

Program Title: Shenandoah Residents

Suggested Grade Level: 1st

Maximum Group Size per Day: 100 students (plus chaperones)

Overview

Plants and animals live all around us and each one has the same life needs. Students will explore Shenandoah National Park to discover the different plants and animals that live in the park. Students will investigate how, where, and why plants and animals meet their life needs in their respective environments and how Shenandoah National Park provides protection for plants and animals. Students will evaluate human and environmental impacts to consider and practice stewardship behaviors that support a healthy environment.

Objectives

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

1. describe the life needs of plants and animals (air, food, water, and a suitable place to grow and live);
2. identify the four functional parts of a plant (roots, stem, leaves, and flowers) and identify all structures the plant uses to meet its life needs;
3. name three different kinds of animals that live in Shenandoah National Park and describe how specific physical characteristics help animals move, find homes, and obtain food;
4. describe how places like Shenandoah National Park help protect our limited natural resources.

Virginia Science Standards of Learning Addressed

Strand: Life Processes

- 1.4 The student will investigate and understand that plants have life needs and functional parts and can be classified according to certain characteristics. Key concepts include
 - a) needs (food, air, water, light, and a place to grow);
 - b) parts (seeds, roots, stems, leaves, blossoms, fruits); and
 - c) characteristics (edible/non-edible, flowering/non-flowering, evergreen/deciduous).
- 1.5 The student will investigate and understand that animals, including people, have life needs and specific physical characteristics and can be classified according to certain characteristics. Key concepts include
 - a) life needs (air, food, water, and a suitable place to live);
 - b) physical characteristics (body coverings, body shape, appendages, and methods of movement); and
 - c) other characteristics (wild/tame, water homes/land homes).

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Strand: Resources

- 1.8 The student will investigate and understand that natural resources are limited. Key concepts include
- a) identification of natural resources (plants and animals, water, air, land, minerals, forests, and soil);
 - b) factors that affect air and water quality; and
 - c) recycling, reusing, and reducing consumption of natural resources.

Teacher Information for Shenandoah Residents Programs

The *Shenandoah Residents* program is teacher-led with the assistance of an education ranger in the park. Teachers are required to attend a free instructional workshop prior to bringing students on the field trip. This workshop provides on-site training, an overview of logistics and outdoor teaching techniques, and the curriculum materials. This workshop helps to prepare teachers to provide students with a meaningful learning and discovery experience that supports and enhances the Virginia Standards of Learning. Completion of the 6-hour workshop may qualify for recertification credits.

Reservations for both teacher workshops and field trips begin on the first workday of August. **Call 540-999-3500, ext. 3489.** No email requests are taken. Curriculum materials can be downloaded at: <http://www.nps.gov/shen/forteachers/index.htm>

A program confirmation form will be sent prior to your scheduled field trip to allow free admission into the park for your group. Backpacks will be provided with materials for up to 100 students. Each backpack contains materials for 10 students. This includes:

- a laminated sheet with on-site activity instructions
- pencils and consumable activity pages needed for the on-site activities
- laminated pictures of animals
- four strips of flagging tape
- first-aid kit

Teachers are welcome to print extra copies of on-site consumable worksheets for groups exceeding 100 students.

Pre- and Post-visit activities are available on the website. On-site materials are also included so that teachers and chaperones might familiarize themselves with activities prior to their trip.

The *Raptor Rap*, a 30-minute presentation with a live bird of prey, is available upon request, depending on raptor availability. If a bird is not available on the date of the program, teachers may request the *Mystery Box* to be used on-site.

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Background Information

Plants and animals live together and rely on each other in Shenandoah National Park. All living organisms have the same basic needs – air, food, water, oxygen, and a suitable place to live. Living organisms use their environment to fill these needs.

