

Shenandoah National Park  
The Changing World of the Shenandoah Salamander

**Program Name: The Changing World of the Shenandoah Salamander**

**Suggested Grade Level:** 4<sup>th</sup>

**Maximum Group Size for presentation and activities:** 25

**Time Consideration:**

Pre-visit: Two 30-minute class periods for teacher-led pre-visit activities

Ranger-led Classroom Program: 45 min - 1 hour

Post-visit: One or more class periods for teacher-led post-visit activities

**Overview**

The National Park Service manages more than 400 park areas across the nation that were set aside to preserve and protect significant natural features and historic sites for all people to enjoy, now and into the future. Protecting these special places *unimpaired* for the enjoyment of future generations has become increasingly difficult due in part to environmental threats such as pollution and climate change. Shenandoah National Park is a refuge for many animals and plants that are pressured by human activities and other land uses. Shenandoah is home for the Shenandoah salamander, an endangered species that lives nowhere else on the planet. Human-accelerated climate change could cause a serious decline in the population of the Shenandoah salamander. Students will learn about the environmental threats to the Shenandoah salamander and determine ways people can help protect species and care for their national parks and the environment.

**Objectives**

Following the ranger presentation and classroom activities, the students will be able to

1. Define the mission of the National Park Service and name three national park areas and their significant features that are protected;
2. Explain how Shenandoah National Park protects plants and animals, specifically the Shenandoah salamander;
3. Identify three environmental and human influences that can impact the sensitive mountaintop ecosystem of the Shenandoah salamander and describe the potential consequences on the Shenandoah salamander's survival;
4. Explain three ways that individuals can help reduce the impact of human-accelerated climate change to help protect national parks and the environment.

**Virginia Science Standards of Learning Addressed**

Strand: Living Systems

- 4.5 The student will investigate and understand how plants and animals, including humans, in an ecosystem interact with one another and with the nonliving components in the ecosystem. Key concepts include
- a) plant and animal adaptations;
  - b) organization of populations, communities, and ecosystems and how they interrelate;
  - d) habitats and niches;

Shenandoah National Park  
The Changing World of the Shenandoah Salamander

f) influences of human activity on ecosystems.

Strand: Earth Resources

- 4.9 The student will investigate and understand important Virginia natural resources.  
Key concepts include  
b) animals and plants;  
d) forests, soil, and land.

### **Background Information**

The mission of the National Park Service and Shenandoah National Park is to preserve and protect the natural and cultural resources and leave them unimpaired for the enjoyment of future generations. There are more than 400 National Park areas across the nation that protect significant natural features, historic sites, and heritage areas.

Shenandoah National Park is one of these special places where visitors come to experience the mountain views, stroll through meadows and forests, hike to waterfalls, photograph wildflowers, and observe wildlife. Shenandoah National Park is a refuge for many animals and plants pressured by human activities and other land uses. There are more than 200 resident and migratory bird species, more than 50 species of mammals, more than 35 fish species, and 26 reptile species found in the park.

Shenandoah is also home to 14 species of salamanders including the Shenandoah salamander (*Plethodon shenandoah*) which is an endangered species that is only found in cool, moist habitats on three high elevation peaks within Shenandoah National Park. Salamanders are amphibians, and like frogs, need water or moisture in which to reproduce. Many salamanders are considered to be at risk for survival due to the loss of or changes to their habitat. Although these secretive creatures are unknown to many people, they are important parts of terrestrial ecosystems in our natural world and are in serious need of our protection.

There are many plant and animal species worldwide that live in special habitats at higher elevations that are at risk of extinction. One contributing factor to this risk could be warming temperatures due to climate change. Climate change is predicted to result in dramatic changes in temperature and moisture conditions in the Appalachian Mountains, including the high elevation ecosystem where the Shenandoah salamander lives.

Around the world, scientists are studying potential impacts of a warming climate. Shenandoah National Park is collaborating with the Smithsonian Institution, University of Virginia, US Geological Survey and other federal agencies to assess the potential climate change impacts on high-elevation ecosystems by studying the endangered Shenandoah salamander. Through this lesson, students will understand the plight of the Shenandoah salamander, will be able to educate others about the Shenandoah salamander and climate change, and will be able to make educated lifestyle choices to reduce their “ecological footprint.”

