

Program Name: Habitats of Shenandoah National Park

Suggested Grade Level: 2nd

Maximum Group Size Per Day: 60 students (plus chaperones)

Overview

A habitat is a specific place where plants and animals live. A complete habitat must provide the basic needs, both living and nonliving, for the survival of its inhabitants. Within each habitat, there are many complex relationships as residents strive to meet their needs. Shenandoah National Park offers the opportunity for students to discover and explore nature as they apply and expand concepts and knowledge learned in the classroom. Through hands-on experiences and exploration, students will identify a variety of habitats and determine the interdependencies needed for survival. As human and environmental impacts are evaluated, students will consider and practice stewardship behaviors that support healthy habitats.

Learning Objectives

Following the park experience and classroom activities, the students will be able to

1. name the five living and nonliving components of a habitat: air, food, water, shelter, and space;
2. explain the concept of interdependence of organisms in a habitat and name three examples;
3. identify at least three influences that may change a habitat and determine potential consequences;
4. explain why Shenandoah National Park is important for protecting habitats and describe three ways people can help protect habitats and the environment.

Virginia Science Standards of Learning:

Scientific and Engineering Practices

- 2.1 The student will demonstrate an understanding of scientific and engineering practices by
- a) asking questions and defining problems
 - b) planning and carrying out investigations
 - c) interpreting, analyzing, and evaluating data
 - d) constructing and critiquing conclusions and explanations
 - f) obtaining, evaluating, and communicating information

Living Systems and Processes

- 2.5 The student will investigate and understand that living things are part of a system. Key ideas include
- a) plants and animals are interdependent with their living and nonliving surroundings;
 - b) an animal's habitat provides all of its basic needs;
 - c) habitats change over time due to many influences.

Earth Resources

- 2.8 The student will investigate and understand that plants are important natural resources. Key ideas include
- b) plants provide oxygen, homes, and food for many animals.

Background Information

Survival of plants or animals depends on their ability to meet basic life needs. A *habitat* is the physical place where an organism is able to find all of these needs. The essential components of a healthy habitat include food, water, shelter, air, and adequate space. If any of these are eliminated, the habitat may not be able to sustain life.

The living and nonliving parts of a habitat work together as a *system* – an ecosystem. All things in an *ecosystem* are interrelated. Every animal either eats plants directly or depends on other species for food, which in turn depend upon plants. We are all connected – joined in a “web” – of interrelationships and *interdependencies*. When one species disappears from a habitat, it may have a far-reaching impact upon the other *inhabitants*. It may result in losses such as a food or water source, nutrition for the soil, materials for shelter, seed transport, oxygen production, or decomposition.

Natural events such as fire, floods, droughts, hurricanes, and landslides can cause extensive damage to a habitat or destroy it. However, people can also cause damage or habitat loss. Human influences such as construction, development, pollution, oil spills, and littering can change or harm habitats. Every hour, thousands of acres of forests are cut and destroyed worldwide. Fifty percent of all species live in such forests. Deserts, grasslands, wetlands, and coral reefs are also being eliminated at an alarming rate.

Habitat loss is the major reason plant and animal species are becoming threatened, endangered, or extinct. It is crucial to life on earth that we develop ways to protect our world’s habitats. It is important for students to realize that they can make a difference by practicing responsible environmental stewardship behavior.

Vocabulary

- **ecosystem** – a community of interacting organisms and their physical environment.
- **environment** – the total of all the surroundings that affect the life and growth of living things
- **habitat** – the environment where a plant or animal lives which provides food, water, shelter, space, and air in an arrangement suitable for life needs
- **inhabitant** – a person, animal or plant that lives in a specified area
- **interdependent** – dependent or relying upon each other, the interrelationships of organisms with one another and with the nonliving elements in its habitat
- **living** – organisms having life or existence
- **nonliving** – something having no life, *abiotic*
- **organism** - an individual animal, plant, or single-celled life form
- **shelter** – a place or object that protects an animal and keeps it safe
- **survive** – to continue to live or exist

Pre-Visit Activities

Prior to beginning the Habitats unit study, have the students take the Habitats **Pre-Visit Assessment**. Record the scores on the **Pre-Visit/Post-Visit Score Sheet**. Begin the unit study and incorporate as many of the following pre-visit activities as possible into your lesson plan to prepare the students for their park field trip.