Plants are living organisms. The structure of the plant helps it survive in its environment. The *roots* help provide support by anchoring the plant in the soil and collecting water and nutrients needed for growth. *Stems* transport water and nutrients absorbed by the roots to the leaves. Stems also provide support for the plant allowing the leaves to reach the sunlight needed to produce food. *Leaves* capture sunlight and are the site of the food production process called *photosynthesis* (a process by which a plant produces its food using energy from sunlight, carbon dioxide from the air, and water from the soil). Green plants are the only organisms that can convert the sun's light energy into food. As plants make food, one of the materials they produce is oxygen. Most plants reproduce through seeds. Every *seed* is a tiny plant complete with leaves, stems, and root parts waiting for the right conditions to germinate and grow.

An animal is generally any living organism that is not considered a plant. All animals – including people, pets, and wildlife – have similar basic needs. All animals need a place to live. A *habitat* is the place where an animal lives. An animal's habitat has air, food, water, shelter, and space. Animals need to move in their habitats to meet their life needs. Since they are unable to make their own food, animals get the food they need by eating other living things. An animal's body or *physical characteristics* (body coverings, body shape, appendages, and methods of movement) helps it survive in its environment. *Wild animals* provide for their own life needs (food, shelter, water, and space) in their habitat. The animals in Shenandoah National Park are wild animals.

Visiting a National Park

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

Following these principles and park rules will help make your park visit a safe, successful learning experience while also caring for park resources.

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Vocabulary

- **animal** – generally any living organism other than a plant
- **habitat** – the arrangement of food, water, shelter, or cover, and space suitable to animals' needs
- **leaves** – the physical structure of a plant that captures sunlight and makes food through a process called photosynthesis
- **plant** – vegetative living organisms that are not animals. Green plants produce their own food from sunlight (photosynthesis)
- **roots** – the physical structure of a plant that anchors a plant in the soil; roots help the plant obtain water and nutrients from the ground
- **seed** – the fertilized egg of a plant that will produce a new plant when it grows
- **stem** – the physical structure of a plant that holds the plant upright; the stem allows water, nutrients, and food to travel throughout the plant
- **tame animal** – an animal that depends on people to feed and take care of it
- **wild animal** – an animal that lives in a natural state, providing for its own food, shelter, and other needs in a suitable habitat

Materials

Copies of activity sheets (enough for 1 per student), markers and/or crayons, vegetables (lettuce, celery, carrots, etc.), *Oodles of Animals*, by Lois Ehlert (ISBN-10: 0152062742), *The Salamander Room* by Anne Mazer and Steve Johnson (ISBN-10: 0679861874), pipe-cleaners, plastic eyes, wood sticks, construction paper, Kid Pix (or other art computer software) computer program, large paper bag, 6 plants, 6 paper cups, potting soil, brown paper lunch bag, water, and *The Lorax* by Dr. Seuss (ISBN-10: 0394823370).

Pre-Visit Activities

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

1. Motivational Activity - Shenandoah National Park Field Journal

Students will make a field journal to use during the Shenandoah Residents program. Print or copy one cover page and the on-site activity sheets for each student booklet. Hole-punch the sheets and connect them with metal fasteners to make the booklet. Have the students personalize their journal covers. Journal contents may also include the program vocabulary list, pre-visit activity drawings, or any other appropriate material. **Remember to bring the journals on the park field trip.**

2. Vocabulary Activity Suggestions

a. Parts of a Plant Salad

Build a salad with all the parts of a plant. As you add ingredients into the salad, have students explain which part of the plant it is from and what that part does. Include leaves (lettuce, spinach, cabbage), stems (celery, asparagus), roots (carrots, onions), fruit (tomatoes, cucumbers), flowers (broccoli, cauliflower), and

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seeds (sunflower seeds, beans). Mix your salad, put on a dressing, and enjoy eating plant parts!

b. Animal Classification

Read the story, *Oodles of Animals*, by Lois Ehlert (ISBN-10: 0152062742) to introduce students to a variety of animals and different animal characteristics.