Shenandoah National Park  
The Changing World of the Shenandoah Salamander

### Vocabulary

- **Adapt** – *to make fit or suitable by changing or adjusting*
- **Adaptation** – *a special trait or characteristic that helps an organism survive*
  - **Physical adaptation** – *a part or function of the body that helps an organism survive. Examples include claws, thorns, long legs, camouflage, mimicry*
  - **Behavioral adaptation** – *behaviors or actions that allow an animal to respond to life needs. Examples include hibernation, migration, dormancy, instinct, and learned behavior*
- **Amphibian** - *a cold-blooded vertebrate that spends some time on land but must breed and develop into an adult in moist areas. Frogs, salamanders, and toads are amphibians.*
- **Carbon dioxide** – *a colorless gas released from the decomposition of organic materials (i.e. animal respiration, burning of fossil fuels.) Carbon dioxide in the Earth's atmosphere keeps some of the Sun's energy from radiating back into space, keeping the planet warm enough to support life.*
- **Cold-blooded** - *body temperature varies with surrounding temperature*
- **Climate change** – *long-term alteration in global weather patterns, especially noted as increases in temperature and storm activity and intensity. These changes can be a combination of natural and/or human-induced activities such as the greenhouse effect from the burning of fossil fuels.*
- **Endangered species** - *a species whose numbers are so few, or are declining so quickly, that the animal, plant, or other organism may soon become extinct. Endangered species are protected under national or international law.*
- **Greenhouse effect** – *warming of a planet's atmosphere caused by solar radiation trapped by water vapor and carbon dioxide.*
- **Habitat** - *environment in which a plant or animal lives*
- **Preservation** – *to keep intact, guard from danger, harm, or injury*
- **Protection** - *the act of preventing something from being harmed or damaged, or the state of being kept safe*
- **Research** – *the methodical investigation into a subject in order to discover facts, to establish or revise a theory, or to develop a plan of action based on the facts discovered*
- **Terrestrial** - *living or growing on land rather than in the sea or the air*

### Materials

Provided by classroom teacher:

- Internet access to download videos and conduct research  
*The Shenandoah Salamander*  
*Climate Change in Shenandoah National Park*  
[www.nps.gov/shen/forteachers/classrooms/changing-world.htm](http://www.nps.gov/shen/forteachers/classrooms/changing-world.htm)
- **What is a National Park?** pre-visit activity sheet (attached) - print one for each student
- **KWL Rocks!** pre-visit activity sheet (attached) – print one for each student
- **Letter to the Ranger** post-visit activity sheet (attached) - print one for each student

Shenandoah National Park  
The Changing World of the Shenandoah Salamander

## **Pre-Visit Activities**

Complete the following pre-visit activities to prepare the students for the Shenandoah National Park Ranger program in your classroom.

### **1. Motivational Activity: What is a National Park?**

Use the *What is a National Park?* activity sheet and individually or as a class, have the students use the National Park Service website <http://www.nps.gov/index.htm> to find six different National Park areas and identify a significant feature of each selected park area. Next, use the Shenandoah National Park website <http://www.nps.gov/shen> to learn about the park.

### **2. The Changing World of the Shenandoah Salamander**

Use the *KWL Rocks!* activity sheet and have the students record what they KNOW about the Shenandoah salamander and climate change in the “K” rock, and then brainstorm with students about what they WANT to know and record it in the “W” rock.

Prepare to watch *The Shenandoah Salamander* video. Challenge the students to listen for the following concepts in the video:

- What is the habitat of the Shenandoah salamander and its specific needs for survival? (*cool and moist environments on mountaintops in Shenandoah National Park*)
- What physical and behavioral adaptations does the Shenandoah salamander have to help it survive in its environment? (*moist skin, lives at high elevation under rocks where it is cool and moist*)
- Why is the Shenandoah salamander a federally endangered species? (*Rarity, restricted range*)
- What is climate? (*weather conditions prevailing over a period of years*)
- What is climate change and what causes it? (*Climate change is a long-term alteration in global weather patterns, especially noted as increases in temperature and storm activity and intensity. These changes can be a combination of natural and/or human-induced activities such as the greenhouse effect from the burning of fossil fuels.*)
- What is happening to the habitat of the Shenandoah salamander? (*human activities are causing more greenhouse gas emissions which cause higher temperatures and lower humidity in salamander habitat*)
- The Shenandoah salamander is an endangered species and found only in Shenandoah National Park. Its habitat is changing ~ getting drier and warmer due to climate change.
- What will happen to the Shenandoah salamander if its habitat continues to change due to a changing climate? (*Can it move somewhere else? Can it adapt? Will it become extinct?*)

Watch the first 2:53 minutes of *The Shenandoah Salamander* video.