Materials for Pre-visit Activities

A large picture of nature or wilderness, drawing paper and art materials, tag board, *Habitat Scenario Cards* (attached)

1. Motivational Activity

Title three columns on the chalkboard: PEOPLE, ANIMALS, and PLANTS. Allow students to brainstorm a list of survival needs for each category. Ask them if the lists are similar. Determine how many items on the list can be classified as FOOD, WATER, SHELTER, AIR, or SPACE. Draw the conclusion that living things have the same basic needs to live.

Show students a picture of a natural area or wilderness. Discuss the picture and ask students to imagine and compare the picture with their idea of Shenandoah National Park. What animals might they find in the park? What plants? What do they think these living things need in order to be healthy and to survive? Would the students like to go to Shenandoah National Park to see for themselves?

2. Vocabulary Activity Suggestions

- a. Have students fold a large sheet of drawing paper into three rows. Draw three boxes in each row to make nine boxes. Then label and illustrate nine of their “habitats” vocabulary words.
- b. Play Vocabulary Charades: Create tag board strips and mark each with the name of a vocabulary term (or use cut-apart pictures from the students’ work above). Choose students to silently read a card and act it out while the others try to guess which term it is. Include other things found in a healthy habitat to expand this game.
- c. Play a riddle game called “I’m Thinking of ____.” Have each student write several clues for the Habitat unit vocabulary words. Examples:
 - Clue: A sentence with the word missing. e.g., The gray fox finds _____ in the trees of the forest. Answer = *shelter*.
 - Clue: A description. e.g., It is a place that preserves and protects habitats for the plants and animals. Answer = *national park*
 - Clue: A spelling riddle. e.g., It has 13 letters and it starts with an “l” and ends with a “t”. Answer = *interdependent*

When all students have their clues completed, have volunteers read their clues and ask classmates for the answers. (This might be expanded and used as a team game, with each side challenging the other and success earning a point.)

3. Our Home Is Our Habitat

Have each student illustrate a picture of his/her home, then circle and label locations of shelter, food, water, space, and air in their own habitat. Discuss: "What would happen if your water faucet was several miles away? How far could you travel daily for food? What if the refrigerator was located a mile away? What if your house had no walls and you had to walk 6 miles to a more protected shelter during a storm?" Students should determine if their house provides adequate and reasonable space for their survival needs.

Discuss how students think plants and animals might get their needs met in Shenandoah National Park. How important is it to have basic life needs readily available?

4. Schoolyard Habitats

Have students imagine the park and compare it with their own schoolyard. Is their schoolyard a good habitat? As a group, explore the schoolyard, discover what lives there, and practice appropriate field trip behavior. In class, have students describe the different plants and animals they saw. Ask them to name the necessary habitat components for those inhabitants and consider ways they can help protect and preserve the schoolyard habitat

5. Visiting a National Park - Leave No Trace

The mission of the National Park Service is to preserve and protect the natural and cultural resources of the nation for all people to enjoy. It is important for today's park visitors to practice good stewardship ethics and behaviors in order to pass these unique natural and historical treasures on to future generations in an unimpaired condition.

We recommend following **Leave No Trace** (LNT) principles when going on a field trip. There are seven LNT principles:

- Plan Ahead and Prepare
- Travel (and Camp) on Durable Surfaces
- Dispose of Waste Properly
- Leave What You Find
- Minimize Campfire Impacts
- Respect Wildlife
- Be Considerate of Other Visitors

To prepare for your field trip to Shenandoah National Park, share with your students the mission of the National Park Service. Explain that they can help protect the beauty and natural resources of Shenandoah National Park by using good environmental stewardship practices.

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- a. Introduce the *Leave No Trace* principle of “Plan Ahead and Prepare.” Brainstorm how important it is to decide about issues of dress, behavior, and care of park resources before their visit. Express the need for good choices and the possible consequences of poor decisions. Discuss the following list in preparation for your national park experience:

Appropriate dress

- long pants – protection from poison ivy, insect bites, scratches;
- closed sturdy shoes – avoid stubbed toes, scratches, lack of stability;
- layered clothing – prepare for cold, wet, changeable weather (often 10 degrees cooler with unpredictable rain).

