solution to the problem. They can either choose to design a devise to clean the water or come up with a way to keep the pollution from getting into the pond in the first place. Have them share their solution with the class.

Language Arts Extension
Ask students to make riddles for the habitats not covered in the Habitats activity procedure.

Resources

Teacher Reference Books
Porcher, Richard D. *Wildflowers of the Carolina Lowcountry and Lower Pee Dee,* University of South Carolina Press, Columbia, SC, 1995.
Written by a biology professor at the Citadel, this book contains identification information and general information on the ecology and natural history of Lowcountry wildflowers. It contains beautiful photographs.

Teal, John and Mildred. *Life and Death of the Salt Marsh,* Ballantine Books, New York, 1969.
An in-depth look at one of the most important and productive ecosystems in South Carolina, with chapters on spartina grass and other marsh plants and their effect on the surrounding wildlife communities.

Videos
National Geographic
http://video.nationalgeographic.com/video/habitats

Teacher Tube
http://www.teachertube.com/video/animal-habitats-81306?utm_source=video-google&utm_medium=video-view&utm_term=video&utm_content=video-page&utm_campaign=video-view-page

Teacher Reference Websites
BBC
http://www.bbc.co.uk/nature/habitats
The worlds habitats.

Botanical Society of America
www.botany.org/
Information on the society whose mission is to increase public awareness of botany. Includes links to kids' websites on plants.

National Geographic
http://environment.nationalgeographic.com/environment/habitats/
Information on habitats around the world.

World Wildlife Fund
http://wwf.panda.org/about_our_earth/ecoregions/about/habitat_types/habitats/
Information about habitats of the world.

http://www.worldwildlife.org/habitats
Conserving the habitats of the world.

Student Books

Baldwin, Robert. *This is the Sea that Feeds Us.* DAWN Publications, California, 1998.

Cole, Henry. I Took a Walk. 1998

Cole, Henry. On the Way to the Beach. 2003.

Creatures of the Desert World. National Geographic, 1991.

Dunphy, Madeleine. *Here is the Coral Reef*. Web of Life Children's Books, 2006.

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

Fredericks, Anthony. *Desert Night, Desert Day*. Rio Chico Books for Children, Arizona, 2011.

Gibbons, Gail. *Deserts*. 1999.

Jenkins, Steve and Robin Page. *I See a Kookaburra: Discovering Animal Habitats Around the World*. Houghton Mifflin Company, New York, 20015.

Kurtz, Kevin. A Day in the Saltmarsh. Arbordale Publishing LLC, South Carolina, 2007.

Kurtz, Kevin. A Day on the Mountain. Arbordale Publishing LLC, South Carolina, 2010.

Mitchell, Susan. *The Rainforest Grew All Around*. Sylvan Dell Publishing Inc., South Carolina, 2007.

Moore, Eva. *The Magic School Bus in the Rainforest*. Scholastic, New York, 1998.

Ward, Jennifer. *Somewhere in the Ocean*. Shenzhen Wing King Tong Paper Products Co. Ltd., China, 2012.

Curricula

Discovery Education
http://www.discoveryeducation.com/teachers/free-lesson-plans/habitats-of-the-world.cfm
A Habitats of the World activity.

Project WILD
http://www.projectwild.org/
Project WILD is an interdisciplinary curriculum for K-12 teachers on a broad range of environmental and conservation topics.