[www.nps.gov/shen/forteachers/classrooms/changing-world.htm](http://www.nps.gov/shen/forteachers/classrooms/changing-world.htm)

Shenandoah National Park  
The Changing World of the Shenandoah Salamander

Following the video, review the pre-video questions and have the students record answers in the “L” rock on the activity sheet.

**3. What’s the Word?**

Select one student to lead a word game with the rest of the class. Have the leader choose a vocabulary word. Mark a blank line for each letter of the word on the chalkboard. The rest of the class tries to guess the missing letters to discover the word. As the students make guesses, place correct letters on the appropriate blank lines. Write incorrect letters in a separate column to show which letters have been guessed. For each incorrect guess, the leader is awarded a letter from ADAPT. The leader “survives” if he/she spells ADAPT before the rest of the class correctly spells and defines the vocabulary word. Repeat with other players as time allows.

**Shenandoah National Park Ranger Classroom Program**

The ranger-led classroom program is designed for a 45-60 minute class period. Coordinate with the ranger in advance for the location, starting time for the program, and whether multiple classes will be scheduled. Allow time for the ranger to set up activities and prepare for the students. Please stay in the classroom to assist the students and ranger during the presentation.

**1. Introduction (3 minutes)**

- a. Introduce the **Park Ranger**. The ranger will connect the topic of Shenandoah National Park, the mission of the National Park Service, climate change, and the Shenandoah salamander from their pre-visit activity class work.
- b. **Park Ranger** will ask students what they know about the park then lead the following activities.

**2. What is Special About Shenandoah? (7-10 minutes)**

**Park Ranger** conducts quick review discussion: “*What does this arrowhead represent?*” (referring back to the “*What’s a National Park?*” pre-visit activity).

- **Park Ranger** will display five park-specific items with brief questioning about each.
- Items symbolize geology (greenstone), plants (leaves or pine cone), animals (antler), culture (arrowhead), and visitation (park brochure), associated with the park’s specialness.
- Concludes with showing a toy salamander, salamander poster and a salamander t-shirt highlighting the Shenandoah salamander and its plight.

**3. Park Ranger questions students about salamanders and climate change (5 minutes)**

- “What do you know about salamanders?”
- “What do you know about climate change?”
- “How are these two things (salamanders and climate change) connected?”

Shenandoah National Park  
The Changing World of the Shenandoah Salamander

**4. Our Changing World: *Climate Change* video (3 minutes)**

[www.nps.gov/shen/forteachers/classrooms/changing-world.htm](http://www.nps.gov/shen/forteachers/classrooms/changing-world.htm)

Teacher should assist Ranger by showing this video. During the video, ranger will prepare for *Shenandoah Salamander's Shrinking Habitats* activity. Following the video, the ranger asks:

- “What do you know about animals that might be endangered due to climate change like that melting ice?”
- Ranger compares climate changes and the plight of polar bears to the impact of climate change on the locally endangered Shenandoah salamander.

**5. Ranger Review (5 minutes)**

a. Students finish sentences orally

- Shenandoah is special because....*(from opening activity)*
- Climate is changing in our world because....*(from photos of melting glaciers)*
- The rate of climate change is speeding up because of... *(from Shenandoah salamander video)*
- Shenandoah salamander is an important part of the ecosystem in Shenandoah NP because..... *(from Shenandoah salamander video)*

b. **Ranger** connects program to 2<sup>nd</sup> and 3<sup>rd</sup> grade SOLs on habitats and adaptations then introduces the *Shrinking Habitat* activity.

**6. Shenandoah Salamander's Shrinking Habitat (10 minutes)**

*(based on Shrinking Habitats from Project WILD)*

- “We know that the Shenandoah salamander is endangered due to its restricted habitat and that its habitat could be even more limited with increased temperatures and drier conditions in its mountaintop habitat. In this activity, you will become Shenandoah salamanders trying to survive in Shenandoah National Park.”
- **Park Ranger** explains rules of the activity. **Teacher** will assist by acting as a “predator” and keeping “survivor” data on chalkboard.
- **Teacher** can extend this activity by charting or graphing population fluctuations and discuss the pressures on populations.
- Conclusion: “We know Shenandoah National Park is striving to protect animals and their environment, but what can YOU DO to help the Shenandoah salamander in its mountain top habitat?”
- **Park Ranger** leads discussion by connecting a changing habitat to climate change and how our everyday activities contribute to climate change. Ranger leads discussion to individual energy choices we make every day.
- **Park Ranger says:** “Time for your test!”, then “Have you ever played Jeopardy?”