Personal needs

- lunch
- caps, sunscreen or lotion
- insect protection and/or medicine if needed and approved,

Appropriate behavior

- eating snacks, utilizing restrooms, and consuming water before leaving for the hike;
 - properly disposing of trash and recycling as many items as possible, use recyclable storage containers in lunches;
 - being respectful to the animals, plants, and other visitors;
 - quietly enjoying the outdoor classroom of the park;
 - leaving things as they are found so that future visitors may enjoy them,
 - caring for animals and plants by not feeding, picking, littering, or digging.
- b. Give students opportunities to identify positive behaviors for their national park visit. Have them draw and label pictures showing how these behaviors would help protect and preserve the park and its resources. They might incorporate these as posters into a “Plan Ahead and Prepare” bulletin board.
- c. Organize students into groups of 3 to 6 and assign a leader for each group. Copy the attached activity sheet *Habitat Scenario Cards* and cut into strips. Distribute a scenario card to each group. Allow students time to develop short skits to show the consequences of bad planning, poor preparation, and improper behavior. Conclude each skit with a discussion about what should have occurred.
Option: perform skits for chaperones.

6. Final preparation and planning for the field trip to Shenandoah National Park.

- Approximately 2 weeks before the field trip, the lead ranger for the program will contact the lead teacher to discuss the final details of the field trip.
- Share field trip details with all teachers going on the field trip.
- Review appropriate dress and behavior for the field trip and remind students they will still be in school while at the park.
 - ✓ Recommend dress: Long pants, closed toed shoes (No sandals or flip-flops) and extra layers – it is often 10+ degrees cooler on the mountain than at school.

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- ✓ Have students write letters to their parents informing them about the time and date, appropriate dress, personal needs, and behaviors expected for the field trip.
- Recruit enough competent chaperones to assist on the field trip. The park requires 1 adult (including teachers) for every 10 students.
- Arrange for transportation and know the travel route to the program location in the park.
- Plan for lunch. School groups are welcome to picnic in the park after the program. Picnic areas offer picnic tables and restrooms, but there are no shelters for inclement weather.
- Contact your lead ranger if you have any last minute questions or changes in your planning.

Shenandoah National Park Field Trip

The in-park program will generally take a minimum of 2 hours. Plan for adequate travel time from your school to meet the ranger(s) at the scheduled time and location in the park. For an effective learning experience, please remember the following:

- Before arriving at the park, divide the students into groups of 15 or fewer and assign chaperones to each group.
- Provide nametags for all participants, including adults.
- Upon arrival, meet the ranger(s) and coordinate a bathroom and snack break prior to the in-park program.
- Let the ranger(s) know how much time you have in the park and your travel schedule requirements for returning to school.
- Present a short, 5-minute introduction at the program site in the park to bridge what you have done in the classroom with the park experience.
- Separate the students into the pre-determined groups with assigned chaperones.
- The ranger(s) will lead the student groups on an outdoor field investigation focusing on a challenge (essential) question using exploration, observation, and critical thinking skills to evaluate data and make conclusions. Assist the ranger(s) as needed while on the program.

Post-Visit Activities

Following your field trip to Shenandoah National Park, use as many of the following post-visit activities as possible to conclude the unit of study. Give the students the Habitats **Post-Visit Assessment**. Record the scores on the **Pre-Visit/Post-Visit Score Sheet**. Complete the **Program Evaluation Form**. Return the program evaluation and pre/post-visit score sheet to:

Shenandoah National Park
3655 US Hwy 211 East
Luray, VA 22835
Attention: Education Office

Materials for Post-visit Activities

Drawing paper and art materials, supplies for dioramas, string

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1. **Habitat Art**

Have students reflect upon and discuss the habitats they saw on their field trip to Shenandoah National Park. Ask them, “Were the habitats healthy? Why? How do plants contribute? Are national parks important in preserving and protecting these natural resources? What can we do in the future to help habitats?”

Have students each choose and illustrate one habitat they saw in Shenandoah National Park. They should include and label the five basic needs for survival (air, food, water, shelter, and space – all in a suitable arrangement) and at least one example of an animal and plant that survives in that habitat. A sentence or short story might be added at the bottom of the page. Individual illustrations can be compiled into a class memory book of “Shenandoah Habitats.”

2. **Peek-A-Boo Flip Book**

Students might develop a “flip book” of Shenandoah habitats. Have each student fold a long piece of art paper in half lengthwise, then divide that into 3-4 sections. Cut each section of the top flap to the fold line. On each top “cover”, students can illustrate a healthy habitat with all its components. On the underneath “peek-a-boo” section, he/she can illustrate and label the plant or animal inhabitant.

3. **Design a Habitat Diorama**

Ask: “If you could design a complete habitat in your schoolyard or home backyard, what would it look like? What might live in this habitat? Why are plants important?” Have students use a variety of materials to create dioramas to illustrate their ideas, then display and share them. They should label or be able to identify all the components present for a healthy, sustainable habitat for its inhabitant.