Have students cut out pictures of any animal they find in magazines and newspapers or print from the internet. Sort the animals into different categories. Example: animals with fur, animals with scales, animals with feathers, animals with two legs, animals with four legs, animals with no legs, animals that fly, animals that walk, animals that slither, animals that swim. Discuss with students the difference between wild and tame animals. Ask the students to sort or classify their animals as “wild” or “tame.” Invite students to use poster board and glue to make a wild animal collage. Ask students what types of animals are in Shenandoah National Park and discuss how to act around wild animals.

3. I Wonder

Make a list of what the students know about plants and animals, each on a separate piece of chart paper. Have students ask questions about anything that they want to know about plants or animals (for example, how animals move, what they eat, or where animals and plants live). Keep these to complete the “What I Learned” as a post-visit activity.

K: What I **know**

W: What I **want** to know

L: What I **learned**

4. Design Your Own Animal

Read the story *The Salamander Room* by Anne Mazer and Steve Johnson (ISBN-10: 0679861874). A young boy is asked a series of questions by his mother when he announces he wants to keep a salamander in his room. Questions such as “Where will he sleep?” prompt the young boy to come up with imaginative answers in an attempt to provide the proper habitat for his new salamander.

Students (individually or in groups) “invent” an imaginary animal using their knowledge of animal characteristics. Ask:

- Will it have legs, feathers, claws, or a tail?
- What will your animal eat?
- Where will your animal live?

Have students select various craft supplies (pipe cleaners, paper towel rolls, paper plates, construction paper) to make their animal.

Challenge activity: Display the animals around the classroom. Have students walk around the classroom and discover each other’s animals. What are its

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physical characteristics that help their animal survive in its environment? How does the animal move, get food, or stay safe?

***Note:** *This is a good time to review proper etiquette for viewing animals – practice staying quiet and using observation and listening skills.*

5. Leave No Trace Principles: Suggested Activities

To prepare for your field trip to Shenandoah National Park, share with your students the mission of the National Park Service. Explain that the mission is to protect and preserve the natural and cultural treasures of the nation for present and future visitors to enjoy. Lead them to understand that they can help protect the beauty and natural resources of Shenandoah National Park by using good environmental stewardship practices. Please explain these principles to your students:

- **Observe nature quietly.**

You will see more animals if you are quiet. Follow directions and respect others by demonstrating good listening skills.

Have students practice using their observation skills. Place several items into a large bag or pillowcase. Select an item from the bag, allow students to observe the item for 2 minutes, and return the item to the bag. Ask students to recall observations about the item (color, shape, size, etc.) and write observations on the whiteboard. Retrieve the item from the bag and compare students' recollections with the actual item. Develop listening skills by having students close their eyes. Make a noise (crumple paper, staple, etc.) and challenge students to identify the noise.

- **Leave objects where you find them.**

All the objects in Shenandoah National Park are protected. Take time to look at rocks, plants, and animals that you find interesting but make sure you leave them behind for other explorers to discover.

Play *Pebble Patterns* to help students learn to observe objects where they are. Students gather about ten small rocks (the game can be played with coins or buttons) of varying size and color. One player creates a pattern or design out of some of the rocks (start with three or four rocks and increase the number of rocks as skills develop). The other player studies the pattern for a specified time before the pattern is scrambled. Player two must re-create the pattern with the rocks. Ask students why it is important to observe objects where they are. Remind students that, in a national park, they need to leave all objects where they found them.

6. Begin final preparation and planning for the class field trip to Shenandoah National Park. 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.

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 at the scheduled time and location in the park. For an effective learning experience, please remember the following:

- Bring enough competent chaperones to assist on the field trip. The park requires 1 adult for every 10 students.
- Review appropriate dress and behavior for the field trip and remind students they will still be in school while at the park.
- Divide the students into groups of 10 and assign chaperones to groups before arriving at the park. Provide nametags for all participants, including adults.
- 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.