Shenandoah National Park  
The Changing World of the Shenandoah Salamander

7. **Shenandoah Categories activity** (10 minutes)  
Divide class into two teams. **Park Ranger** leads activity.

<b>Shenandoah Salamander</b>	<b>Climate Change</b>	<b>Shenandoah National Park</b>	<b>I CAN Make A Difference!</b>
How does the Shenandoah salamander breathe?	<b>DAILY DOUBLE!!</b> What happens to the air when we burn fossil fuels such as coal and oil?	What is one special thing about Shenandoah National Park?	What could you plant to increase oxygen and reduce carbon dioxide in our atmosphere?
<b>DAILY DOUBLE!!</b> What is the <u>habitat</u> of the Shenandoah salamander?	What is an animal (other than the Shenandoah salamander) that is <u>endangered</u> because its habitat is changing due to climate change?	In what <u>geographic region of Virginia</u> is Shenandoah National Park?	What is <b>ONE</b> thing you can do to help the Shenandoah salamander when you visit Shenandoah National Park?
What are two of Shenandoah salamander's <u>adaptations</u> to survive?	What is the term for weather over a long period of time?	What is the name of the 105 mile long road in Shenandoah National Park?	<b>DAILY DOUBLE!!</b> How can you save electricity every day?
What is a common salamander that looks like the Shenandoah salamander and also lives in Shenandoah National Park?	What causes <u>climate change</u> ?	<b>DAILY DOUBLE!!</b> What do all National Parks strive to do with the resources in their park?	What should we do with paper, aluminum and glass to reduce the amount of trash in landfills?

Shenandoah National Park  
The Changing World of the Shenandoah Salamander

**8. Ranger summarizes all elements of lesson** (5 minutes)

Review Shenandoah National Park's "specialness", the 100<sup>th</sup> birthday of the National Park Service in 2016, climate change, Shenandoah salamander, habitats, and individual stewardship behaviors then end with an invitation to come to Shenandoah National Park.

**Post-Ranger Visit Activities**

Following the Shenandoah National Park Ranger program in your classroom, complete as many of the following post-visit activities as possible to conclude the unit of study. Complete the Program Evaluation Form. Return the program evaluation and copies of student work to:

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

1. Use the *Letter to the Ranger* activity sheet and have the students write a letter to the park rangers about what was learned during the Park Ranger program and what is important to "preserve and protect" in Shenandoah National Park.
2. **"Melting Glaciers – A Photographic Journey Through Time"**  
12 Alaska glaciers and one Peruvian one – 3 minute video  
<http://www.youtube.com/watch?v=OfeNmITawpg>  
Discussion: Why is this happening?
3. **Are YOU Going to Change?** What's happening in "**YOUR** habitat" and what can you do in your habitat to reduce climate change?
  - Students will calculate and analyze their Ecological Footprint  
<http://www.myfootprint.org/> or <http://epa.gov/climatechange/kids/calc/index.html>
  - Students can create a pledge to make lifestyle choices that can reduce their carbon footprint and contributions to climate change.
3. **It's Salamander SHOWTIME!** Review the Shenandoah salamander KWL chart and read a salamander book. Using a sock puppet, toy salamander, or a finger puppet, have students create a puppet show/skit/drama telling the story of the Shenandoah salamander and climate change. Present their skit before an audience.
  - Salamanders of the Southeast*** by Joe Mitchell (non-fiction)
  - The Salamander Spell*** by E.D. Baker (fantasy)
  - Salamander Rain*** (A Lake and Pond Journal) by Kristin Joy Pratt-Serafini
  - Big Night for Salamanders*** by Sarah Marwil Lamstein
4. **Shenandoah Salamander Habitat**  
Have students make a Shenandoah salamander habitat/diorama in shoebox and be able to describe its habitat requirements.