4. **Shrinking Habit – Create A Story**

Have the class dictate and illustrate a storybook describing the scenario of a “Happy Habitat” as it changes to an increasingly “Shrinking Habitat.” Changes may be attributed to impacts such as fire, drought, storms, pollution, acid rain, mowing, pesticides, herbicides, or building construction. Make sure the story ends with a happy ending, as caring student citizens create positive changes to resolve the problems.

This story may be acted out using string as a shrinking perimeter for the habitat, with students acting as the plants and animals. They can relate thoughts of plants and animals as they are challenged to meet their needs and survive in today’s world. As a class, analyze the impact national parks have on natural resources. How do National Parks preserve and protect habitats?

5. **Portfolio Activity**

Use the attached *Habitats of Shenandoah Portfolio Page* for an end-of-the-unit portfolio activity. You may use this as a unit final evaluation, confirmation of student learning, or portfolio page. Below is a suggested rubric. Provide each student with a copy of the worksheet and encourage creative writing and thoughtful input.

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<u>NUMBER</u>		<u>Points possible</u>	<u>Student totals</u>
#1 – 2 (20 points each)	Facts And Knowledge - with explanations	40	
#3 – 4 (20 points each)	Expression of Behaviors	40	
#5 (20 points)	Environmental writing	20	
	Total points	100	

Unit Assessment

1. Observe and document student interaction, discussion, behavior changes, skits, and written work.
2. Evaluate dioramas and posters based on effort and correct number or pre-determined and posted criteria.
3. Administer the Habitats unit pre-visit/post-visit assessment and document student scores.
4. Utilize the portfolio activity rubric to evaluate learning.

Going Further

Classroom Walk Through Shenandoah National Park

Create a “walk through Shenandoah National Park” in your classroom. Have students make or bring in play animals that live in Shenandoah National Park. Discuss the survival needs of each animal, then use rugs, fabric and felt, tents, poles, mural paper, etc., to make a habitat scenario throughout the room. Each student should make sure his/her animal has shelter, food, water, space, and a suitable arrangement. Invite guests to the room so that the students can “walk them through Shenandoah’s good habitat” and explain their animals’ available survival needs.

References and additional activities:

2018 Science Standards of Learning Curriculum Framework, Virginia Department of Education, 2019

http://www.pen.k12.va.us/testing/sol/standards_docs/science/index.shtml

Good Character, Good Stewards, Caring for the World Around Us, Shenandoah National Park, 2005.

<https://www.nps.gov/teachers/classrooms/good-character-good-stewards.htm>

Project Wild. Council for Environmental Education.

<http://www.projectwild.org>

What’s That, Habitat? 2000 Edition, pp.54-55.

The Beautiful Basics, 2000 Edition, p.58

Project Learning Tree. American Forest Foundation.

<http://www.plt.org>

Trees as Habitats, 2006 Edition, pp.102-104.

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Pre-Visit Activity #5

HABITATS SCENARIO CARDS – “PLAN AHEAD AND PREPARE”

*Teacher Note: These can be expanded or modified. Make them fit your needs in the classroom.
Following each role play, discuss the importance of “Plan Ahead and Prepare.”

You are going on a field trip to Shenandoah National Park. You realize that you forgot to pack a snack or lunch. You brought candy instead and it is all sticky and wrapped in foil. You throw the wrapper on the ground.

Act this out and show the consequences of your behavior. How would planning ahead help?

Roles: mom, teacher, ranger, child, classmates

You are visiting Shenandoah National Park. You never learned that national parks preserve and protect plants and flowers. You pick a bunch of pretty wildflowers for your mom.

Act this out and show the consequences of your behavior. How could being prepared help?

Roles: teacher, child, ranger, chaperone, classmate, group following you in the forest.

There are many visitors to Shenandoah National Park on the day that you visit with your family and friends. You decide to bring your favorite music and a boom box to play while you are walking through the meadow. The deer and other visitors are startled and upset.

Act this out and show the consequences of your behavior. How would planning ahead help?

Roles: child, deer, friends, family, other visitors in the meadow

It was a nice day when you left school for Shenandoah National Park and you forgot to listen to the weather forecast. Your teacher reminded you to layer clothes because weather on the mountain is unpredictable. You didn't bring a coat or a rain jacket and it has turned cold and started to rain.

Act the out and show the consequences of your behavior. How would planning ahead help?

Roles: mom, teacher, child classmates, sun, wind, rain

Your teacher reminded you to wear long pants and tennis shoes to Shenandoah National Park when your class goes there for a field trip. You forgot and wore shorts and flip flops instead.