The *Shenandoah Residents* program is usually done in the Big Meadows area. Travel to Byrd Visitor Center, Milepost 51 on Skyline Drive. Meet the ranger and pick up the backpacks for your group. Have the students take a restroom break and have a snack if needed. Re-board the bus and move to the meadow parking area at the Rapidan Road gate, across Skyline Drive from the gas station. Spread out your student groups in the meadow and complete as many of the following activities as your time permits.

Plant Part Scavenger Hunt (20 minutes)

Have students complete a plant part scavenger hunt as they explore the meadow for different kinds of plants including flowers, bushes, and trees. Use the “Plant Part Scavenger Hunt” worksheet included in their journals. Please remind students they are in a National Park and should not pick or pull plants out of the ground. They should examine plants for roots, stems, leaves, flowers, fruits, and seeds. To see roots, look for tree roots above the ground. Gather the group and discuss student findings. What do plants need to survive? How do their structures help them stay alive?

Safety message: Please tell the students that some wild plants, leaves, nuts, and berries are poisonous to people. Animals can eat almost any kind of wild plant and not get sick, but people cannot!

Animal Detectives Discovery Walk (20 minutes)

Locate the Big Meadows animal picture cards inside the backpacks. Have students work in pairs and give each pair a card. Show the children the card. Model for and discuss with the students clues that would indicate that the pictured animal has been in the meadow. Encourage students to explore the meadow and the forest edge to search for evidence of their pictured animal. Students may not see the animal, but they may discover where an animal has been (scat or tracks), where it lives (home), or what it eats (food).

If students locate other animals, give them time to record observations in their journals on the “Animal Detectives Discovery Walk” worksheet. Draw the animal. Place a check

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by how the animal moves (hop, fly, crawl, or walk). Sketch where the animal lives. Draw something the animal might eat.

At Home in the Meadow (20 minutes)

Use the flagging strips in the backpack to mark four boundary corners in the meadow, approximately 30' X 30' square, which will allow students and the teacher/chaperone to stay within sight of each other. Tell students to look at their animal picture card and imagine being that animal. How and where would they make their homes? Where would they get their food and water? Have students locate and settle in their imaginary homes inside the designated boundary pretending to be their animals living in the meadow. In their journals, have students complete the "My Shenandoah Animal" worksheet. Have them illustrate how their animal meets its life needs in the meadow.

Challenge Activity: Ask the students if they like living in the meadow. Ask them what would happen if houses were built next to the meadow. Move the boundary markers in 10 paces to simulate a shrinking habitat. Ask the students if there is enough space for everyone now. Do habitats shrink? Remind students that Shenandoah National Park helps to protect the habitats where animals live and meet their life needs.

**Note: Please remember to remove the flagging strips and return them to the backpack upon completion of this activity.*

After the completion of your planned meadow activities, board the school bus and drive to the Big Meadows Amphitheater.

The Raptor Rap (30 minutes)

Meet the park ranger at the amphitheater and take a closer look at one of Shenandoah National Park's common residents, either a hawk or an owl. What physical characteristics does the raptor have? How do these physical characteristics help the raptor meet its life needs? Where does it live? What does it eat? Why and how is it protected? The ranger will allow time for a student question and answer session.

**Note: If a raptor is unavailable, the following activity may be substituted for The Raptor Rap.*

The Mystery Box (30 minutes)

Divide students into groups of 10 students. Choose a student to sit in front of each group and wear a blindfold. Give each blindfolded student a bag with a natural object from the Mystery Box inside it. Instruct the student to keep the object in the bag. Direct the other students to ask questions about the object. Example: Is it from a plant or animal? What shape is it? Does it feel rough or smooth? Ask the blindfolded student to use the sense of touch to answer the other students' questions. Have students guess the object. Repeat the game, as time allows, by rotating the objects between groups.

Post-Visit Activities

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

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

1. Follow up: What I Learned

Complete the K-W-L chart with the students. Review what students wanted to know and what they have learned about plants and animals on their visit to Shenandoah National Park.