Shenandoah National Park  
The Changing World of the Shenandoah Salamander

**5. Eluding Extinction**

People can make a difference to help the environment and species in danger of extinction. Investigate “success stories” of other imperiled species:

- Peregrine Falcon: <http://www.nps.gov/shen/naturescience/falcon.htm>
- Bald Eagle: <http://ngm.nationalgeographic.com/ngm/0207/feature2/index.html>

**6. Make a Difference!!!**

Have the students participate in a citizen science project at school. Students will be able to analyze and share their data, submit poems, artwork, and other classroom activities to the projects that have student publications. The following projects have their own protocols, lessons, and general information to get your students involved in “making a difference” in their world.

JourneyNorth (monarch butterflies) <http://www.journeynorth.org/>

Project Budburst: <http://www.budburst.org/>

Classroom Feederwatch <http://www.birds.cornell.edu/pfw/>

North American Amphibian Monitoring Project <http://www.pwrc.usgs.gov/naamp/>

**Unit Assessment**

1. *What’s a National Park?* activity sheet
2. *KWL Rocks!* activity sheet
3. *Letter to the Ranger* activity sheet
4. Salamander skit
5. Salamander habitat diorama
6. Ecological footprint calculation and pledge

**Going Further**

1. Make Your School a “Schoolyard Habitat”! With teacher assistance, students can analyze, then apply appropriate habitat principles in their schoolyard.  
[www.dgif.virginia.gov/habitat/schools/](http://www.dgif.virginia.gov/habitat/schools/)  
[www.dgif.virginia.gov/habitat/](http://www.dgif.virginia.gov/habitat/).
2. Virginia Naturally. Virginia Naturally provides citizens and educators with a virtual library and gateway to statewide environmental education resources.  
[http://www.dcr.virginia.gov/virginia\\_naturally/](http://www.dcr.virginia.gov/virginia_naturally/)
3. Students analyze a fictional situation and consider the options.  
“A new highway is being considered in your town. Right now, ambulances have a 30 minute trip from the new senior citizen center on one side of town to the hospital on the other side of town. The proposed road would reduce the trip to the hospital from the senior center to only 7 minutes. However, it is planned to go through the city park and would eliminate ball fields and a sensitive wetland habitat that is home for many plants and animals.”
  - How might it change the lives of the senior citizens in town?
  - How might the new highway change what you might do in the park?
  - How might it change the lives of animals in the wetland area of the city park?

Shenandoah National Park  
The Changing World of the Shenandoah Salamander

- If you had an opinion on the building of this highway, what could you do? (research options, talk to experts, go to city council, write letters)

## **Resources and References:**

### **National Park Service resources**

Home page for finding information about individual parks <http://www.nps.gov/index.htm>

Frequently asked questions about the National Park Service

<http://www.nps.gov/faqs.htm>

Shenandoah National Park website [www.nps.gov/shen](http://www.nps.gov/shen)

### **Shenandoah salamander resources**

"Shenandoah Salamander - Shenandoah National Park."

[http://www.nps.gov/shen/naturescience/shenandoah\\_salamander.htm](http://www.nps.gov/shen/naturescience/shenandoah_salamander.htm)

United States. U.S. Department of the Interior. National Park Service. 2012.

"Virginia Department of Game and Inland Fisheries." *Species Information: Shenandoah Salamander (Plethodon shenandoah)*. Virginia Department of Game and Inland Fisheries, 2012. <http://www.dgif.virginia.gov/wildlife/information/?s=020045>

"Shenandoah Salamander (*Plethodon shenandoah*)." Virginia Herpetological Society, 2011.

[http://www.virginiaherpetologicalsociety.com/amphibians/salamanders/shenandoah-salamander/shenandoah\\_salamander.htm](http://www.virginiaherpetologicalsociety.com/amphibians/salamanders/shenandoah-salamander/shenandoah_salamander.htm)

"Climate Change and Shenandoah Salamanders."

[http://www.nps.gov/shen/naturescience/upload/SHEN\\_NR\\_104\\_Climate\\_Change\\_and\\_Shenoandoah\\_Salamanders.pdf](http://www.nps.gov/shen/naturescience/upload/SHEN_NR_104_Climate_Change_and_Shenoandoah_Salamanders.pdf)

### **Climate change resources**

National Park Service Climate Change Overview

<http://www.nature.nps.gov/climatechange/overview.cfm>

"Media Advisory: NSIDC launches "Greenland Ice Sheet Today," reviews extreme melt season of 2012", National Snow and Ice Data Center, 2013.