Act this out and show the consequences of your behavior. How would planning ahead help?

Roles: teacher, child, ranger, child, classmates, doctor

You didn't listen when the teacher explained that human food is harmful to wild animals. You brought a pocketful of cheerios with you to the park, but scared the deer away when you approached it. You decided to feed the chipmunk instead.

Act this out and show the consequences of your behavior. How could planning ahead help?

Roles: child, teacher, ranger, classmates, deer, chipmunk

You know you have a bad allergy to bee stings, but forgot to tell the teacher and didn't bring your medicine with you on the field trip to Shenandoah National Park. You are discovering wonderful things in the park when you see a bee.

Act this out and show the consequences of your behavior. How could planning ahead help?

Roles: child, teacher ranger, mom, classmates

You brought your camera and binoculars on the hike, even though the ranger asked you to leave them on the bus. You were so excited to see the salamander and deer, you left your binoculars lying under a tree deep in the forest.

Act this out and show the consequences of your behavior. How could being prepared help?

Roles: child, teacher, parent at home, classmates, chaperone, ranger

**Post-Visit Activity #5
Habitats of Shenandoah Portfolio Page**

Name _____ Date _____

School _____ Teacher _____

#1 – 2 Facts and Knowledge:

Identify 2 new facts you learned in this unit of study and tell why you think each is important.

1)
2)

#3 – 4 Behaviors:

List 2 behaviors you learned in this unit that can help protect our national parks and/or preserve the natural resources of our world.

3)

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4)

#5 Environmental Writing:

Write a paragraph, creative story, poem, essay, rap, song, etc. about these stewardship behaviors. You might tell how using them will change your life and your future world.

If you have time, create a picture to go along with your writing.

5)

**Habitats of Shenandoah
Pre-Visit/Post-Visit Assessment**

Name _____ **Date** _____

Instructions: Read each question carefully and choose the one best answer. Circle the letter of your choice.

1. Which of these things can make its own food?
 - a. Rock
 - b. Beetle
 - c. Tree
 - d. Water

2. Which **nonliving** thing does a black bear need to survive in a forest habitat?
 - a. Air
 - b. Berries
 - c. Insects
 - d. Ocean

3. A **living** part of a deer's habitat includes _____.
 - a. paper
 - b. plants
 - c. air
 - d. water

4. Which of these things that can change a habitat?
 - a. Pollution
 - b. Fire
 - c. Seasons of the year
 - d. All of these things can change a habitat

5. In a meadow habitat, a Monarch butterfly depends on _____ to survive.
 - a. big trees and soil
 - b. birds and ants
 - c. flowers and water
 - d. deer and acorns

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6. Which animal would be hurt the most if the **forest** habitat in Shenandoah National Park was cut down?
 - a. Bear
 - b. Buffalo
 - c. Alligator
 - d. Fish

7. Which of these things does a squirrel get from plants in its habitat?
 - a. Sunlight
 - b. Nuts for food
 - c. Rocks for shelter
 - d. A pond for water

8. What action would harm a habitat for plants and animals?
 - a. Recycling
 - b. Picking up litter
 - c. Building a parking lot
 - d. Plant new trees

9. What is one purpose of a National Park?
 - a. Protects animals, plants, and their habitats
 - b. Provides a place to hunt animals
 - c. Provides a place to cut down trees for firewood
 - d. Provides amusement park rides

10. What can you do to help protect habitats in Shenandoah National Park?
 - a. Feed the animals
 - b. Pick the flowers
 - c. Kill poisonous snakes
 - d. Leave plants and animals as you find them

**Habitats of Shenandoah
Pre-Visit/Post-Visit Assessment
Answer Key**

1. Which of these things can make its own food?
c. **Tree**
2. Which **nonliving** thing does a black bear need to survive in a forest habitat?
a. **Air**
3. A **living** part of a deer's habitat includes _____.
b. **plants**
4. Which of these may change a habitat?
d. **All of these things can change a habitat**
5. In a meadow habitat, a Monarch butterfly depends on _____ to survive.
c. **flowers and water**
6. Which of the following would be hurt the most if the **forest** habitat in Shenandoah National Park was cut down?
a. **Bear**
7. Which of these things does a squirrel get from plants in its habitat?
b. **Nuts for food**
8. What action would harm a habitat for plants and animals?
c. **Building a parking lot**
9. What is one purpose of a National Park?
a. **Protects animals, plants, and their habitats**
10. What can you do to help protect habitats in Shenandoah National Park?
d. **Leave plants and animals as you find them**