2. Technology Integration: Kid Pix Project

Encourage students to reflect upon and discuss the animals they saw on their field trip. Have students imagine being a park ranger in Shenandoah National Park. Choose one Shenandoah animal to research and learn: How does it move? Where does it live? What does the animal eat? Using Kid Pix (or other art software program), draw a picture of your animal. Combine your picture and sentences together using Kid Pix. As a class, present a Kid Pix slide show on Shenandoah National Park to other classes or for parents.

3. Science Experiment: What Plants Need to Grow

Lead a discussion by asking students "What do children need to grow?" Then ask students what they think plants might need to grow. Investigate the life needs of a plant and use observation skills to examine physical changes in plants.

Each class will need: 6 identical plants (re-potted in paper cups), a marker, brown paper bag, and water. Label two of the plants with a sign - NO WATER. Put these two plants in a sunny window but do not water them.

Label the next two plants - NO LIGHT. Place these plants away from sunlight. Water these plants then place a brown paper bag over them. Provide water to keep the soil damp throughout the experiment.

Label the last two plants - WATER & LIGHT. Water these plants and place them in a sunny window. Provide water to keep the soil damp throughout the experiment.

After two weeks, examine the plants. Ask students which plant is the healthiest. Why do you think that plant looked healthier than the others? What things do plants need to grow? How does Shenandoah National Park help plants grow? What can harm the plants in Shenandoah?

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4. Portfolio Activity

Make copies of the Portfolio worksheets for an end-of-the-unit portfolio activity. You may use this as a unit final evaluation, confirmation of student learning, or portfolio page to add to the student journals. Below is a suggested rubric. Provide each student with a copy of the worksheets and encourage creative writing and thoughtful artwork.

		Points possible	Student totals
Page 1	Experience shared	40	
Page 2	Facts learned	40	
Page 3	Expression of future behaviors - Environmental thoughts	20	
	Total points	100	

**If possible, send copies of the completed worksheets, artwork, and writing to:
Shenandoah National Park Education Office
3655 US Hwy 211 E
Luray, VA 22835**

Unit Assessment

1. Observe and document student interaction, discussion, behavior changes, and written work.
2. Evaluate pictures and sentences based on effort and correct number of pre-determined and posted criteria.
3. Administer the *Shenandoah Residents* unit pre-visit/post-visit assessments and document student scores.
4. Utilize the portfolio activity rubric to evaluate learning.

Going Further

1. Create your own outdoor classroom or Schoolyard Habitat. Have students research and learn about native plants and wildlife. Learn how to create and certify your Schoolyard Habitat at <http://www.vanaturally.com/outdoorclassrooms/homepage.html>
<http://www.nwf.org/schoolyard/>
2. Read *The Lorax* by Dr. Seuss (ISBN-10: 0394823370). The story teaches students about the need to take care of the Earth. Ask students to think about their visit to Shenandoah National Park and what kinds of things they can do to help protect Shenandoah National Park and the Earth. Start a recycling bin for paper, plastic, or juice boxes.

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http://www.learningtreasures.com/plant_salad.htm

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Journal Cover Page



This journal belongs to: _____

On-site Activity: Plant Parts Scavenger Hunt

Find these plant parts in the meadow.
Put a check in the box for each one you see.

<p>Leaf</p> 	<p>Stem</p> 	<p>Bark</p> 
<p>Cone</p> 	<p>Flower</p> 	<p>Needle</p> 
<p>Seed</p> 	<p>Thorn</p> 	<p>Root</p> 

On-site Activity: Animal Detectives Discovery Walk

Explore the meadow and try to find some animals.
Observe 3 animals and draw what you discovered.