[http://nsidc.org/news/press/20130129\\_greenlandicesheettoday.html](http://nsidc.org/news/press/20130129_greenlandicesheettoday.html)

"Climate Change: Vital Signs of the Planet." *Climate Change: Vital Signs of the Planet*.

National Aeronautics and Space Administration <http://climate.nasa.gov/>

United States Environmental Protection Agency's "What You Can Do" about climate change (home, office, school and on the road suggestions)

<http://www.epa.gov/climatechange/wycd/index.html>

Environmental Protection Agency's Students' Guide to Global Climate Change.

Interactive and good information <http://www.epa.gov/climatestudents/index.html>

Shenandoah National Park  
The Changing World of the Shenandoah Salamander

Calculate your carbon footprint and find out ways to reduce their energy use  
<http://www.myfootprint.org/>

**Citizen science resources**

“You Can Be a Scientist, Too!” Citizen science project websites relating to climate change. <http://www.epa.gov/climatestudents/scientists/citizen-science.html>

Student involvement in citizen science; informative and inspirational articles  
<http://www.edutopia.org/service-learning-citizen-science>

National Science Foundation’s website with answers to “What Can I Do To Help?”  
[http://www.nsf.gov/discoveries/disc\\_summ.jsp?cntn\\_id=123903](http://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=123903)

**Additional resources for adapting curriculum activities**

*Readwritethink.org*. 2012 IRA/NCTE, 2012.

<http://www.readwritethink.org/classroom-resources/printouts/chart-a-30226.html>

"Welcome to TeAch-nology.com." *Worksheets, Lesson Plans, Teacher Resources, and Rubrics from TeAch-nology.com*. Teachnology, Inc., 2012.

<http://www.teach-nology.com>

**Print resources**

Baker, E. D. *The Salamander Spell*. New York: Bloomsbury, 2007. (fiction)

Cherry, Lynne, and Gary Braasch. *How We Know, What We Know, about Our Changing Climate: Scientists and Kids Explore Global Warming*. Nevada City, CA: Dawn Publications, 2008.

Gershon, David. *Journey for the Planet: A Kid's Five Week Adventure to Create an Earth Friendly Life*. Woodstock, NY: Empowerment Institute, 2007.

Harper, Michael, Paula Owen, and Gayle Reed. *Global Climate Change: Teachers' Resource Pack (secondary School Edition)*. Manchester: ARIC, 1994.

Lamstein, Sarah, and Carol Benioff. *Big Night for Salamanders*. Honesdale, PA: Boyds Mills, 2010.

Malnor, Carol. *A Teacher's Guide to How We Know What We Know About Our Changing Climate – Lessons, Resources, and Guidelines about Global Warming*. Nevada City, CA: Dawn Publications, 2008.

Mathez, Edmond A. *Climate Change: The Science of Global Warming and Our Energy Future*. New York: Columbia UP, 2009.

Mitchell, Joseph C., and Whit Gibbons. *Salamanders of the Southeast*. Athens: University of Georgia, 2010.

Shenandoah National Park  
The Changing World of the Shenandoah Salamander

Pratt-Serafini, Kristin Joy. *Salamander Rain: A Lake & Pond Journal*. Nevada City, CA: Dawn Publications, 2000.

Schmidt, Gavin, and Joshua Wolfe. *Climate Change: Picturing the Science*. New York: W.W. Norton, 2009.



Shenandoah National Park  
The Changing World of the Shenandoah Salamander

**What is a National Park?**



- A. Use the National Park Service website at <http://www.nps.gov/index.htm>
- Find six different types of National Park Service units (park, seashore, battlefield, historic site, trail, and monument).
  - List one outstanding feature for each unit.

1. \_\_\_\_\_ National Park  
Feature \_\_\_\_\_

2. \_\_\_\_\_ National Seashore  
Feature \_\_\_\_\_

3. \_\_\_\_\_ National Battlefield  
Feature \_\_\_\_\_

4. \_\_\_\_\_ National Historic Site  
Feature \_\_\_\_\_

5. \_\_\_\_\_ National Historic Trail  
Feature \_\_\_\_\_

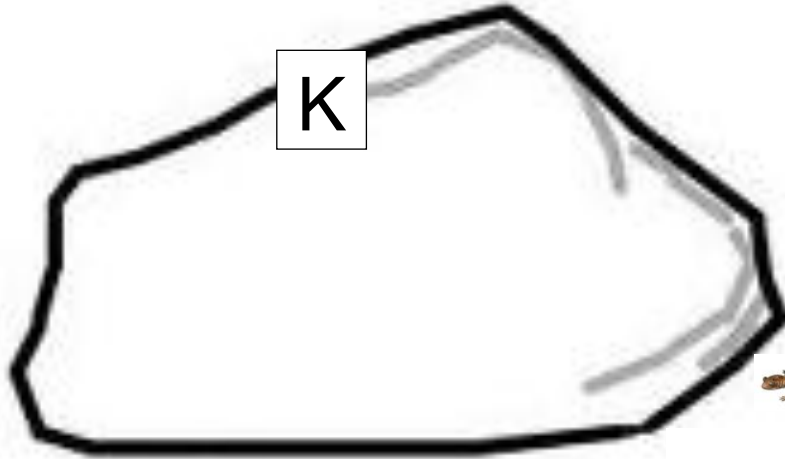
6. \_\_\_\_\_ National Monument  
Feature \_\_\_\_\_

- B. Use the Shenandoah National Park website at [www.nps.gov/shen](http://www.nps.gov/shen).
- What is an outstanding feature of Shenandoah? What makes it special?
  
  - Draw a picture of something that you'd like to see when you visit Shenandoah National Park.

Shenandoah National Park  
The Changing World of the Shenandoah Salamander

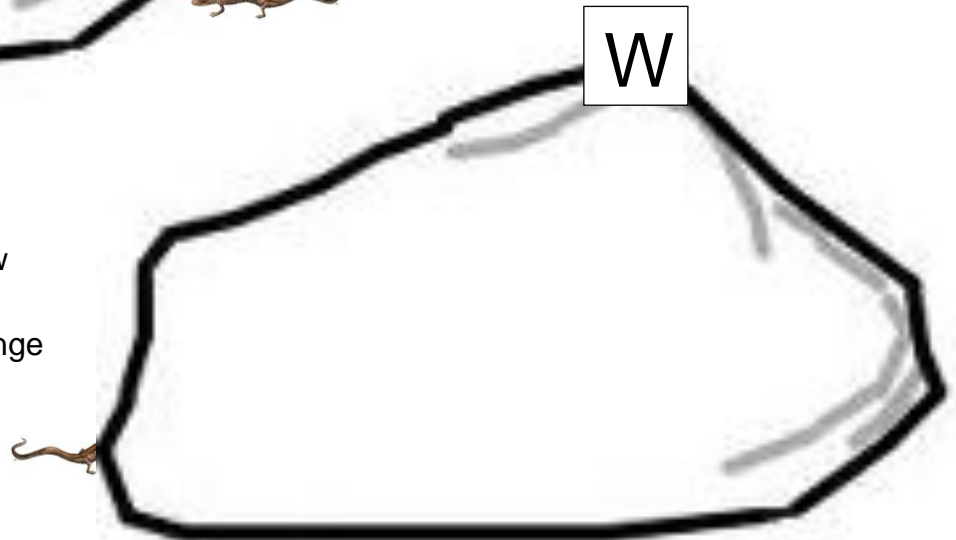
KWL Rocks! The Shenandoah Salamander Video Notes

Use before and after *The Shenandoah Salamander* video  
(Only the first 2:53 minutes need to be shown)