Draw an animal you discovered.	Put a check by how the animal moves.	Draw where the animal lives.	Draw something the animal eats.
	<input type="checkbox"/> Hops <input type="checkbox"/> Crawls <input type="checkbox"/> Flies <input type="checkbox"/> Walks		
	<input type="checkbox"/> Hops <input type="checkbox"/> Crawls <input type="checkbox"/> Flies <input type="checkbox"/> Walks		
	<input type="checkbox"/> Hops <input type="checkbox"/> Crawls <input type="checkbox"/> Flies <input type="checkbox"/> Walks		
	<input type="checkbox"/> Hops <input type="checkbox"/> Crawls <input type="checkbox"/> Flies <input type="checkbox"/> Walks		

On-site Activity: My Shenandoah Animal

This is a picture of my animal living in Shenandoah National Park:

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Post-Visit Activity #4
Shenandoah Residents Portfolio Page

Name: _____ Date: _____

School: _____ Teacher: _____

1. Draw a picture of Shenandoah National Park. Write a word describing Shenandoah National Park.



Post-Visit Activity #4
Shenandoah Residents Portfolio Page

Name: _____

**2. Draw a picture of an animal you discovered in Shenandoah National Park.
Write the name of an animal you saw at Shenandoah National Park.**

Post-Visit Activity #4
Shenandoah Residents Portfolio Page

Name _____

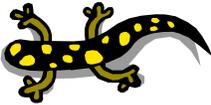
3. Draw a picture of you caring for Shenandoah National Park. Write what you are doing.

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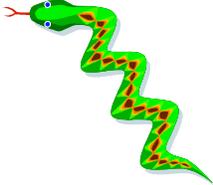
Shenandoah Residents Pre-Visit/Post-Visit Assessment

Note: This pre/post-test can be administered by reading the question aloud and having students mark a colorful "X" on the correct answer in each line.

Name _____ Date _____

<p>1. What holds the plant in the soil?</p>	 <p>a. roots</p>	 <p>b. stem</p>	 <p>c. flower</p>	 <p>d. leaves</p>
<p>2. Which animal is a <i>wild</i> animal?</p>	 <p>a. dog</p>	 <p>b. cow</p>	 <p>c. deer</p>	 <p>d. cat</p>
<p>3. Which animal is different from the others?</p>	 <p>a. salamander</p>	 <p>b. eagle</p>	 <p>c. owl</p>	 <p>d. parrot</p>
<p>4. A new plant grows from a _____.</p>	 <p>a. stem</p>	 <p>b. leaves</p>	 <p>c. roots</p>	 <p>d. seed</p>
<p>5. Which animal lives in Shenandoah National Park?</p>	 <p>a. lion</p>	 <p>b. panda</p>	 <p>c. giraffe</p>	 <p>d. bear</p>

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<p>6. What plant part uses sunlight to make food?</p>	 <p>a. flower</p>	 <p>b. leaves</p>	 <p>c. roots</p>	 <p>d. seed</p>
<p>7. What is the best way to observe animals?</p>	 <p>a. look quietly</p>	 <p>b. talk loudly</p>	 <p>c. cover your ears</p>	 <p>d. run around</p>
<p>8. Which animal uses its feet to run?</p>	 <p>a. snake</p>	 <p>b. owl</p>	 <p>c. frog</p>	 <p>d. deer</p>
<p>9. How can you help protect Shenandoah National Park?</p>	 <p>a. hunt in the park</p>	 <p>b. throw trash on the ground</p>	 <p>c. ride your dirt bike</p>	 <p>d. recycle your litter</p>
<p>10. Which of these does a deer <i>not</i> need to survive?</p>	 <p>a. water</p>	 <p>b. grass</p>	 <p>c. shelter</p>	 <p>d. french fries</p>

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Shenandoah Residents Pre-Visit/Post-Visit Assessment Answer Key

1. What holds the plant in the soil?
a. roots
2. Which animal is a *wild* animal?
c. deer
3. Which animal is different from the others?
a. salamander
4. A new plant grows from a _____.
d. seed
5. Which animal lives in Shenandoah National Park?
d. bear
6. What plant part uses sunlight to make food?
b. leaves
7. What is the best way to observe animals?
a. look quietly
8. Which animal uses its feet to run?
d. deer
9. How can you help protect Shenandoah National Park?
d. recycle your litter
10. Which of these does a deer *not* need to survive?
d. French fries