K

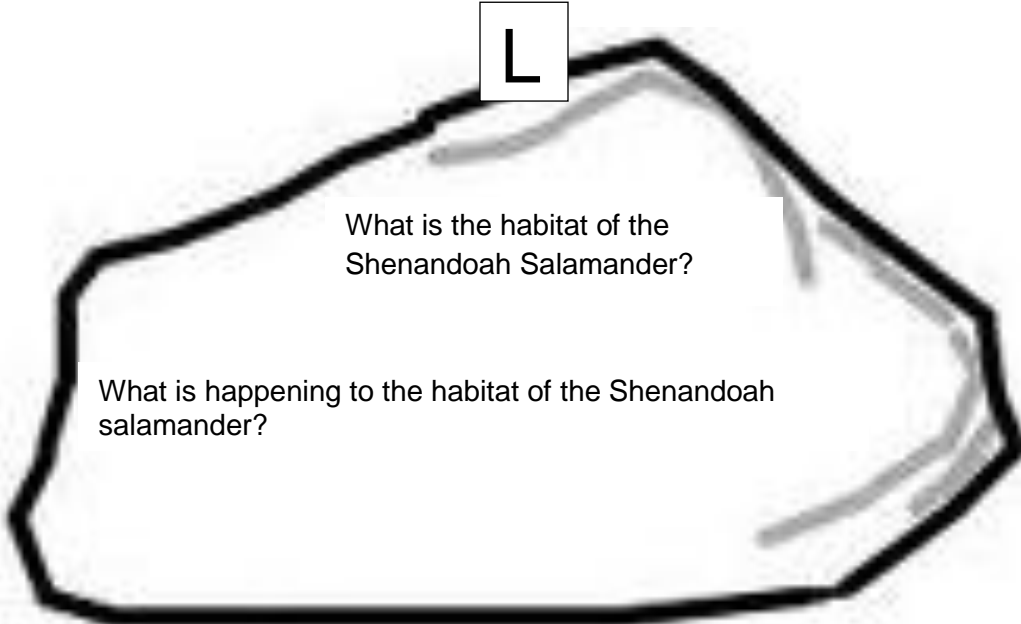
Write what you already **Know** about the Shenandoah salamander and climate change inside the “K” rock.



W

Write what you **Want** to know about the Shenandoah salamander and climate change in the “W” rock.

L



What is the habitat of the Shenandoah Salamander?

What is happening to the habitat of the Shenandoah salamander?

Write what you have **Learned** about the Shenandoah salamander and climate change in the “L” rock.

Shenandoah National Park  
The Changing World of the Shenandoah Salamander

Date \_\_\_\_\_

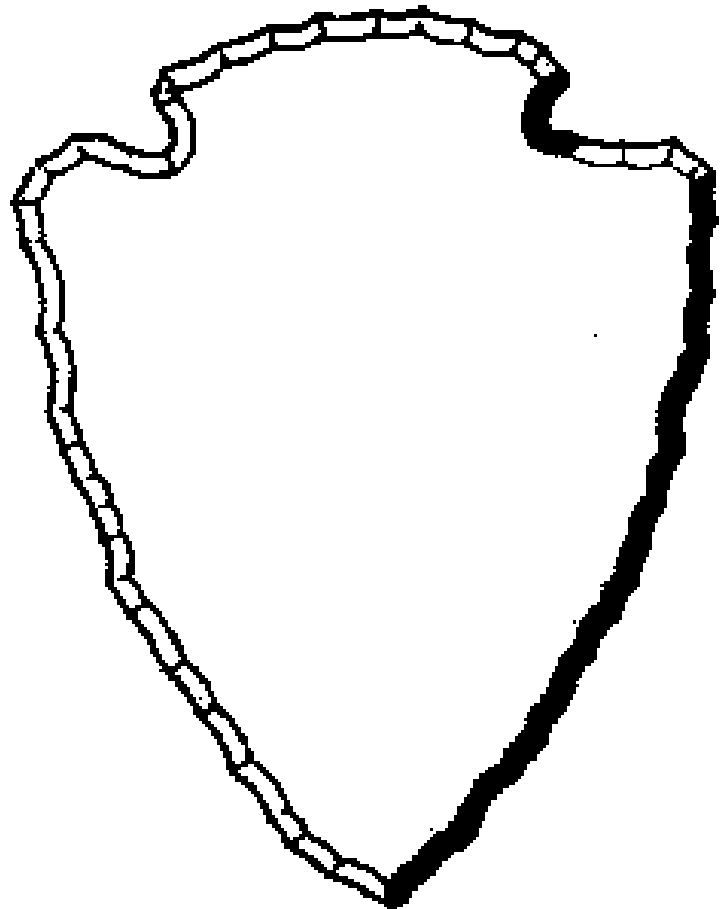
Shenandoah National Park  
Education Office  
3655 US Highway 211 East  
Luray, VA 22835

Dear Ranger,

I've decorated this salamander with words and phrases that I learned about the Shenandoah salamander's adaptations, its habitat, and its survival challenges due to climate change.



Inside this arrowhead, I've put what I can do to help Shenandoah National Park "preserve and protect" all park treasures especially the Shenandoah salamander that lives ONLY in Shenandoah National Park.



Sincerely,

\_\_\_\_\_

\_\_\_\_\_ School